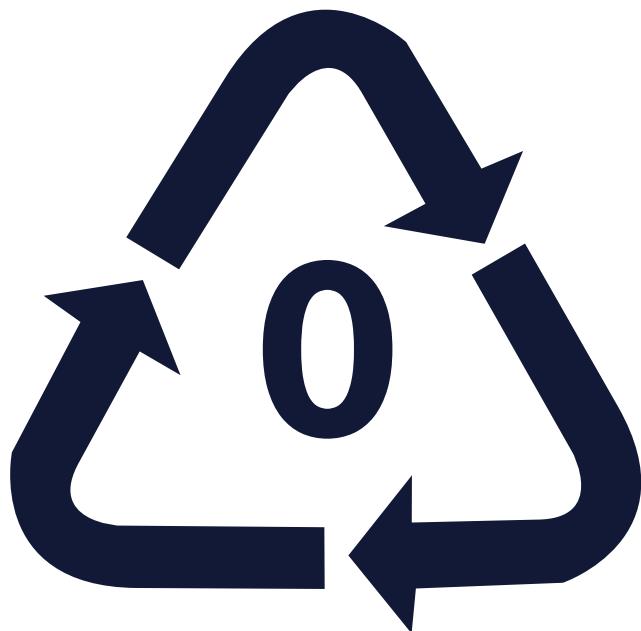


Plass-Backward:

A Handbook on Using Less Plastic



A Division III Project by Allxie Cleary

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Table of Contents

Introduction ... 5

The Plastic Problem ... 5

Six Months Without Plastic ... 7

What Is Plastic? ... 11

Glossary ... 20

Chapter 1: Drinks ... 21

The Last Straw ... 21

99 Bottles ... 23

The Truth about Recycling ... 28

Beverage Environmental Checklist ... 32

Chapter 2: Water ... 33

Not a Drop to Drink ... 33

Bottle Upcycle! ... 37

Water Environmental Checklist ... 39

Chapter 3: Produce ... 40

Vegetable Safari ... 40

Produce Bags ... 42

Let Them Rot ... 43

Produce Environmental Checklist ... 48

Chapter 4: Meat ... 50

The Meat of the Argument ... 50

Meat Environmental Checklist ... 57

Chapter 5: Packaged Groceries ... 58

Ravioli Recipe ... 59

Snack Bar Recipe ... 62

Grocery Environmental Checklist ... 64

Chapter 6: Dining Out and Take-Out ... 65

Table of Contents

Dining Out and Take-Out Environmental Checklist ...	71
Chapter 7: Self Care and Household ...	72
Hair Conditioner Recipe ...	74
Self-Care and Household Checklist Environmental Checklist ...	79
Chapter 8: Shopping for Four ...	80
Shopping for Four Environmental Checklist ...	85
Conclusion: Personalizing Plastic Reduction ...	86
My New Rules ...	90
Plastic Environmental Checklist ...	92
Allxie's Bio ...	93
Works Cited ...	94

Introduction

The Plastic Problem

What does it mean to “go green?” This is a term that has become popular in our culture as corporations market themselves to the world as “going green” whether or not they actually are. but what would it mean for an individual to “go green?” We learn growing up to save water, turn off the lights, and don’t litter. Ride a bike or take public transportation. Cut the loops on plastic sixpack holders so that the turtles and penguins don’t get stuck. Reduce, reuse, and recycle. I often make choices based on these common-knowledge guidelines, but always felt a helpless guilt that I wasn’t doing more when environmental media such as Al Gore’s *An Inconvenient Truth*¹ and Edward Humes’ *Garbology*² are telling me that I, as a consumer, am probably a part of the problem instead of than the solution. In search of problems to which we, as consumers, contribute in a proportionally significant way, I discovered that creating demand for and disposing of plastic causes major environmental problems. Reducing the amount of plastic we consume is a necessary step in reducing pollution and toxins in the environment, and may reduce serious plastic related health issues in all living creatures.

The issues with the production, consumption, and disposal of plastic can be divided into three major categories.

1. Environment

Plastic from goods and packaging that we use every day is poisoning our oceans, our air, and our land. Each of the oceans of the world have giant swirling slurries of plastic at their centers trapped by circular current formations called “gyres.” Plastic from litter, loose garbage flying out of garbage trucks, and illegal (but common) dumping finds its way into storm drains and rivers and makes its way to the ocean. Plastic also ends up in the ocean when tanker ships tip during storms at sea. The gyre full of garbage in the Pacific Ocean has been dubbed the Great Pacific Garbage Patch, or the Pacific Trash Vortex. Though a lot of media refers to

the Great Pacific Garbage Patch as being “twice the size of Texas,” it is difficult to estimate the concentration and distribution of these enormous plastic patches. It is, however, easy to estimate that the patches are growing, and continuing to harm the environment. Macroplastic, plastic ranging in size from a few centimeters to tens of meters in diameter, can alter and damage habitats, or kill animals through entanglement or ingestion.^{3,4} Also, marine life may colonize drifting plastic debris and invade new areas.⁵ For example, algae can grow on a large floating net, creating a habitat for marine life that eat the algae. The net may then carry the species across the ocean to a place where the species is invasive. Microplastic, smaller than a few millimeters in diameter, accumulates toxins, gets eaten by marine life, and also can provide a floating surface on which algae can grow, which may alter habitats by providing more algae than normal^{6,7}. Meanwhile, plastic production contributes heavily to greenhouse gas emissions, and much of landfills are made up of plastic waste (Garbology)

2. Physical Health

Plastic contains harmful mutagenic, carcinogenic, and endocrine disrupting chemicals, none of which plastic manufacturers are required to disclose due to patent law. Even plastics marketed as “safe plastics” and “BPA-Free” are likely to leach estrogenic chemicals.⁸ The FDA does little work around the issues of plastic packaging contaminating food and drinks; for example, there’s only one person in charge of the plastic in bottled water, and that person has other duties as well. Chemicals that leach from plastic have been linked to breast cancer and adverse birth effects.⁹ These chemicals such as BPA and dioxins come from bottled water, children’s toys, toothbrushes, meat products where the animals may have lived in or ingested contaminated water (such as the ocean), and potentially any plastic.

3. Social Justice

Lower income households always pay for the world’s plastic consumption; plastic manufacturing plants pollute the air in low income neighborhoods, people in developing countries are made responsible for the toxic burning and melting portions of the recycling process,¹⁰ and landfills, which leach toxins into ground water, are almost always in low income neighborhoods. Plastic contributes to toxicity of our land, especially in low-income areas. In the United

States, African-Americans are 79% more likely to live in industrially polluted neighborhoods suspected of causing the greatest health problems.¹¹

Every piece of plastic that we use has the potential to end up in the ocean, perhaps in the Great Pacific Garbage Patch. Interestingly enough, there is a low incidents of red colored plastic in the ocean. This is because the fish are eating all of it, thinking that it's food. It is common for whales to wash up on shore that have been killed by dozens of pounds of plastic, but whales washed ashore are a tiny fraction of the total plastic related whale deaths; most whales that die of plastic ingestion sink to the bottom, and it's impossible to determine the exact scale of the problem¹². In the classic food chain model, small fish eat plastic, those fish are eaten by bigger fish, which are then eaten by bigger fish, which are then eaten by us. Your tuna dinner isn't just giving you heavy metal poisoning; it's giving you plastic poisoning.

These alarming statistics and learning about the pivotal role of plastic, especially to the environment, motivated me to take action.

Six Months Without Plastic

I stopped consuming plastic on August 25th, 2013. My goal was to abstain from using plastic for approximately six months--until March 1st, 2014. I did this in order to discover just how much plastic there was for an individual to avoid, and to determine the most effective and easiest ways for me (or anybody) to change personal consumerism to reduce impact on the earth. This project served as a good tool to discover the unconscious and unintended ways we consume plastic, and to study how I (and I hope as an extension, consumers in general) acquire, use, and dispose of plastic. With this knowledge, I have created this document to guide those wishing to embody environmentally conscious, health conscious, and socially conscious consumption.

The idea for this project came about while I was on the phone with Dr. Meisa Salaita, my teacher, mentor, and longtime friend. I was reading *Garbology*, by Edward Humes as my summer reading assignment for my job as an orientation leader, and Meisa and I were discussing solutions for the garbage problem.

We discussed the horrifying idea that someone managed to create a substance, plastic, that is extremely difficult to unmake which is used once and then thrown away. Many plastic

items aren't even necessary--we have plastic packaging that only exists because a focus group said more plastic would sell more products, and because corporations are rewarded for cutting costs, not for taking account environmental costs.

So, Meisa mentioned hearing on the radio about someone living without plastic for a year. That sounded amazing! I told her she should do it and write a book.

"Allxie, I had a kid a year ago. I can't just stop using plastic."

"That would be the best time to do it," I said. "It would be hardest. And then you can write a book."

"Allxie--that's insane. I need plastic for everything. I can't. I just can't."

I thought about all of the plastic items that Meisa would need with a new baby, and then I thought about all of the plastic that I use.

"Wait...I could do it," I said.

I needed a year long project about environmentalism, and I found one.

The next steps were to define the parameters. Here are the rules I made for myself:

I may not buy or receive new plastic products or products that are purchased in plastic packaging.

This covers many (or arguably most) food products, electronics, and most home, garden, health, and beauty products. This also includes disposable dishware and containers such as plastic grocery bags. I also may not buy or receive any synthetic clothing (which are made with plastic).

I may not buy or receive products that are made in entirety or in part from recycled plastic.

This includes anything made of plastic with a “made from recycled plastic” label on it, even if it’s post-consumer recycled plastic. The recycling process isn’t a solution, isn’t nearly as effective as we are led to believe, and may or may not be helping at all. Read the more about this in [Truth About Recycling](#) in Chapter 1: Drink.

I may not buy anything made or packaged in plastic used or from a thrift store.

I cannot buy plastic items from a thrift store or yard sale or online consignment such as Craigslist.com. While buying plastic items “used” is more sustainable than buying plastic new, these rules were all designed to prevent me from bringing any plastic items closer in the consumer cycle to the landfill (or ocean). By my reckoning, buying from a thrift store might take the product away from someone who would buy it new if they didn’t find it in the thrift store. This may be a flawed argument, as it’s possible that the vendor may throw away the item if it wasn’t sold. In general, I do recommend buying necessary plastic items used, but have avoided doing so in this project to illustrate the difficulty of living without.

I may salvage plastic or synthetic items or packaging on their way to the garbage or recycling.

If someone I know is throwing something away instead of giving it away, I may take it and use it. I may also “dumpster dive” (or salvage items from trash cans or dumpsters), and pick trash up off of the ground. While avoiding plastic altogether is better for avoiding toxins, reclaiming discarded plastic for necessary items and upcycling projects is a good way to avoid buying new plastic.

I may use items made of plastic or synthetics that I already own.

The alternative to using plastic items that I already possess is to give them away or throw them away. I decided that using and keeping the plastic items I already own is the best way to ensure that they get the most use and take as long as possible to get to a landfill. If my major motivation for this project had been personal health, I may have been more compelled to start phasing out the plastics I already own and use, but my primary motivation was a cleaner environment.

I may use items made of plastic which do not exist solely for my benefit, or items which, by using them, I contribute little to their future “demand.”

This includes items such as my linoleum dorm floor, the dorm oven, the fire retardant couches in the Admissions Office where I work, and my airplane to get home. One could argue that using any of these items at all is creating a demand for them, but those are systemic changes that are beyond the scope of this handbook.

Any plastic or synthetics that I accidentally acquire or use must be saved, weighed, and reused if possible.

I was aware that this project was going to be almost literally impossible unless I were to hike into the mountains and live in a cave for six months. I knew that in trying to live as normally as possible, I would accidentally acquire plastic lids and straws from waiters at restaurants, hidden plastic in packaging in grocery stores, and other unavoidable, unforeseen items. I also knew that there were going to be limits to my own commitment to this; for example, if I were to get sick, I would get medicine in a plastic bottle. It also seemed possible that in a particularly bad fit of withdrawal, I might throw all of my months of discipline to the wind and buy a nice big plastic bag full of frozen Chinese potstickers.

After determining these rules, I was suddenly hit by the most obvious question in the world:

What is Plastic?

Merriam-Webster dictionary defines plastic as “made or consisting of plastic,” “not real or sincere,” and “capable of being made into different shapes”¹³.

I called up Meisa Salaita, Ph.D, my high school chemistry teacher and co-founder and co-director of the Atlanta Science Festival, to ask about plastic. She and her husband Khalid Salaita, Ph.D explained what plastics are. Plastics are materials made up of any synthetic or semi-synthetic organic (carbon-based) polymers (which are large molecules made of repeating units). Plastic can be made of any organic polymer, but most industrial plastics are made from petrochemicals. Rubber is usually categorized as a plastic, though rubber is made mostly of latex, which comes from a tree. Meanwhile, synthetic fabrics like polyester are made from flexible plastic fiber. There are many polymers that are not plastic, for example your fingernails.

The most common types of plastic that a consumer may encounter can be identified and categorized using the Resin Identification Code.¹⁴

Resin Identification Codes



Polyethylene Terephthalate (PET, PETE, Polyester) is transparent and usually used in drink containers like single serve bottles. PET is also used in food jars for peanut butter and jelly and the trays of microwavable dinners. Polyester fabric is also made of PET, though few facilities will recycle polyester fabric. PET can be recycled into products like carpets, fleece jackets, comforter filling, and tote bags.



High Density Polyethylene (HDPE) is used to make milk and juice cartons, shampoo, dish soap, laundry detergent, and household cleaner bottles. Grocery bags, cereal box liners are also made of HDPE. HDPE can be recycled into bottles for non-food items such as hair products, household soaps and detergents, motor oil, and antifreeze, also, plastic lumber for outdoor decking and picnic tables, flower pots, and, appropriately, recycling bins.



Polyvinyl Chloride (PVC, Vinyl) has excellent chemical and weather resistance and stable electrical qualities, making it useful in wiring and household applications like piping, siding, window frames, decks, and railings. PVC is used for some food products, such as clamshell containers (as for strawberries), and in deli and meat wrap.

The production of PVC also produces various dioxins, a highly toxic group of compounds known to “Cause reproductive and developmental problems, damage the immune system, interfere with hormones and also cause cancer”¹⁵



Low Density Polyethylene (LDPE) plastics are mostly used in film applications like dry cleaning bags, grocery bread, frozen foods, fresh produce, and garbage bags. LDPE is also used for shrink wrap, coatings for paper milk cartons and disposable cups, container lids, toys, and squeeze bottles for products like honey. LDPE is recycled into shipping envelopes, garbage can liners, flooring, furniture, compost and trash bins, and lumber. Recycling facilities often choose not to recycle LDPE.



Polypropylene (PP) is used for food containers like yogurt and margarine tubs, as well as for take out meals and deli foods. Medicine bottles and many bottle caps are made of PP. Automobile carpeting may also be made of PP. PP is difficult to recycle, but is sometimes made into plastic parts for cars, gardening rakes, and bins for storage.



Polystyrene (PS) can be a rigid plastic or foamed (like Styrofoam). PS is transparent and brittle. When foamed, it is used for products like packing peanuts, protective packaging for electronics and appliances. PS, foamed or unfoamed, can be used for food containers like cups, plates, silverware, and hinged clamshell takeout containers. PS may be recycled into a number of different items, including licence plate frames and light switch plates, but polystyrene foam is rarely recycled because its density is so low that it isn't a cost efficient enough to the recycling companies. Filling a truck with foam yields a lot less plastic to recycle than filling a truck with denser materials. PS foam, while using far less plastic to make more products, is still a big environmental problem because of the ease with which it crumbles and gets lost.



This is used for any plastics that do not fall into any of the above categories, or is made up of more than one type.

Plastics made of plants instead of fossil fuels also fall into this category. Some plant plastics may actually be composted into dirt instead of recycled. Others, like Coca Cola's PlantBottle, are exactly the same as PET and can be recycled as such.

Over the six months I spent without consuming new plastic, I faced major challenges, the biggest of which was in feeding myself. Grocery shopping, dining out, and take-out were all areas where I needed to develop new systems. Other consumables, such as self care and hygiene products and office supplies such as tape, were also difficult to circumnavigate. Challenges arose with more permanent, less disposable items, such as synthetic clothing and a new battery for my computer.

My first shopping trip of the year took five hours, not counting travel. Without doing any research, I went to Stop n' Shop, Trader Joe's, and Whole Foods Market. I acquired some kitchen staples, food for preparation, a few sage plants potted in organic compostable pots, unpackaged bar soap, unpackaged bar shampoo, some Ball Jars, and a bar of bacon flavored chocolate. Looking back, half of the items had hidden or unseen plastic packaging in one form or another. For instance, the olive oil had a plastic pour spout that I couldn't see with the lid still on. I found out a few weeks into the year that aluminum cans, which I originally assumed only contained aluminum alloys, are actually lined with epoxy resin, which is a BPA (Bisphenol A) based product.¹⁶ The bacon chocolate had a whole second wrapping under the cardboard made of a mylar-like plastic foil. I could have cried.



Food shopping continued to take inordinately long for about a week. I spent about three hours in each of my local grocery stores walking up and down each aisle to see what products were offered without plastic, and how to extend my food-dollars with cheaper stores and brands. It was like moving to a new country and going to grocery stores for the first time; three quarters of the product selection available to me was different than anything I'd bought before. Many of my favorite brands were unavailable, and the pricing was higher

on many of the products I did need to buy (though some were lower). Additionally, the more I learned about packaging over the semester, the more packages dropped off my list of foods I could buy, and the more I had to explore new sources of food.

As I became aware of the difficulty in finding the plastic-free foods I needed, I had to find a way to travel to different stores without owning a car or having access to bike-friendly roads. Even knowing where products were located didn't necessarily help me get them. It wasn't until my mother visited me in October that I made it to my dream store--the local Northampton Co-Op store, River Valley Market. Having access to bulk foods, spices, oils, soaps, and detergents made avoiding plastic much more straightforward.

I set myself an additional challenge when I went home to San Francisco for winter break. I returned home and made a proposition to my parents and brother. I explained how the plastic-free project was going, and asked them to let me do all of the shopping plastic-free for the month of break, which you can read about in **Chapter 8: Shopping for Four**. The real challenge came towards the end of break when I tried to shop for my family of four plus my elderly grandparents on a trip to Southern California. My grandmother was in the hospital after a fall, and I didn't have the heart to deprive her of her favorite Thai soup because we had to take it to her in a polystyrene take-out cup.

Spending time with my grandparents made me think a lot about why plastic is such a popular material, when if anybody stopped to think about it, plastic makes up most of the litter we see on the ground. My grandparents are both about 85 years old. This means a few things for them. Firstly, they are old enough to have spent a large portion of their lives in a world before plastic packaging. It's hard for me as someone born in 1992 to imagine that such a time even existed, but my parents tell me about how Saltines were sold in wax paper packages in aluminum tins as recently as the 1970s; between 1960 and 2010, waste in the United States tripled from 88.1 million tons to 249.9 million tons¹⁷. My grandparents grew up in a world without nearly as much plastic-related pollution and aren't in touch with the repercussions of using plastic. Secondly, my grandparents are no longer able-bodied and tend to want to take advantage of any additional convenience life can afford them. If buying a plastic water bottle will be lighter to carry and unimportant if lost, they may choose the plastic bottle.

Thinking about my grandparents' plastic use made me think about why anybody might use so much plastic.

1. Convenience and Product Preference

Disposable stuff makes life easier! It can be nice not to have to carry containers around if the containers can be thrown away. Shopping is easier if all of the groceries are at one stop. Plastic makes it possible to eat potstickers on a Tuesday night after all of the Chinese restaurants are closed. Most people couldn't make a Pop Tart taste just right from scratch. The desired product is made and sold only in plastic for ease and cost of manufacturing and distribution and for the product to retain its extensive shelf life.

2. Time

It may take longer time to cook every meal out of raw ingredients, depending on complexity of food and cooking experience. Shopping at more than one store takes longer. Sit-down meals at restaurants or at home take too long, and other fast options such as take-out come in plastic packaging.

3. Cost

The organic aisle costs more. Stuff in glass containers cost more. The plastic version of the item needed is cheaper than the other material because it is easier, faster, and cheaper to make, and lighter to transport.

4. Habit

Even with the intention not to use plastic, it may take a little while to get into the habit of remembering to ask for no lid on a drink, or to bring reusable bags to the grocery store.

5. Functionality

Plastic can be soft, hard, porous, dense, light, transparent, or colored depending on the additives. Different types of plastic with alternative chemical additives elicit different reactions from various kinds of external stimulation, from heat and cold, to pressure and heavy loads, to a range of dangerous chemicals. This flexibility allows plastic to be used in situations where other materials are inferior or will outright fail. For example, plastic is optimal for use in electronic devices and as casing for wiring. Old wiring was cased in rubber or cloth which

can biodegrade over time or melt when the wiring heats up, possibly exposing live wires and causing fires. The PVC and Teflon™ are “forever” even though they produce toxic gases when the wiring heats up enough.

6. Safety

With the wide range of functionality, plastic introduces new safety technology. Due to the various properties of plastic, many sanitation and hygienic biohazards can be avoided. Plastic provides a shatter-free alternative to glass, and other necessary products like helmets, which weren’t popularized until after polystyrene (an expanded foam plastic popularized by the brand Styrofoam) plastic became readily available in the 1970’s, are accessible and commonplace.¹⁸

7. Excuses and Obstinance

Everybody has needs, but it’s important to draw distinctions between needs and excuses made for conveniences. I brought my grandmother Thai soup from the Thai restaurant to the hospital in a polystyrene container because I wanted her to have it and I’m such a nice granddaughter that I wouldn’t deprive my grandmother of Thai soup while she was in the hospital. --Actually, if I’m being honest, I could have had some more forethought and brought a reusable, resealable container to the Thai restaurant to carry the soup for my grandmother.

“I need this for my diet.” Really? Will you become sick or injured or die without it? This handbook is designed in part to help reevaluate and contextualize the status of various items on your need to preference spectrum. Everybody’s actual need spectra are different. If I say I need to take allergy meds, it means that the alternative is spending a month with itchy eyes and a nose that runs more than if I had a head cold, requiring me to use large amounts of paper products or water to wash handkerchiefs. If, on the other hand, I say I need to order food from the new Chinese restaurant that opened up in Amherst, what I probably mean is that I’m craving pork buns, but I don’t care enough to learn how to make pork buns myself and I’m too busy writing my handbook to get on a bus and go to the restaurant myself. We make excuses, and some of them are more valid than others.

In terms of obstinace, I had a friend whose name I’ll change to Henry who asked me about my project, and then told me he thought it was stupid to try to stop using plastic until somebody figures out how to clean the ocean because he has “no incentive to inconvenience

[himself] if it's not getting cleaned up anyway." Henry is wrong. Despite no apparent effect on himself as an individual (as Henry does not live in a town with a plastic production plant, nor does he live next to a landfill or recycling processing community), his actions continue to aggravate the situation for the planet as a whole. Incidentally, Henry's family works in the fossil fuel industry. Many people make excuses for their behavior, and many others are simply not motivated to change their habits unless they believe their actions will make a difference.

8. Education

What's made of plastic and what isn't? What is recyclable? How does one find an organic farm? Most people have no idea what actions would actually make a difference. I certainly didn't before I started this project--fortunately, the purpose of this handbook is to remedy that! Education and awareness are the best ways to change the choices someone makes. Many issues of convenience, time, cost, and even excuses can be circumnavigated with sufficient education. Also, while my grandparents may misuse plastic resources in some ways, I learned a lot from watching how frugally they save jars, wash and reuse plastic bags, and treat every piece of Tupperware as if it were wedding china.

And speaking of education, by second semester back at school, every grocer, butcher, baker, and a fair number of restaurant servers in town knew about my project. Having the support of those people made shopping a lot easier. All the guys behind the butcher counter recognized me even if I hadn't been shopping in two months and would always ask how the plastic-free life was going. The workers at Panera Bread knew not only how I liked my bread sliced, but that I had a special reusable bag for it and, no, I didn't care that the slices wouldn't be in order.

By that time, I had also done enough research on food products available in my area to begin redesigning my diet instead of just restricting it. I started trying new foods, and I learned how to structure my shopping to keep my meals balanced and efficient to make. I discovered a sophisticated plastic-free dish served in many countries which is high in protein and quick to make that I'd never had the heart to try before--I call it fried eggs. I shocked the deli counter at Stop & Shop by buying an entire 2.5lb Italian dry salami; they brought out two managers to make sure it was allowed. *Cold cuts forever.*

On March First, my official plastic free life ended. I'm no longer technically living completely plastic-free, and I wouldn't recommend that you do either unless your lifestyle lends itself particularly well to bucking societal mores on a day-to-day basis. Living completely plas-

tic-free would be highly admirable, but also impractical for most people, me included, until the infrastructure exists. My guide and recommendations aren't targeted to people who can just stop consuming plastic at the drop of a hat. It's for my teacher Meisa who inspired me to do this project and her husband and her toddler son who can't completely drop plastic use, but want to be conscious consumers all the same.

In light of this, I began designing a way to optimize the ratio between minimizing my plastic and minimizing the potential inconvenience to my life caused by avoiding plastic. I began distilling the easiest and most important changes I'd made, and also thought about which plastic items really weren't worth the time for me to avoid and need to be addressed at the corporate or legal level. I created a rubric for determining what plastic consumption is worth it for me, personally, moving forward, and created a series of guides and checklists for creating a rubric that fits anyone's consumer needs.

Through the next chapters, I discuss the process of living for six months without plastic, and outline some suggestions on how to make your life more sustainable.

Glossary

Compostable: items must break down into carbon dioxide, water, inorganic compounds, and biomass at about the same rate as other known compostable materials. These materials must not be toxic for the environment¹⁹.

Biodegradable: items will break down with the aid of naturally occurring microorganism, like bacteria, or fungi over any period of time. This has no clause for time limits or environmental toxicity.¹⁹

Degradable: items will undergo breakdown that may change the properties of the substance. There is no specification of how the items will break down.¹⁹

Microplastics: Small pieces of plastic that end up in the environment (especially the ocean). The size of particles that the term microplastics refers to is debated, but usually refers to particles smaller than 5mm.²⁰

Nurdle: A small pellet of plastic about the size of a jelly bean which gets used as raw material for forming plastic into products.

Carcinogen: A chemical that causes cancer

Mutagen: A chemical that may cause mutations or adverse birth affects

Endocrine Disruptor: chemicals that mimic and interfere with hormones

Upcycle: Using old products or packaging for new and improved purposes. Creating art or functional objects out of discarded materials.

Downcycle: Recycling materials in a way that degrades them, makes them less useful, or brings them closer to the eventual landfill resting place.

Post-Consumer Recycled: Has been recycled from products that a consumer has used and recycled (as opposed to post-industrial recycling, which comes from industrial excess).

Locavore: Someone who sources their food locally or from as nearby as possible. Usually this connotes sourcing from small farms

Drinks

1

The Last Straw

Some housemates of mine decided to go “bar hopping” the night before winter break. Of course, they’re (okay, we’re) all a bunch of shut-in board-game nerds, so “bar hopping” looked like bar, donut shop, bar, game shop, restaurant portion of bar. I caught up with them around the donut shop, and we spent a magical evening of not really wanting to spend money on another drink and getting the unlimited fries instead.

For my one drink of the night, I ordered a cranberry vodka with no ice and no straw.

The bartender was a skinny dude with blonde spikes in his hair. He’d been doing about three different things while he took my order, but stopped his bustle when he heard me.

He gave me his full attention.

“With no ice and no straw?” he asked.

“Yep!” I said.

He turned away and then turned back and squinted at me as incredulously as if I’d been wearing renaissance faire garb riding a dragon.

“It’s weird that you want no straw and no ice.”

“Mmhmm,” I said, making a mental note to order from someone else next time.

He gave me the drink the way I asked, though. I went back up a few minutes later for a glass of water. A different bartender was there.

“Hi, may I have a glass of water with no straw, please?”

“Absolutely!”

He filled up a glass for me and then grabbed a straw out of the straw cup.

“Oh! No straw, please!”

With a graceful flourish, he cast the straw away. I mean, he tossed it over his shoulder and it fell somewhere on the floor behind the bar. He turned to smile and wink at me, only to

be met with ridiculously disproportionate expression of pain and horror as if he'd slain the pet dragon that I'd been riding earlier.

"Straw's gone!" he said, lost as to what could have possibly deserved the absurd look of horror.

"I...It's a project...Um... I don't use plastic and I have to weigh all of the plastic I accidentally use."

"You can't use any plastic?"

"It's an environment thing. Turns out plastic's kind of terrible."

"Oh, sure. But you didn't use it."

"Well," I paused to grimace. "It was used on behalf of me."

"Oh--here's another one, then, if you need to weigh it." He reached into the straw cup and pulled out another one. I politely declined.

The dilemma here, of course, is that while refusing the second straw throws off my plastic count for the year by exactly one straw, humiliating this friendly guy by telling him "No, go pick up the other one that you just threw away and hand it to me," does not endear him to my cause. It's condescending and obnoxious. Educating someone is better, but nobody wants to hear a lecture about environmental activism when they've got tips to earn. Instead, what I learned to default to was simply telling someone that I don't use plastic, which is brief, and it tends to get people thinking about plastic without any lecture attached. If people aren't busy, nine times out of ten, they'll ask questions about the project, and nine times out of ten they will say either "wow, I've never even thought about that," or "wow, I never noticed, but plastic is everywhere." By my reckoning, getting someone to think about their plastic consumption is worth more than a thousand straws or the accuracy of my plastic weight measurement. After all, my project isn't science; it's marketing. Research exists on how and why plastic is bad; now, the trick is to get your friends and possibly the world to understand and join you in your plastic reduction.

On the flip side, an extremely romantic moment for me occurred in a diner with some friends and a young man I liked. I went to the restroom, and when I came back, the party had already ordered drinks. The waitress went by and I flagged her and said "may I please have a wa--"

"Water with no ice and no straw?" she asked, smiling. "Got it."

My eyes went wide. The waitress gestured to the young man I liked. He smiled sheepishly.

99 Bottles

Beverages can come in many different types of packages, and many people ask me which ones are the best for the environment and which should be avoided. Here's an overview of some beverage items and what to look out for when shopping for them.

Milk

Milk can come in large and small cartons are both made of a thin cardboard with a polyurethane plastic coating. These cartons may have a plastic lid and pour spout.²¹ The cartons are accepted for recycling in many places, but only the paper portion of the carton is reused. The plastic caps and coating are discarded to the landfill.²²

Milk can also come in large gallon or smaller translucent plastic jugs made of high density polyethelene (HDPE). HDPE, symbolized on products with the number 2 inside the triangle of arrows, is light and takes little energy to transport. It's also technically recyclable, but only about a third of it gets recycled, according to Environmental Protection Agency statistics.²³ This type of plastic could also theoretically be recycled into new bottles, but isn't in the United States because post-recycling products may have chemical and bacterial contamination. Instead, the bottles are made into products where chemical safety isn't as important, like toothbrushes and children's toys.²⁴

Many of my friends and family suggested that I could find milk in glass containers at most grocery stores. I reminded them that I'm lactose intolerant and that I shouldn't be looking for more ways to ingest dairy, anyway. They then reminded me that I should probably quit my job at the ice cream parlor (which is discussed in chapter 6, on dining out and take out). I disagreed with my family members, horrified and indignant that they would suggest such a thing. Ice cream is important.

Though I am lactose intolerant, I do like baking a fair bit, and scones aren't nearly as fun without a cup or so of heavy cream.

The main issue is that I can't find any milk products without plastic at any stores. Even the glass bottles that I can turn back into the grocery store come with a non-reusable plastic lid. I happened to live on an organic farm with cows, so I went down to the farm with a Mason jar to see if I could get some raw milk. When I got there, I had a nice conversation with the Livestock and Pasture Manager, Shannon Nichols. She explained to me that the farm couldn't give or sell me raw milk due to liability issues and licensing, but that there was a farm down

the road that would do it for me. I joked that I'd probably just sneak into the cow pasture the next time I need to satisfy my need for scones.

Alternatively some co-op type stores also sell powdered milk, which, of course, is a completely different product, but works just fine for baking.



Juice

Juice can come in large and small cartons, similar to the milk cartons, and small or single serve beverage juice boxes. Juice boxes might come with an attached straw in a plastic sleeve, and milk or juice cartons. Juice and other products like coconut water may also come in aseptic packaging like Tetra Pak. Aseptic packaging, which are boxes with glossy paper on the outside and a plastic and aluminum foil on the inside. They carry anything from coconut water to soup and are a fantastic innovation that keeps perishable goods fresh on un-refrigerated shelves for a year. Tetra Pak advertises itself as an environmental enterprise because they acquire their packaging from "responsible" sources, their packaging is lighter than alternatives and as such does not require as much fuel to transport, and the preservative technology removes the need for energy to be spent on refrigeration in transport and storage.²⁵

The problem is that these packages are extremely difficult to recycle. While the plastic in the packaging is recyclable and Tetra Pak advertises itself as recyclable, the process to recycle Tetra Pak products is complicated. Because of the aluminum components, these containers can contaminate loads of processed recycling. Most recycling facilities do not take Tetra Pak products, and the ones that do struggle to keep them from contaminating the process.²⁶ The Tetra Pak website is perky and optimistic, even in the paragraph where it mentions that only one in three households has access to recycling facilities (whatever "has access" means), but they then may or may not admit though sufficiently vague language that the "one in three households" is only in thirty states, bringing the total United States access down to about one in five households. Tetra Pak also uses language like "Recycling really closes the loop," which is incorrect. The paper from aseptic packaging goes to tissue products, which is downcycling, not recycling; all recycling is downcycling because tissue products can't be reused because the fibers get too small.²⁷

One of the most delicious food items on this earth might well be fresh-squeezed or-

ange juice from fresh valencia oranges. Fresh orange juice has so much more flavor than any orange juice sold in a carton in a grocery store because of the pasteurization process. I was at a farmers market with my mom one time when I was a kid, and I was picking out oranges to squeeze for orange juice. The farmer came over and asked me what I was going to do with so many oranges.

“Making juice?” he asked.

“Yep,” I said.

“The secret of Valencia oranges is to look for ones like this with sugar spots.” He showed me an orange with brown lines like spider webs. He took out a knife and cut open an orange with sugar spots and one without and showed me and my mother that the one with sugar spots was, in fact, sweeter. I hope this is helpful the next time you make orange juice, and I’d recommend talking to farmers at farmers markets; I always learn something new about

Wine

While most wine is sold in bottles, boxed wines like Franzia claim lower environmental impact. Many students at Hampshire subscribe to a tradition called “Tour de Franzia” where students race bikes around campus after consuming boxed wine. I have to wonder if Franzia counts bikes crashing into trees as “environmental impact.”

Box wine is wine packaged in a 1 gallon polyurethane “bladder” and a glossy cardboard box. The bladder has a plastic pour spout for easy re-sealing. Like Tetra Pak, companies that box their wine advertise that boxed wine is better for the environment because the packaging is lighter per unit volume of wine than glass, and thus requires less energy to move product. Other advantages of the bladder are that it reduces oxidation because the bag deflates as the wine is poured, as opposed to a glass bottle which obviously does not deflate. Keeping the wine from oxidation can keep the wine fresh longer. On the other hand, box wine typically does not last in the box longer than a year because small amounts of oxygen can move through the plastic into the wine, oxidizing it.²⁸ Box wine also avoids cork contamination. Of course, it does not avoid the contamination from the plastic leaching its additives into the wine more easily than oxygen passing through.

Plastic Bottles

Plastic bottles, especially single serve plastic bottles, are one of the biggest sources of plastic, and one of the easiest products to avoid, making them one of the most important products to avoid. I talk about this much more in the next chapter, Water.

Cans

Beverage cans for sodas and beer are extremely common. The cans themselves are made of aluminum. Aluminum will always be recyclable, as aluminum does not deteriorate even when it's melted down many times. The bottoms of the cans are varnished, and then the sides are painted and then varnished. The insides are coated with a plastic epoxy resin which is burned during the recycling process.²⁹ Cans can come in sixpack rings, which are a particular environmental hazard as marine animals often get stuck in them. When I was a kid, there was a big movement to get people to cut the rings so that animals couldn't get stuck, and I always wondered why people would buy the six packs if the holders would end up in the ocean whether or not the rings were cut. Aluminum can multipacks also come in HDPE wrapping and cardboard boxes as an ecologically preferable alternative to rings.

Cups

Cups have complicated environmental footprints. As with comparing any products, in order to discover which is actually best for the environment, one must look at resource use, energy consumption, emissions, waste, disposal, recycling, and more. To do that information justice would require an enormous document beyond the scope of this project. I have done my best to keep this shorter than my source document comparing cups, which was 400 pages and still never discussed recycling or disposal. My professor labeled it "more than you ever wanted to know about cups."

In comparing a reusable polycarbonate plastic cup (nicknamed PC), a single-use disposable polypropylene plastic cup (PP), a disposable cardboard cup coated in polyethylene, and a disposable polylactide cup (PLA) which is a biodegradable or compostable plant-based plastic, all of the cups do better in different scenarios and with different criteria. Here's a brief analysis of these types of cups without discussing the problems that come with recycling and disposal.

For small events (2,000-5,000 visitors--because we all throw little gatherings that size) the reusable plastic cup is probably the best, even when the cups need to be transported from a distributor and back to the distributor after the event. While the cardboard cup is on average the worst contributor to each category, the disposable plastic cup is the worst overall due to its fossil fuel use. That being said, the disposable plastic cup is actually the best in terms of mineral consumption, ozone layer. Interestingly enough, while plastic itself may have carcino-

genic elements, there are more carcinogenic byproducts of the lifecycle of both the paper cup and the PLA cup than either of the plastic cups when compared for small events.

For large events (of more than 300,000 visitors--because I'm pretty sure most of the people reading this own amusement parks), all of the cups are much more similar. While the disposable plastic cup is clearly the worst in terms of fossil fuel consumption (the highest impact criterion), when all other criteria are factored in, the cardboard cup is actually a tiny bit better than all of the rest.³⁰

Meanwhile, here is some information about cups that you may care about if you aren't planning the Royal Wedding.

Disposable cups take less energy and material to make than reusable cups, and reusable cups also require energy for washing, so reusable cups have to be used many times before the production and transportation become worthwhile in terms of energy. Table 1, below, compares reusable ceramic, plastic, and glass cups to disposable paper and foam cups. It is energetically worthwhile to use the reusable cup over the corresponding disposable cup if you are going to use the reusable cup more times than the number in the corresponding box in the table below. This breakeven point is calculated assuming the reusable cups are washed in an efficient dishwasher between each use.

Reusable vs. Disposable Cup Option Breakeven Chart

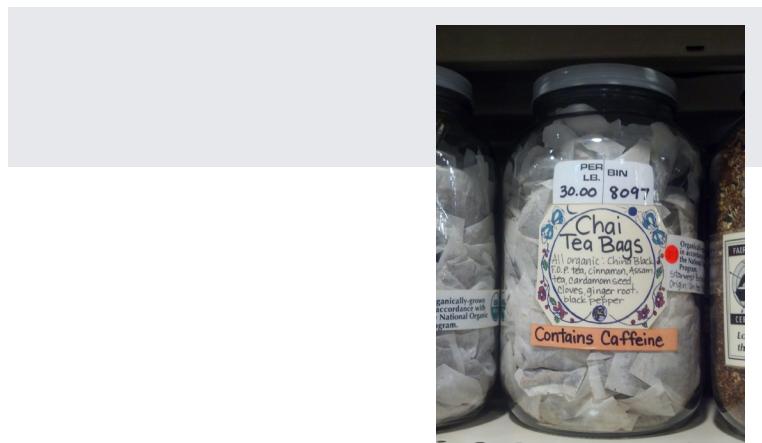
	Paper	Foam
Ceramic Reuse Number	39	1006
Plastic Reuse Number	17	450
Glass Reuse Number	15	393

Table 1 The reusable cup is more worthwhile than individual disposable cups when used more times than the number in the chart.³¹

This does not mean that everyone should use 1005 foam cups instead of one ceramic cup. While creating hundreds of foam cups is more energy efficient than buying one ceramic cup and washing it hundreds of times in a highly efficient dishwasher, the end-of-life part of the equation may be more important. First of all, a "use" in a reusable cup may not be equal to a "use" of a disposable cup. I'm more likely to reuse a glass throughout the day (or week--let's be honest; I'm a college student) without washing and it, than I am to reuse a foam cup. Secondly, the foam comes with the suspected carcinogen styrene, and is more susceptible to additional toxin absorption due to its porous nature and high material surface area. Thirdly, polystyrene is rarely recycled and easy to lose between use and landfill because it breaks up so easily and is light enough to blow away. The best option is glass because it only needs to be reused 15 or 393 times to be more energetically efficient than paper or foam, respectively, and can be recycled and doesn't damage the environment post-life.

Tea and Coffee

Tea and Coffee can be purchased in bulk! Go to your local store with a container of your choosing and select your beans or leaves of choice. Tea can come in loose leaf, or sold in individual bags (which I bought because I have no idea how to handle loose leaf). These are excellent alternatives to tea bags that may be individually packaged in plastic and foil like the tea in the unfortunate box of Earl Gray that I bought, or have a box that is wrapped in plastic.



The Truth About Recycling

So, we're trying to do something good for the environment by recycling, but what actually happens after the bottle leaves the curb?

Over the year, people would often respond to my explanations of the plastic-free project with "that's amazing--I mean, our family recycles everything, so we understand what you're trying to do." These were often parents of prospective students looking at the college, and I'd be discussing my studies with them in the Admissions Office. What these parents usually meant was that their family always made sure to put glass and plastic bottles, aluminum cans, and scrap paper in the recycling bin to be picked up by a truck. Many of them would refer to the chasing arrows symbol on the bottom of a plastic bottle with the misleading term "the recycling symbol," as it is commonly known. Some of the parents were aware that there were some numbers that their communities could recycle, and some that the communities could not. Usually, the knowledge stopped there.

Most people I've encountered either have misconceptions about the recycling process, or know very little about it. Here are some misconceptions, and what's actually going on:

“ The chasing arrows symbol means that a plastic item is recyclable, **”** and items without the symbol are not recyclable.

As stated in the introduction, the chasing arrows symbol is a partial indication of the type of plastic of which the item is made, and does not specifically indicate that an item is recyclable. I say partial indication because all of these plastics may have additional additives, and #7 refers to everything that isn't the other six categories. Curbside and drop-off recyclability is not determined by whether or not the type of plastic could be recycled; it's determined by the infrastructure and capabilities of the local recycling facility. Municipally commissioned recycling facilities will publish the plastic numbers (and other items such as paper and metals) that it accepts.

There are also facilities that collect and recycle other items such as electronics and batteries which should not be put in the garbage or in curbside recycling due to the presence of heavy metals and other toxins.

“ Recycling facilities will recycle everything I send them as long **”** as I send plastic with the right numbers.

The fact that a recycling facility will “accept” a certain number does not mean that the plastic can be recycled at that facility. These facilities are trying to cast as wide a net as possible so as to make the recycling process simpler for the consumer. For example, while most recycling facilities accept #1 plastics (PET), it is possible that they only have the equipment to recycle beverage bottles and not PET microwavable dinner trays. In that case, anything but the bottles will most likely be sorted out and sent to a landfill. Similarly, facilities that accept all numbers receive more plastic that they can actually recycle because it may be easier for consumers to remember “all numbers” instead of “1, 2, and 5.”

It is possible to determine exactly what any local recycling facility can recycle by finding their website or calling their phone number.

“ If I send only items that the facility’s equipment can recycle, all of the items will be recycled.

Still nope.

Recycling equipment technology is amazingly complex. In a single-stream recycling facility (where paper, cardboard, plastic, and metal are all in the same line) first, human sorters remove any garbage that shouldn’t be in the line. They remove plastic bags, for instance, which can get caught in rollers and shut down the whole process for hours. Next, the paper, plastic, and glass are sorted using chutes and belts, and the plastic goes off by itself. Using technology as complicated as infrared scanners and air guns and more humans, the plastic is sorted into different types, shredded, and compressed into bales.

Once the plastic has been chopped up and baled, it’s inspected for contaminants like food and incorrect plastics. If the bale isn’t pure enough, it will be sent to the landfill instead of sold.

“ Recycling is a “green” and environmentally friendly process.

Once the bales have been approved for content, the facilities sell it to brokers who sell it to Chinese importers. Because the United States imports so much more from China than China imports from the United States, shipping from the United States to China is extremely inexpensive because the shipping containers need to go back to China whether they’re empty or full. It only costs about \$300 per shipping container to transport goods from LA to China, as compared with \$2400 from China to LA or from LA to Chicago by rail or truck. Because the transport is so inexpensive, Chinese importers can afford to pay a lot more for the bales than anyone in the United States can. Once the plastic gets to China, it’s sold to small traders who transport and sell the plastic to one of over 60,000 (as of 2006) small, family-owned workshops. These families buy plastics in the morning, and shred it, wash it with water and chemicals, and melt it down into pellets for resale with the aid of heat and toxic chemicals. Sometimes this

work is done in homes, and there usually isn't ventilation in the rooms where this work is done. Correlations have been found between recycling communities in Northern China and high stroke rates for people in their twenties and thirties. Meanwhile, the water with chemicals is then thrown into the nearest river.

“ Recycling closes the loop; plastic can be recycled over and over again into the same products forever.”

Plastics can be recycled into products that aren't food related (because they may contain contaminants that the FDA is worried about), but may only be recycled once before the plastic degrades and must be downcycled into non-recyclable materials like plastic lumber.

The pellets from the recycling process are made into new products, but the U.S. Food and Drug Administration prevents most recycled plastics to be used in food packaging. Products where the plastic actually touches the food have to meet criteria such as being able to provide a complete description of the recycling process (which is difficult, if not impossible in most cases), demonstration of the existence (eggistence) of no contaminants (like the egregious (eggregious) chemicals used for melting down the plastic), and the purpose for which the plastic is intended to be used.³² Egg cartons are one example (eggsample) of an exception (eggception) wherein the food doesn't actually touch the plastic.²⁰

Recycling is not a solution. Recycling just delays the inevitability of plastic making its way into a landfill or the environment. Out of “Reduce, Reuse, and Recycle,” the most important solution is the first on the list, to reduce. Another valuable option is to reuse through repair or to upcycle, which you can read about in the next chapter.

Beverage Environmental Checklist

Level	Achievements	✓
Helpful Consumer	Find out what numbers your local recycling facility accepts. Avoid acquiring beverage containers with other numbers.	
	Recycle plastics with the right numbers. Rinse out beverage containers before recycling to avoid contaminating the recycling process. Use as little water as possible.	
	Avoid purchasing or receiving single serving plastic bottled beverages.	
	Avoid buying beverages that come in plastic cups.	
	Refrain from purchasing aseptic packaged beverages.	
	Refrain from buying or using disposable cups, especially plastic. Reuse disposable cups when possible, especially paper cups as plastic cups will leach more the older they get.	
	Reduce water (especially hot water) used for washing glasses. If you have one, use a high efficiency dishwasher and skip the dry cycle	
Tree Hugger	Though your recycling facility may accept some specific numbers (or all numbers), it does not necessarily have the ability to recycle every item with that number on it. Contact your local facility to see what package types they can and cannot actually recycle.	
	Avoid buying plastic beverage containers of any size, including plastic juice and milk jugs. Avoid buying soda bottles.	
	Avoid plastic lids on beverage cups.	
Environmentalist	Avoid any beverage containers with plastic, including cardboard milk cartons (which have a polyurethane coating), and juice boxes or pouches.	
	Avoid plastic drinking straws.	
	Squeeze fruit juice fresh.	
	Buy coffee and tea in bulk in a reusable container such as a jar or sack.	
	Obtain milk from a local farm in your own, reusable container.	
Activist	Work with your workplace or school to reduce the use of beverage lids, plastic and foam cups, and plastic bottled beverages.	
	Collect and recycle bottles that you find on the ground or in the trash.	
	Upcycle! Use drink bottles and cartons in educational art projects. Search on the internet for ways to repurpose water bottles into useful household items.	

Water

2

Not a Drop to Drink

Water, specifically bottled water, is such a big issue that it deserves a dedicated chapter.

During my third year, Hampshire College banned the sale and distribution of bottled water on campus. All around campus, Elkay hydration station drinking fountains were installed. The hydration stations have a typical drinking fountain spout, a sensor and dispenser for filling reusable bottles, and a counter keeping track of how many bottles may have been saved through the use of the station.

Students were concerned about the unnecessary environmental impact of consuming bottled water and campaigned the president's office to ban the bottle. The school conducted a series of tests to prove that the tap water quality was high enough to expect students to drink it, and then banned the bottle.

Fred Wirth, professor of the school of Natural Science at Hampshire College recounted that "when students were buying bottled water through the campus store, the carbon footprint was the same-ish as all of the water on campus used for everything else--watering the lawns, taking showers, washing dishes. Every gallon of bottled water produces 300 times the greenhouse gas as a gallon of tap water."

Companies have an easy time getting the rights to pump water for bottling and have no obligation to pay the local communities for the water they take.⁹ The bottle production process is resource intensive, and shipping the bottles to retailers all around the world is even more taxing of our resources.

This is a photo I took of an exhibit at the CuriOdyssey Museum in San Mateo, CA. It shows six water bottles and a container with the amount of oil required to transport the water to the drinker near San Francisco. The card under the Evian bottle reads "EVIAN, France, 33.8 oz of spring water, 2.56 oz of Oil, Purchase Price: \$2.09." The label under the bottle on the far right with water from the reservoir that provides the local tap water reads "TAP WATER, Hetch Hetchy [reservoir], 22 oz of melted snow, 0.00 oz of Oil, Purchase Price: < \$0.01.



Source:
CuriOdyssey
Museum
(San Mateo, CA)

Meanwhile, bottled water is expensive. Tap water costs \$3.40 per 100 cubic feet in Amherst, MA, which is about \$0.0045 per gallon.³³ Bottled water, on sale for 3 packs of 24 bottles for \$10, is about \$1.05 per gallon. In a market or store, a single water bottle might be \$1-\$2 (costing \$7.50-\$15 per gallon). I've seen ballparks and also Las Vegas retailers, where the tap water was only about \$0.0027 per gallon in 2010, sell water bottles for \$5 each (costing about \$38 per gallon).³⁴ In some communities where water is more scarce, water is charged on a sliding scale where the more a household uses, the more they're charged per gallon. This is intended to curtail the profligate use of water, for example charging people more if they're filling up a swimming pool.



I was on an airplane home for winter break, and the passenger in the seat next to me and I got to talking. He was a pharmacist and taught me all about Diabetes, and I talked to him about bottled water. He had a Dasani bottle with him and told me that tap water just didn't taste as good enough and wasn't safe, and that Dasani bottles are green and made from plant plastic.

As it turns out, most bottled water probably isn't safer than most tap water in the United States. Firstly, the plastic in the bottle itself leaches contaminants into the water. I know I can even taste the plastic when the bottle has been heated and cooled repeatedly in the trunk of a car. Secondly, bottled water is actually held to lower testing standards than tap water. City water works are required to test the water multiple times per day for over 150 different contaminants, and bottled water companies are not.⁹ Some bottled water, like Coca Cola's Dasani, is just tap water run through a filter.

There are some places in the United States where the tap water tastes terrible, and in those cases, filters (or perhaps a lemon) are the best option. City waterworks often publish their statistics to the public online, and if you are curious or concerned about the quality of your water, you can look for it online or find the department number and call. For the many places, usually low income areas, in the United States and the world that do not have safe drinking water due to preexisting contaminants and pollution, water bottles may be the only option, but the creation and disposal of water bottles contributes to the very same water pollution around the world and should be avoided when possible.

As for the claim about plant plastic, Coca Cola is piloting "plantbottleTM", which is a (non-degradable) PET bottle made with up to 30% sourced from plants like sugar cane.³⁵ While plant plastic does tap a resource that is more renewable than fossil fuel, increasing the United States' demand and production of corn and sugar isn't environmentally optimal either, and the end product is still a PET bottle.

The little green chasing arrows symbol with the leaf, as seen in the photo with the Dasani bottle, is misleading. It makes the consumer think, subconsciously or consciously, that the product they are buying is somehow good for the environment. Many products are colored green, have leaves on them, or have the words "green," "eco friendly," or "sustainable" on them with no explanation. The truth is, there is no certification that allows a company to call their product "green." Anyone can do it, and if it makes more people buy their products, why wouldn't they? This practice of playing off of the sustainability fad is called "greenwash-



ing." In a world where greenwashing exists, packaging claims mean little.

My family in California used to buy bottled water to prepare for the possibility of waterlines breaking in an earthquake. People in other areas may worry about hurricanes or floods. In the case that tap water becomes unavailable, households should make sure to have a gallon per person per day for at least three days, and possibly more for pets. The San Francisco Public Utilities Commission recommends having bottled water on hand, but recommends replacing it once every three months due to bottle degradation.

For the sake of minimizing plastic production and disposal, I would recommend not using bottled water, unless none of the following options work for your living situation. Hot water heaters contain large quantities of water, but the water may need to be boiled before consumption. It may be wise to have a small gas camping stove or wood stove for this purpose in case the power or gas go out. Toilets usually contain a few gallons of water in the tank in the back. This may also need to be boiled. To check how many gallons of water your toilet holds, the capacity may be stamped on the inside of the tank or the underside of the tank lid. If not, turn off the valve and fill it up using your own measuring containers to the capacity line. Do not use glass to store water; glass can break in a natural disaster. Ice cubes can also be used as a source of water during emergencies (but should be melted first), and the water in canned fruits and vegetables can be drunk, as long as the vegetables aren't salty.³⁶

My parents both worked at a canned food company in San Francisco during the 1989 Loma Prieta Earthquake, and were somewhat stranded in their building for a day or so afterward. On learning that canned fruit is a good source of emergency water, I enjoyed imagining that they took the excuse to drink all of the fruit cups they had stacked in their office as product samples. The truth was that while they were subjected to the acidic smell of broken pickle jars, they were also "forced" to eat all of the ice cream in the cafeteria because the refrigeration system went out. That being said, I do not recommend stocking up on canned fruit as your first hydration option because cans are typically lined with BPA, and I certainly do not recommend ice cream as a hydration strategy because it really wouldn't help.

The emergency water option that I would recommend is purchasing a stainless steel tank that could hold the desired amount of water. If a family needed 20 gallons of emergency water, a 20 gallon tank would pay itself off in 2 years as compared with replacing 20 gallons of bottled water once every four months, assuming the bottled water was on sale for three 24 packs for \$10, and the tank cost \$120.

Bottle Upcycle!

Used and discarded bottles exist all around us, and there are some wonderful ways to reuse them to make something awesome. During first semester, I assisted with a class called Creative Reuse wherein students designed and built new objects using only recycled materials.

Search online for “bottle upcycle” and do a project.

I poked around on the internet for a while and found some great ways to reuse bottles in arts and crafts projects and to make household objects, and I came up with some new ideas, too.



I made this **gallon carton** into a shower caddy with a pair of scissors in about ten minutes.



These hanging planters made out of **single serve bottles** took about a half hour.



Here's a **single serve bottle** that I turned into a crayon case. This might also be a good alternative to gift wrapping.



Also, take the cap and bottle top that was cut off, and reuse it to seal the tops of plastic bags.



One of the students in the Creative Reuse class, Grusha Prasad, made this lamp out of a half gallon container, other bottles, and recycled wire.

Beverage Environmental Checklist

Level	Achievements	✓
Helpful Consumer	<p>Find out what numbers your local recycling facility accepts. Avoid acquiring water containers with other numbers. Only recycle plastics with the right numbers.</p> <p>Refrain from purchasing single-serve bottled water.</p> <p>Use a reusable stainless steel bottle.</p>	
	<p>Use glass cups, and reuse the same cup throughout the day to conserve water used for washing. When washing is necessary, use a high efficiency dishwasher and skip the dry cycle</p>	
Tree Hugger	<p>Refrain from consuming any water that has been in a bottle (including larger bottles).</p>	
	<p>Suggest to your local cafe that they put out a water dispenser and reusable cups for customers to use, and a bin to put the cups in when the customer is done.</p>	
Environmentalist	<p>Educate your friends on the “evils” of bottled water.</p>	
	<p>If you live in an area at risk of watermain breakage due to natural disasters, invest in an emergency water tank to replace emergency bottled water.</p>	
Activist	<p>Write to your local government to create anti-bottled legislation</p>	
	<p>Talk to your local school/office about sustainable hydration stations.</p>	
	<p>Pick up bottles from the ground or out of the trash and recycle them.</p>	
	<p>Upcycle! Use water bottles in educational art projects. Search on the internet for ways to repurpose water bottles into useful household items.</p>	

Produce

3

Vegetable Safari

Walking through the kiosks in the produce section of a grocery store is always an interesting experience. What produce is fresh today? Hey, what's that strange vegetable? Look, strawberries are back in season! Wow, did anybody else know Brussel sprouts grew like this?



Living plastic-free exaggerates the produce exploration experience. Much produce can be acquired without any packaging, but a lot of it comes in plastic bags or a plastic mesh material or with plastic label tags. The rules I set for myself disallowed me from even buying produce with plastic stickers. I was dismayed to find that at my local Stop & Shop grocery store almost all of the produce had some form of plastic on or around it. The fruits had UPC (Universal Product Code) stickers on them, some of the vegetables such as green onions had plastic tags on rubber bands, and products such as romaine hearts came in plastic bags. Many fruits and vegetables came in plastic clamshell containers. My first instinct was that I might have better luck at a farmer's market.

I attended a Wednesday farmers' market in Amherst in early October. There were only about ten vendors, and the selection of vegetables was not what I was used to from either the grocery store or from California farmers' markets. I bought some squash, had a conversation with a goat farmer that you can read about in Chapter 4: Meat, and headed on my way. I concluded that certain months of the year I would not have much of a selection of fresh, local produce in Massachusetts.

Interestingly enough, when I visited a farmers' market in Bay Area when I was home for break, I had a difficult time finding anything not in plastic. In many instances, plastic packaging is easier for small farmers to handle and transport than paper, cardboard, or no packaging.

Hampshire College's farm actually produces fall "farm shares" that 210 students or

community members can buy and share for \$325. The produce is grown in a large greenhouse during the winter months, and outside during the rest of the year. People who buy a farm share can go down to the farm one day a week from August 30th until Thanksgiving and pick which vegetables they want and take them home in whatever container they want. I was excited about getting a farm share--it was going to make my project so much easier! Then I couldn't talk any of my friends into splitting it with me, and there was no way I was going to eat a bushel of vegetables, most of which I'd never heard, every week. I was unable to locate anyone to share with me in time to buy a share, and I had to go without. One theme through this project was that larger purchases afford more flexibility.

Unfortunately, buying produce in a CSA (Community Supported Agriculture) share does not guarantee that the produce will come plastic-free. It guarantees that the produce will be local, but there are no particular stipulations about how the produce arrives and is distributed. My aunt told me that the CSA share that she receives through her son's school in Marin County, California always comes double bagged in plastic.

The benefits of the locavore movement, in and of itself, are debated. One of the principles behind buying local foods is that supporting small farms and local communities is good, and getting food locally reduces carbon footprint due to transportation, or "food miles." For some places like New York City, bringing many vans full of food from nearby rooftop gardens actually has a higher carbon footprint than one large truck from farther away.³⁷ Another principle of locavorism is that locally grown food is healthier. While it's often easier for larger farms and corporations to reduce issues like soil and groundwater contamination, a farmer from a small farm might be more inclined to avoid pesticides or GMOs (Genetically Modified Organisms).

Local consumption also needs to be paired with seasonal consumption. Seasonal produce takes less artificial energy or water to produce than produce grown out of season. Out of season produce must be grown with extra water, extra heat or light, or may come from other countries.

The best success I had in purchasing plastic-free produce was at local grocery stores and co-ops. Most of the selection of fruits and vegetables were local or priced according to seasonality or shipping distance. During the first few weeks of the school year, Atkins Country Farms, a micro-local independent grocery store and farm, sold peaches from their own farm by the half peck for \$1.29 a pound, and they were fantastically delicious. I was interested to watch the evolution of prices as different produce items went in and out of season. Asparagus, for instance, ranged from \$5 per pound to \$1.99 per pound depending on the time of year and source.

One day at Atkins, I was excited to find an entire bin of tomatoes with no stickers only to overhear a few minutes later that the grocers had individually removed each sticker in order to make the products look more organic and appealing on the shelves.

Another issue of which I was made aware part-way through the year was fruit waxing. I was in the produce section of Atkins, and I asked an elderly man how to tell whether onions were still good. He told me to squeeze them to see if they're firm. He told me he'd been working on farms and in produce for his entire life. I asked him which type of apples were the best, and he told me his favorites were the baking grade apples because they weren't waxed. Atkins sells bags of apples that might be slightly damaged or older which customers would be less likely to select off the shelf, so the store puts the apples in paper bags and discounts them, marketing them as "baking grade."

The man brought me over to the regular apples and pulled out a pocket knife. I thought he was going to cut the apple, but instead, he scraped at the skin and little bits of wax peeled off. "Always wash your fruit," he said. "With a brush."

-Many fruits and vegetables are waxed in order to maintain moisture and because customers like shiny produce. Though waxed fruits and vegetables may retain moisture better and last longer, the wax may also trap pesticides to the fruit during washing.

Produce Bags

Despite the fact that San Francisco and many Bay Area communities have banned plastic grocery bags, almost all grocery stores still have plastic produce bags in the produce section. Worse yet, many stores are switching to bags that are colored green like the 100% compostable "bio" bags (made from plant materials and not petroleum) and have the word "green" on them, but are not compostable. A friend of mine came back from a Trader Joe's telling me that our local Trader Joe's had switched to BioBag® for their produce. I was skeptical at first, but this friend insisted that the bags were the compostable type. This friend insisted that they knew the difference, and that these were really the "green," "eco friendly" ones.

She was wrong. Upon further investigation, I determined that they were regular, non-compostable plastic. Often compostable bags will have a completely different texture,

but the key is looking for the word “compostable.”

This is another example of greenwashing--companies playing off of the consumer's desire to have a lower environmental impact to sell whatever products they want. Many stores are switching to grocery bags in the color green, and others put big green chasing arrows symbols on their bags. This builds green associations with the store in the minds of shoppers who see the bags, whether or not the store is making any actual effort to be environmentally conscious. I was dismayed when my local grocery store Atkins Country Market incorporated plastic bags half way through the year after never having them before. The plastic bags were the color green, and a grocer actually told me they were bio bags. They were not. I was frustrated about this misinformation and I ended up writing an email to the store about making sure all of the staff was educated about the bags and the damage that can be caused by providing plastic bags in the first place, and the greenwashing issues with having green bags.

Let Them Rot

Fruits and vegetables, many of which are durable or have their own natural wrapping, are often additionally packaged for marketing or freshness. Berries often come in clamshell packages which many facilities don't recycle. Mushrooms often come in foam boxes with plastic wrap over the top. Almost all of the produce in Trader Joe's is in a mesh or plastic bag. Stickers, rubber bands, tags--it's all avoidable if you go to the right stores. If you go to the wrong stores, you may find bananas individually peeled and wrapped in plastic wrap. (Really, Whole Foods? Come on.)

While plastic is avoidable with produce, the question arose about whether there were ways to keep fruits and vegetables as fresh without the aid of plastic.

I designed a slight science experiment for your benefit to see which fruits and vegetables lasted better under which conditions. The results are in, and the prospects are mixed.

Actual “BioBag®” at the grocery store
Rainbow in San Francisco.



Here are photos and descriptions of five types of produce in five settings. Each of the items was alone in its bag, or not touching anything else if not in a bag. The items sat in their respective spots undisturbed for two weeks before I took pictures. I was originally hoping to get some nice moldy photos for you, but my housemates disapproved.

Vegetable Experiment

Outside of fridge (cerca 70 °)	Open air in fridge	Plastic Bag	Bio Bag	Paper Bag
				
perfect	superficially dried out but edible	perfect	perfect	superficially dried out but edible

Outside of fridge (circa 70 °)	Open air in fridge	Plastic Bag	Bio Bag	Paper Bag
 <p>Thoroughly crunchy: unusable (except for tinder)</p>	 <p>Wilting but edible with trimming. Small tips were a little crunchy.</p>	 <p>Springy and fresh</p>	 <p>Slightly wilt- ed, but edible</p>	 <p>Reasonably crunchy. Un-useable.</p>
 <p>Thouroughly crunchy</p>	 <p>All but the outer layer and end of tails were good as new</p>	 <p>Good as new except for the ends of tails</p>	 <p>Almost as good as new-- tails were slightly more wilting than the onions in plastic</p>	 <p>All but the outer layer and the ends of tails were good as new</p>

Outside of fridge (cerca 70 °)	Open air in fridge	Plastic Bag	Bio Bag	Paper Bag
				
perfect	just a little softer than perfect	perfect	usable, but skin had begun to wrinkle	usable but soft and skin had wrinkled
				
Hard as a rock and dry, but not rot- ten or smelly	Hard as a rock and dry, but not rot- ten or smelly	Slimy and smelly with a rotting spot	Slimy and smelly with a rotting spot	More dry than I would use but this was usable the longest. No rot or odor.

To my dismay, plastic clearly aided the longevity and freshness of the two leafy vegetables (the onions and the kale). That being said, mushroom did best in a paper bag, zucchini did equally well in the bio bag and outside the refrigerator, and the tomato did well outside the refrigerator. Extrapolating from this (and from my observations throughout the year), other leafy vegetables do best when in plastic or in closed, high humidity conditions. Crisper sections of the refrigerator can help with this, or wrapping the vegetable in a damp paper towel.

Avoiding plastic in produce was easy compared to most of the areas of this project. Meanwhile, avoiding plastic for meat made me want to give up meat altogether.

Produce Environmental Checklist

Level	Achievements	✓
Helpful Consumer	<p>Bring your own bags for produce in the grocery store, or don't bag them at all.</p>	
	<p>Avoid produce that comes in mesh bags, plastic bags, plastic clamshell containers, or with foam.</p>	
	<p>To maintain optimal freshness for leafy items, seal in an airtight container or wrap in a damp paper towel. Apples and citrus will stay fresh for months in open air in the refrigerator, or a few weeks outside the fridge. Mushrooms should be kept in a paper bag or in cardboard in the fridge. Soft fruits like pears and peaches and avocados should be kept outside the fridge in a bowl or basket and consumed quickly. Carrots can be kept in water in the fridge. Basil and other fresh herbs should have their stems cut diagonally at the end and be put in water like flowers, and they will keep fresh for weeks. Roots and bulbs like potatoes, onions, and garlic can be kept in a dark cabinet in a basket for several weeks, though green onions can be put in water and will regenerate.</p> <p>Remove any moldy vegetables to preserve the rest; mold spreads.</p>	
	<p>Plan your meals to eat the most perishable items first, and the least perishable items when you haven't had time to get to the store.</p>	
	<p>Buy potted herb plants like basil and sage and keep them in your windows. Herb plants can provide herbs for over a year with low cost, low maintenance, and low plastic. Also, they smell nice and oxidize your house.</p>	
	<p>If you have compost pick-up in your area, make sure to put all food scraps and yard trimmings in the compost. This will dramatically reduce your garbage to the landfill where a hotdog might be preserved perfectly forever. Instead, compost turns food scraps back into dirt.</p>	
	<p>Avoid purchasing pre-sliced fruit or vegetables in tubs.</p>	
	<p>Wash your produce before eating. Scrub anything that might be waxed with a brush.</p>	
Tree Hugger	<p>Determine when seasons are for produce you like to buy, and try to buy it only when they are in season. If the produce is out of season, it may take more energy or water to grow, or may have come from far away, requiring lots of energy and possibly plastic to transport.</p>	
	<p>Avoid fruits and vegetables with wax coating. Wax coatings may be petroleum based.</p>	
	<p>Avoid canned fruits and vegetables. Cans are lined with carcinogenic BPA.</p>	

Environmentalist	<p>Go in on a co-op or farm share that grows food nearby, and make sure not to get plastic! You'll probably learn all about vegetables you've never heard of before.</p> <p>Try composting at home. Search online for a composting option that will work for you. Then, use the dirt to fertilize your plants.</p> <p>Buy unwaxed produce</p>	
Activist	<p>Avoid produce with stickers, especially those made of plastic.</p> <p>Talk to farmers at the farmer's market. Ask questions about what's in season. Ask how to prepare a new vegetable. I learn something new every time I talk to a farmer.</p> <p>If you have a yard, plant your favorite vegetables. Growing a garden can be time consuming, but the food is cheap and eating things you grow can be highly rewarding.</p>	

Meat

4

The Meat of the Argument

If I had done this project right, I wouldn't have eaten meat at all. There are dozens of books written about the evils of the meat industry, and plastic use is one of its evils. Additionally, cows for the dairy and the meat industry contribute heavily to greenhouse gasses.³⁸ There are also giant ethical issues with the commercial treatment of animals, and I would recommend that anyone who is interested in eating meat should educate themselves on the industry.

Meanwhile, I had a profile on a dating website (which I made as a joke, I swear), and over the course of the project I got about four different messages from various men informing me of the hypocrisy of my caring about the environment and then listing "meat" under my favorite foods. While messages like this are highly hypocritical and unlikely to motivate me to show up to a date, I reluctantly must agree. I stand by the conjecture that if I were to try and optimize my carbon footprint and plastic footprint, I would refrain from eating meat that I don't hunt, myself. Hunting can actually improve ecosystems by removing excess population, and doesn't require plastic of any kind.

Unfortunately, at this stage in my life, it is beyond the scope of this project for me to learn to hunt, and my poor physical health at the end of the first semester of this project proves that I'm also currently incapable of nourishing myself without the convenient protein of meat. As I learn about myself and get better at feeding myself, I may be able to make shifts in a meatless direction, or I may make myself a bow, learn to shoot, and spend the rest of my life running through the woods wearing animal skins.

As it stands, I have been spending time this year trying to figure out how to acquire meat without plastic. Here's an example of one of my more frustrating encounters at the meat counter.

"Are you all set?"

"Hi, yes, thanks. I had a question. So, I'm doing a project where I can't consume any new plastic for the entire year. Would it be possible for you to wrap the meat in just the butcher paper?" --This was before I found out that most butcher paper tends to have a thin coating of plastic on the inside so that the meat doesn't leak.

"Are you allergic to plastic?"

"No--no it's a school project."

"Yeah, I can wrap it in paper. What would you like?"

"Can you also try not to use any other plastic while you wrap it, please?"

"Yes. What would you like?"

"I'd like a pound and a half of the 85% lean ground beef, please."

He reached into the little cardboard box on the counter and pulled out two square sheets of thin plastic tissue.

"Oh!" I said "is there any paper you can use instead of that? Can you weigh it on the butcher paper?"

"If I don't put plastic in it, it'll leak all over the place."

"Please, I'm just walking a mile home to Hampshire and it's cold out so it won't leak. I have to weigh every bit of plastic I use all year."

"These aren't plastic. They're tissue."

"Actually, it looks like they say they're plastic here on the box."

"Don't worry about it. These hardly weigh anything."

Clearly the customer is always wrong. I've had a few unpleasant interactions with folks at butcher counters in grocery stores. However, also been highly impressed by and grateful for many other interactions. Over winter break, my family decided to have a big holiday prime rib dinner. By this point in time, I'd discovered that butcher paper is typically lined with plastic and had begun bringing plastic reusable storage containers to the store. Plastic reusable storage containers, of course, has many of the same carcinogenic and endocrine disrupting properties as butcher paper, but it's still better than disposable plastic and disposable paper for the environment.

So, my mom and I went to the store and stood in front of the counter for a while while my mom tried to remember which end of the roast her cookbook had told her was the right end to buy. (For the record, it's the "loin end" or the "small end" or the "first cut"). A butcher came up to us and asked what we needed. It was actually someone I'd talked to before. I was about to launch into my project explanation, but he said, "Ahh, I remember you."

"Right. I'm sure I'm your very favorite customer," I said sarcastically.

He shrugged. "I like what you're doing."

"I've got an extra challenge for you today," I said. I put a large plastic bowl up on the counter. "Do you think you can fit enough prime rib for four people in there?"

He took the bowl in his hands and tossed it around a little before sticking it on the scale to zero it. "Hmm...I'll see what I can do."

He carved up two bones or so of meat, and stuck it in the bowl. Despite the fact that this was one of the biggest plastic bowls my family owns, the meat stuck out a good two inches over the top.

"Hmm..." He put the meat, bowl and all, on the scale and then stood frowning at it.

He called over to one of his coworkers and explained the project.

"We could use just the butcher paper."

"Nah, that has a polyethylene coating on it," he said.

"We could use aluminum foil!"

They looked at me.

"Are you okay with that? It might rip."

"Uh...sure! That sounds fine," I said. "I'll be careful."

They spent about five minutes dressing up my prime rib roast with aluminum foil until it looked like a potluck item, then they smacked a price sticker on it, and handed it to me over the counter looking quite proud of themselves.

"You guys are the best!" I said.

They laughed. "You enjoy that prime rib! How are you going to cook it?"

"Probably with a mustard rub."

"Mmmm, good choice."

There are a bunch of different ways to acquire meat. The easiest and most common is picking it up out of a refrigerated shelf. It will have a polystyrene foam tray, an absorbent plastic pad, and plastic wrap over the top. Some of my favorite brands of meat are packaged only in this way, as, for example, Johnsonville sausages. I can't find bratwurst that I like quite as much anywhere else and I'm kind of mad about it.





Another way to get meat is vacuum-packed. Meat can be shipped far and wide in vacuum packed containers, and take much longer to spoil. My favorite chicken apple sausages come in vacuum sealed packages, as well as the New Zealand lamb that I love so much. Subscribers to the miraculous (and highly overrated, in my opinion), Sous-vide technology actually bathe their meat in warm water while still encased in vacuum-packed plastic. Half way through this project I discovered that the vacuum-packing process had actually been invented and popularized by a direct ancestor of mine. That was a rough day.

Vacuum packing was popularized in the 1960s when the increasing demand for meat resulted in a shortage of animal intestines used to stuff sausages. The process enabled manufacturers to broaden distribution of meat products to a greater number of consumers throughout the US and also to promote the products with mass marketing techniques, according to my grandfather who worked for Oscar Mayer and Company for 30 years.

Another option springing up in different places is a modification on the foam trays. The styrofoam has been replaced with a compact cardboard, though the absorbent pad and plastic wrap remains. This is a similar cardboard to that which is now used in the deli section of many Whole Foods stores. While this cardboard is better post-life than more plastic intensive solutions, packaging should be avoided.



Butcher counters can contain a wide selection of raw meats. There are cuts and meats of every kind, and many counters also have pre-marinated products, or combinations like hamburger patties with jalapenos and cheese smooshed in. Sometimes, a butcher counter actually serves a purpose and the employees are real butchers who know how to cut and prepare meat for sale. Other times the employees are “fake butchers,” as my food industry mother calls them, who are employed to take meat out of packaging and arrange it in the window in a way that looks most appealing to the customer. I always had the most success in avoiding plastic with “real butchers,” who were typically more flexible and interested in the project.

Butchers can wrap meat in a few different ways. Most butcher paper has a thin plastic coating to keep the meat from leaking. Butchers will take the meat out of the case with the aid of a plastic tissue, weigh it on the plastic tissue, and then wrap it. The plastic tissue also helps keep the meat from leaking and spreading pathogens. Usually, a butcher shop is also equipped with butcher paper with no coating, but the butchers may be reluctant to use it due to leak risk. Also, leaking meat is gross (and unsanitary, possibly risking the spread of dangerous bacteria such as e coli).



A package of Whole Foods chicken after being frozen and defrosted in the refrigerator

As I discussed earlier, I had some success at home in California in getting meat put directly into a Tupperware container. Often, the butcher would apologize and say that I needed to pay for the weight of the container, as well. A way to get around this is to suggest that they could put the container on the scale, weigh it, and then subtract the weight from the total to get the weight of the meat. Some scales also have “zero” options, which reset the default weight to whatever’s on the scale at that moment, so they could put the container on, and then “zero” the scale and weigh the meat without having to do math.

I did not have as much success in Mas-

sachusetts. Even my store hero, River Valley Market, would not let me buy meat in my own container. Often a butcher won’t know the state’s policy, but River Valley Market had clearly gotten the request often enough to know that it was illegal in Massachusetts.

Earlier in the year, I visited a farmer’s market in downtown Amherst. There was a farmer from Copper Head Farm selling meat, all of which was in plastic. I asked her about her packaging.

“I have to send the animals to a slaughter house. Nobody can do their own slaughtering unless they are a dedicated and state certified slaughterhouse.” This was consistent with what I’d learned from talking to Leslie Cox, the farm manager at Hampshire’s farm.

“And they send it back in plastic?”

“Yep,” she said.

“Would there be any way to get it in paper?”

“If you gave me a specific order and picked it up the day I got it back, yeah, I could do that for you. It just doesn’t last as long, and I can’t freeze it.”

The option existed, but there was no way I was going to be able to get to her farm to pick it up. I thanked her, tried her awesome sample of goat stew, and went on my way.

The most plastic-free meat I managed to acquire all year was a 2.5lb salami from the deli counter at Stop & Shop. All of the salami in the rest of the store was vacuum-packed or in a zipper bag, so I asked if I could have some cold cuts, but wrapped in paper instead of plastic. The guy behind the counter sliced about a half pound of the salami thinly for me and wrapped



it in paper. The salami, which is a fantastically long-living food which hardly needs to be refrigerated at all, actually dried out. The next time I went into Stop & Shop to buy more, I stopped and asked "could I just...have...a whole salami?"

"Uh, sure, why not?" said the man behind the counter. "Well, actually...I should ask my manager."

He called over to someone across the floor. She came over and I explained what I'd asked for. She frowned and then laughed. "Oh, yeah, um...that should be okay, but let me ask..." She went through a door in the back and came back out with a woman in a snappy suit. I explained what I'd asked for one more time.

"Yes," said the manager. "Just weigh it normally--you'll have to pay by the pound. Is that okay?"

"Yep," I said. "Sounds great."

Without being cut, the salami stayed fresh until I finished it which was several weeks later. I made a lot of really good sandwiches, and realized that salami was invented for the very purpose of being preserved without plastic or refrigeration (which is either really cool or really gross depending on how much you like salami). Unfortunately, it's much more difficult to make and sell cookies or crackers or Chinese potstickers that will last for several weeks without packaging.

Meat Environmental Checklist

Level	Achievements	✓
Helpful Consumer	Avoid buying meat packed in foam trays with plastic wrap.	
Tree Hugger	Avoid buying any pre-packed meat.	
Environmentalist	Request no plastic at the butcher counter. Ask for no plastic tissues, and suggest that they weight the meat on the paper. Request no plastic wrap.	
	Bring your own container to the butcher counter.	
Activist	Acquaint yourself with a local farmer and make arrangements for meat without plastic.	
	Go vegetarian.	
	When discussing this document with friends, make sure to make the pun "meat of the argument."	

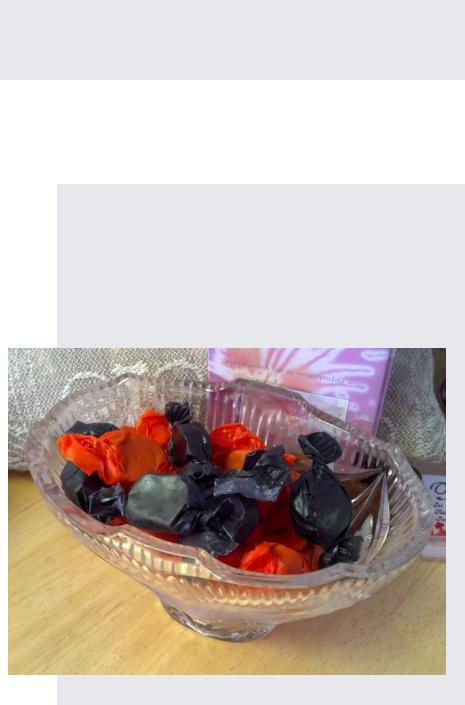
Packaged Groceries 5

The single most difficult part of living plastic-free for me was avoiding ready-made grocery products in plastic packaging. Grocery stores stock thousands of delicious and handy products that have been pre-assembled or pre-cooked for your convenience that would be extremely difficult or time-consuming or expensive to make at home. Much of the food in grocery stores falls into this category. One of my favorite foods is a particular brand of frozen Chinese potstickers in a plastic bag, and my brother Paul made sure to send me a photo of himself whenever he was buying or eating them.



One item I've missed is my candy fix. My usual Twix bar impulse-buy was no longer on the table, and while gum sometimes actually comes in a cardboard package with wax paper wrappers, gum itself has plastic in it.³⁹

While getting my hair cut over winter break, I spotted a bowl of salt-water taffy wrapped individually in wax paper. I excitedly unwrapped one and stuffed it into my mouth before examining it closely--as it turns out, they were from Halloween and hard as a rock.



Beyond candy, one of my main staples the year before I started this project was frozen ravioli. Frozen ravioli are great; they provide the ability to create most of a “home-cooked” meal in the time it takes to boil water plus about three minutes. Ravioli can be meat, cheese, vegetable, or some combination of many things. Just add some of grandma’s sauce, and nobody can tell you bought it in a plastic bag in the freezer aisle.

I was thrilled to find out that I could make my grandmother’s Italian pasta sauce with no plastic (or so I thought the first two times I made it). Turns out, a bunch of the ingredients had some secret plastic). I even found bulk pasta to go with it, but it just wasn’t the same as eating it over ravioli. One day, after I’d had a half gallon of sauce sitting in my freezer for a month, I finally decided to make ravioli myself, by hand.

It turns out, ravioli are simple to make and takes little time to actually cook. Sort of.

My Recipe for Sweet Potato Ravioli (approx. 2 servings)

1 Sweet Potato
Olive oil (optional)
Brown sugar (optional)
2 Cups Flour
 $\frac{1}{2}$ tsp Salt
1 Wee Bit Turmeric

First, the sweet potato needs to be baked at 425 degrees until it’s soft (for about 20 minutes, or 60 minutes if you have a dorm oven). I cut mine in half first and added olive oil, brown sugar, salt, pepper, garlic, and sage. Meanwhile, I make the pasta dough. Pasta is about $\frac{1}{4}$ tsp salt for every 1 cup flour, and a shake of turmeric if you want. Turmeric gives the dough a little color and a little flavor. Add water until the mixture forms a dough. Knead the dough a bit to make sure it’s all mixed. When the sweet potato is tender to the fork, take it out of the oven and either moosh it in the skin, or scoop out the pulp and moosh it on a plate with a fork. On a floured work surface, roll out a small handful of the pasta dough as thin as you can without tearing it. Cut a rectangle of pasta about an inch and a half wide and three inches long. Place dollops of potato on one side of the rectangle, avoiding the edges. Fold the dough in half and smoosh the edges together with your fingers or with a fork. Bring water to a boil. Boil ravioli until they float (about 3 minutes). Drain. Add sauce. Devour.

Basically, the difference between homemade ravioli and frozen ravioli is twenty minutes of baking and forty minutes of practicing fine motor skills on food arts-and-crafts. Home-made ravioli is arguably way better, and cheaper per serving. While the frozen ravioli I used to buy was \$6.29 per 25 oz bag (approximately \$4.02 per pound), it would cost less than \$1 for the materials to make that much at home (where any ratio of flour and sweet potatoes will almost always cost less than \$1 per pound, and certainly no more than \$2 per pound unless you're buying super floofy fancy flour and organic sweet potatoes grown in gold dirt). By contrast, fresh vegetable ravioli from Molinari Delicatessen are \$8.25 for a 16oz box, which serves about two people. Whole Foods sells spinach ravioli in bulk (plastic free!) for \$7.99 per pound, and cheese for \$6.99 per pound. They also sell plastic packaged fresh ravioli, the cheapest of which is Nuovo brand for \$6.49 for a one pound container, and the most expensive of which is the Whole Foods brand for \$8.99-\$9.99 per pound.

The question, with pre-made packaged food more than anything, becomes “how much do I value my time versus my money versus my reduced environmental impact versus my ravioli (or other product)?”

With the specific case of ravioli, where most of the work is either passive or busywork with hands that can be accomplished sitting down, it’s worth my time to make a week’s worth of portions through one or two Star Trek episodes. I freeze them, and they make for quick meals later. Just add sauce!

Except that I discovered part way through the year that aluminum cans from which I sourced my tomato sauce actually contain plastic. Oops.

Another staple for me has historically been bread. Most of the bread that I’d bought before had been in a package. From sandwich bread to buns to tortillas, packaging and preservatives are ubiquitous for keeping bread fresh.

At the beginning of the year, I tried a few bread-related experiments, including the “burger bun burger,” and the home-made tortillas without baking powder. I substituted baking soda, but got the proportions wrong and ended up with something like nine times the amount of baking soda I needed. They looked good, anyway, but they tasted a little...strong. I made better tortillas later in the year--they are actually really easy to make as long as you can find the critical ingredient, bulk baking soda. Tortillas big enough for burritos, however, are next to impossible without industrial equipment and burrito magic.



I thought about learning to make bread, but the process was more complex than the process of making ravioli, so I went the European route of buying it from a bakery. The bread was so good that I started making up all sorts of ridiculous sandwiches, for example Cucumber-Chicken-Peanut-Sauce Sandwich, and the famous BLJ, the Bacon Lettuce, and Jelly Sandwich.

Bread stays reasonably fresh for up to a month in the freezer in a paper bag. I would thaw individual slices in the toaster or turn the toaster up higher to actually toast the bread. (Frying the bread in butter in a pan also works and tastes awesome, but my friends call me Paula Deen when I do that too much).

Moving beyond the bread dilemma, technology exists to make some packaging compostable while still maintaining a moisture and bacteria barrier. Frito-Lay piloted a compostable bag for eighteen months with Sun Chips and retired it; their sales dropped by over 11% because, despite the company's best marketing efforts, customers found the packaging too noisy. The company is still looking for environmentally friendly solutions.⁴⁰ I interviewed the president of Clif Bar, Kevin Cleary (who happens to be my uncle), about Clif Bar packaging. Clif manufactures organic bar brands including Clif, Luna, Builder and ZBar, and various athletic energy products like Shot Gel. Clif is an environmentally conscious company; their headquarters building in Emeryville, CA produces up to 100% of their energy, and Clif pays employees for a half hour of the day dedicated to exercising or biking to work. Clif sponsors outdoor activities such as climbing, biking and snowboarding events. I asked Kevin why Clif used plastic for their wrappers.

"We're working on it," he said. "The technology doesn't exist yet."

"What about the Sun Chips bag material?"
"Ever seen what happens to a Sun Chip left out on a table for a few days?"
I laughed. "Stays about the same?"
He nodded. "Ever left a Clif Bar out for a few days? They get rock hard. The compostable material is too porous for our products."

Instead of the steady stream of Clif Bars in my diet, I made my own bars.

My Recipe for Granola Bars

2 eggs, beaten
2 cups brown sugar
 $\frac{3}{4}$ cup oil
 $\frac{3}{4}$ cup creamy peanut butter
1 tsp. vanilla
1 tsp. salt
4 cups oatmeal or rolled oats
1-1½ cup raisins or chocolate (or half of each)



Mix together first 6 ingredients thoroughly; add remaining ingredients and mix well. Press into an ungreased 11X15-inch pan. Bake at 375 for 15 minutes. Cool for 5 minutes. Cut and remove from pan. Tip: Freshly baked, this snack is soft and delicious served as a dessert with ice cream.

I would like to say that I saved money and had a great snack, but every time I made these bars, my friends ate most of them before they cooled down. This is certainly an easy money-saving project, though, as long as you don't have friends who steal all of your food.

One aspect for discussion is the idea of the length product life versus the amount of plastic actually used. I call this “plastic efficiency.” For example, if I buy a bag of Oreos^(TM) (which is completely made of plastic), those cookies could be gone within a week (or hour), whereas if I buy a bottle of olive oil with a plastic pour spout, it may be around for several months. This Lays Potato Chip^(TM) bag and its contents are a great example of poor plastic efficiency.



The chips out of a Lays^(TM) bag and the bag.



A product that optimizes plastic efficiency is Stop & Shop’s Simply Enjoy^(TM) jelly, coming in strawberry, apricot orange, and red pepper flavors. These jars have aluminum lids which are fastened with a vacuum seal and removed with a tab. The labels and the tab contain plastic, but once the jam jar is empty and the lid and labels are removed, it is indistinguishable from a tumbler drinking glass.

In designing your plastic reduced consumerism, think about this plastic efficiency ratio as the ratio between the amount of plastic in the item, and the length of time for which it is useful and how helpful the item actually is. In some cases, such as in the take-out industry discussed in the next chapter, the ratio is unreasonably high (which is bad).

Packaged Groceries Environmental Checklist

Level	Achievements	✓
Helpful Consumer	Bring your own cloth or reusable bags to the grocery store to avoid paper and plastic	
	Avoid buying individually packaged food items such as bars or chip bags.	
	Pick glass jars and bottles over plastic tubs and bottles.	
	Buy eggs in cardboard instead of foam or plastic. Set a good example (egg-sample).	
	Select as many products as possible in bulk using your own reusable containers. Grains, ingredients, dried fruits, nuts--even the elusive peanut butter can be found in bulk in several flavors!	
Tree Hugger	Buy bread from bakeries. Bring your own bag for it. Store it in a breadbox or in the freezer.	
	Avoid canned foods.	
	Avoid buying any containers with plastic lids or seals.	
Environmentalist	Buy groceries with minimal packaging for your events.	
	Substitute items out of your diet that you can only find in plastic. For example, rice as a starch alternative may be easier to find in bulk and store than bread, or vise versa.	
Activist	Learn how to make your favorite products. Bake your own bread.	
	Write to the manufacturers of your favorite product telling them that you are looking forward to any sustainable packaging that they might employ.	
	Look for products with long-term useful packaging.	
	Search online for ways to Upcycle old packaging, or design ways yourself.	

Dining Out & Take Out 6

It was late the night after my impromptu plastic-free pasta Thanksgiving party, which you can read about in Chapter 8: Shopping for Four. I was doing my reading in the machine shop while my friend Sam was doing something dangerous. Sam ordered Chinese food. I was out of food, feeling quite hungry as the evening wore on, and I was feeling extra lactose intolerant that night, so pizza (which comes in a cardboard box) was out. I decided to challenge myself to see if I could acquire dumplings and mushu pork without plastic.

Sam just laughed at me.

After selecting my order, I got on my phone and dialed.

"Hello, Zhang's Kitchen, can I put you on hold?" a woman answered with an accent.

"Sure."

I put the phone on speaker so that Sam could hear. He rolled his eyes, motioned with his finger by his ear that I was crazy.

The woman picked back up. "What would you like to order?"

"I would like one order of pork fried dumplings, please, and one order of mushu pork, please. Is it possible to put all of the food in the paper boxes?"

"They don't come with that," she said. I knew they had the white, folded, paper classic Chinese food containers there, though, so I kept asking.

"Can you please put the food in the white boxes? I know they usually come in the aluminum containers with the plastic lids--can you put it in a different kind of box, please? And if there's sauce, can you put the sauce right in the box, or in a separate box, please? I don't want the little plastic tubs."

"You want an order of plum sauce?"

"Well, if you can put it in a cardboard box--I mean whatever comes with the mushu, please, but if it can't go in a box, then I don't want it. Also, I don't want a plastic bag--just a paper bag."

"You want potsticker sauce?"

"Uh," I looked at Sam, who was holding his hand in front of his face to keep from laughing. "No, thanks. I also don't want any soy sauce or duck sauce packets, please."

"Ok, so, you want plum sauce."

"As long as it doesn't come in a plastic container."

"Ok, fifteen sixty nine."

I gave her my credit card number and address and she hung up. I looked at Sam.

"I'm just going to get sauce, aren't I."

Sam burst out laughing and I put my face in my hands.

"You forgot to say no fortune cookies," he said.

"Crap."

Forty minutes later my phone rang, and I went outside in the twenty degree weather to find the delivery woman with a paper bag in a plastic bag with a big happy smiley face on it.

"Hi," I said taking the bag. "Thanks for coming out. Can I give you this back?" I said, removing the plastic bag, folding it, and handing it to her. "Can you re-use it?"

"We use so many of these, I'm sure it can get re-used," she said.

"I think the person I was talking to and I had a miscommunication," I said. I briefly explained the project while I signed my receipt.

I thanked her again, and she went back out into the cold.

I brought my food into the shop, bracing myself for the damage. With every object that I pulled out of the bag, my eyes grew wider with horror. Sam watched with growing glee as I pulled out a plastic container of potstickers, a plastic container of mushu, a plastic tub of pot-sticker sauce, a plastic container of plum sauce, and pancakes in cellophane.



"If I hadn't said anything, half of this stuff wouldn't have--"

"Yep," said Sam.

"She didn't put the extra sauce packets in," I said.

"Or the fortune cookies. I'm pretty sure it's punishment for a hard order," he said sarcastically.

"Thanks, Sam."

Of course, there are other forms of take-out. Hampshire's student cafe, the Bridge Cafe, started making sushi in-house fresh daily. After making the sushi, the sushi chef put the sushi in a little black plastic tray with a clear plastic lid.



I'd heard that if you went up to the sushi chefs while they were making sushi, they would make you a custom order.

"Hi, I was wondering if I could have some custom sushi?"

"What kind do you want?" the chef asked.

"Um...avocado rolls, please, but I was wondering if you could put them on a plate. I'm doing a project where I can't buy things that come in plastic."

"You want avocado rolls?"

I nodded.

He reached over the counter to the shelf of sushi for sale, grabbed a box of packaged avocado rolls and handed it to me.

"Um, I was wondering if I could have some that isn't already packaged --if you could put it on a plate for me, please? I can't use the plastic."

"Okay," he said. He took out a plate, and picked up the box he'd handed me and started opening it to take the sushi out and put it on the plate.

"Wait! Wait, I'm trying not to use up any plastic. I would really like some new sushi that hasn't been in the plastic."

"This isn't plastic," he said, picking up an empty box tray and looking at it.

"Um," I was quiet for a second trying to figure out exactly how to respond. At this point I was flustered and frustrated. "Actually...can I see? Anything with a number like this on the bottom is plastic," I said, pointing to the recycling symbol.

"Are you allergic?"

"Allergic? I...yes. Yes," I lied. This project is turning me into a monster, I thought, a sushi

monster.

"Okay," he said. He put on a pair of latex gloves and started making the sushi. He reached into a big plastic tub to scoop out the rice and then froze. "This bin is plastic," he said.

"It'll be okay," I said, feeling worse and worse for lying.

He finished up the sushi, picked it up, and put it on a plastic tray out of habit. He heard my sharp intake of breath, and said "oh, right."

He put the plastic tray with the sushi in it onto the paper plate, wedged a plastic soy sauce packet between two rolls. He was about to put the lid on when I said "Wait! I don't need a lid."

He nodded, threw the lid away, and handed the plate to me.

That was the last time I tried to get sushi at the Bridge Cafe.

I tried to make something like sushi on my own--it's actually reasonably straightforward--lay down some rice on a sushi mat or natural wax paper, add a sheet of nori (nori) on top, add filling, and then roll it up using the sushi mat or wax paper and squish it down into the roll shape--except that I didn't have nori. Some co-op type stores actually sell nori in bulk, but I couldn't find any. My final product, despite not having any nori, was delicious, though it turns out that the nori is what keeps the sushi from falling apart.



Months later, I was meeting with Marcy, the Head of Operations for Bon Appétit. I mentioned my frustration at the amount of plastic used for sushi even though the sushi was made right there, and how it would be great if students could get sushi made to order like other items at the Bridge.

"Oh," she said. "Good idea. Yeah. I'll tell the guys and put up a sign."

Marcy and I got a lot done during that conversation. Students may now bring their own

their own mug or hot beverage container for drinks, and signage has been designed to encourage them to do so. Marcy is also now organizing a reusable drink container giveaway and has asked me to present to the dining staff on plastic-related sustainability.

The administration is working to find reusable hot beverage alternatives to paper cups in the dining commons, and to add compost bins. Composting may be a more complex issue, though. Bon Appetite uses compostable dishware on campus; the silverware and cups look like plastic, but actually compost. There are still a few issues with this material. Firstly, most people look at the cups and silverware and think that they are regular plastic and then throw them in the trash instead of compost. Secondly, there are only compost bins in the dining commons and at large events and not in the Bridge Cafe or any small Bon Appétit-catered events. An additional problem, according to Marcy, is that the man who picks up the compost from Hampshire actually picks out the forks and knives because they take too long to compost compared with everything else. Compost and compostable dishware has a long way to go, and the best solution, for now, is to use as little disposable dishware as possible. When I mentioned this conversation on Facebook, I was overwhelmed with endorsements from friends and school acquaintances of these potential environmental changes. Sometimes, all that's needed for change is a few good ideas and somebody to communicate them.

I was thrilled at how responsive Marcy was to my ideas and suggestions. This responsiveness may also be the case in many institutions like workplaces, though sometimes there are obstacles further up the chain.

During the year, I worked at an ice cream parlor in Northampton, MA called Herrell's Ice Cream. Herrell's is usually ranked in the top ten ice cream parlors in the United States for its all natural, homemade ice cream in hundreds of innovative flavors. Ice cream is awesome because you can buy it in a delicious cone and use no plastic at all. Herrell's also provides a cup option. Some of the cups are paper, some are plastic, and some are compostable plastic. Spoons are plastic, as are the cups and straws for milkshakes, and the take-out lids. Also, though Herrell's has some compostable dishware, the store does not have any compost bins. I asked the owner of Herrell's, Judy Herrell why this was, and it's because the mall where the store is located does not support compost pick-up. Judy is dissatisfied with this and has been searching for solutions for a long time. She's also frustrated that all of the companies that used to be able to sell her paper cups are going out of business, forcing her to stock the store with more plastic instead.

Working at Herrell's was a dilemma for me, because my job was to sell products, but some of the products I didn't really want being sold. I was careful to pay rapt attention to orders so as to avoid wasting dishware. I mostly kept my meddling to "the cones are really

delicious,” except for the few times that I reminded customers that there was a water fountain and cups when they tried to order bottled water. “I just didn’t want to make you spend the money if you didn’t have to,” I’d say, to which the customer would usually respond “oh, wow, thanks! I didn’t notice the fountain.” and get a drink from the fountain, or occasionally “that’s alright. I need to carry it around for a while,” and buy the bottle.

There are lots of different containers that restaurants use for take-out and delivery. Most take-out food comes in individual containers in a bag. Sometimes the containers are plastic, and sometimes they are paper-based. Pizza comes in cardboard which is biodegradable but not recyclable due to the grease and food stains. Some pizzerias deliver their pizzas with little plastic tables in the center of the pizza so that the box doesn’t get stuck to the cheese. Restaurants that serve ribs or wings or other messy finger foods sometimes provide moist towelettes. My brother Paul sent me a photo he took one night after ordering ribs of himself with a towelette and wrapper.



To see if I could, I actually managed to smuggle most of a Peking duck (speaking of messy meals) out of a Chinese restaurant one night. I brought tupperware in my backpack, ate what I wanted, and packed the rest into the tupperware. I’m pretty sure that the waiter thought I’d eaten the whole thing and was impressed or something because the next time I went to that restaurant, I brought a friend and we ordered just the duck (which is a meal for at least two); he asked “just that?” and then gave us a bowl of free soup and free dumplings and free dessert.

For the record, Peking duck is decent leftover if you reheat it in the oven.

Dining Out & Take Out Environmental Checklist

Level	Achievements	✓
Helpful Consumer	Refrain from purchasing single-serve meals wrapped in plastic.	
	Refuse plastic silverware. Put reusable silverware in your backpack or briefcase or purse. Use a silverware multitool or chopsticks.	
	Avoid venues that serve to-go meals on plates or in bowls made of plastic or foam.	
	If you order take-out it can help to ask for no silverware, no extra sauce, no bag, and no fortune cookies or plastic table in the middle of the pizza if applicable.	
Tree Hugger	Check to see what kind of take-home boxes a restaurant uses before ordering delivery or enough to have leftovers to take home.	
	Ask about portion sizes before ordering in order to avoid bringing food home.	
Environmentalist	If you intend to order more food than you can eat, bring your own metal containers to restaurants to take leftover food home.	
Activist	Write to your local government to create laws prohibiting plastic bags for take out and delivery.	
	Brainstorm individualized solutions for your local school/office about reducing plastic packaging or dinnerware. Ask questions of the people in charge, refine the ideas, and make suggestions.	
	Put reviews on Yelp about plastic content. This will share with other readers the idea that plastic should be avoided, and may inspire restaurants to reduce their plastic use.	
	Write directly to your favorite restaurants about reducing their plastic use.	

Self-Care & Household

7

Close your eyes--well, actually, keep them open 'cause you're reading--and imagine walking into your bathroom. You step into the shower, but don't turn it on because you're still wearing clothes, silly. Now look at your shampoo. That's probably in a plastic bottle. How about your conditioner? Any soaps? How were those packaged? Well, those may have come in cardboard or by themselves, or maybe they were in plastic or in a tube or bottle. Do you have any scrubbers? Maybe a loofa? Do you remove any of your hair? How do you do that? What does your razor look like? Ok, now go to your sink. Your toothbrush, down to the bristles, is made of plastic, as probably is the tube of toothpaste, and your floss. Your aftershave has at least a plastic lid, and your makeup kit is all plastic as are your lotions, and hair appliances. Even your tissue box has a little plastic window. Time to dry your hands--is your towel 100% cotton? Probably not. Now walk to the toilet. Your toilet paper may have come in bulk, wrapped in plastic, and your plunger could be made of rubber and wood, but more likely, it's plastic. Our homes are full of plastic items.

When I moved back to campus in the fall of 2013, one of my first steps was to find products to clean myself. I had, on hand, a hotel bottle each of shampoo and conditioner, but they were running out fast. My first purchase was Just Soap bar shampoo from Whole Foods. Whole Foods did not have a conditioner option for me, but I wasn't running out of that quite yet.

I spent three showers trying to use the bar shampoo by lathering it in my hands and then putting the shampoo from my hands in my hair. This resulted in an increasingly oily head. On the fourth day, I applied the bar directly to my head and discovered the true functionality of bar shampoo. Turns out, it does work.

Conditioner was harder. I heard from a friend of mine that one can make conditioner from simple products, and I spent a while searching on the internet for recipes, but most of them involved avocado and olive oil. This was problematic for two reasons--firstly, I wasn't super keen on putting olive oil in my hair, and secondly, I've been hard pressed to find avocados without plastic stickers on them.

I asked around, and some locals informed me of the existence of a store called the River Valley Market in Northampton-- a co-op grocery store. "If bulk conditioner is anywhere, it'd be there," said my friend Emma. The real problem became my lack of transportation as this co-op is located away from public transportation. I had no car and it was breaking my heart.

My mother flew into town for a week to visit me, and the two of us took a trip out to the River Valley Market. After a few minutes of poking around all the local, organic, cheaper-than-Whole-Foods produce, I found the bulk section which had everything from herbs to oils to detergents to, you guessed it, conditioner! Fortunately, I'd brought along some Mason jars because most of the containers in which to take bulk products home were plastic. There were plastic produce bags, little baggies for spices, and plastic tubs for the detergents. There were also glass bottles for purchase at the back of the store by the bulk olive oil and balsamic vinegar with plastic and rubber lids with a metal latch.

I selected a powdered laundry detergent and collected it in a paper bag, which I later put inside a wax-paper bag. I took a Mason jar to the front of the store, had it weighed, and then returned to the conditioner--a process with which the store was already familiar and of which they were supportive.

As soon as the conditioner started flowing, my mother and I both recoiled. The conditioner was highly fragrant, and both she and I have super-sniffers and matching allergies.

"Excellent," I said. "We find the one bulk conditioner in the valley, and I'm probably allergic to it."

"You could use the olive oil," said my mother. We both made faces.

After bringing home my conditioner (and bulk laundry detergent and a lot of other groceries) I realized that keeping a Mason jar in the shower was possibly the dumbest idea I'd had since the time I tried to make cookies in a frying pan.

Naturally, having nothing else to put it in, I did it anyway. I promise this story doesn't end with me slicing my foot open on broken glass, slipping on the spilled conditioner, getting a concussion and additional Mason jar lacerations.

Hampshire has a club called Design Conspiracy. We eat pizza (which I get the delightful privilege of picking out and ordering) and discuss design ideas. It was a slow night, and I mentioned my Mason jar problem. I asked if anyone had ideas for the best kind of replacement bottle to look for, or if anyone had ideas for how to make a Mason jar shower-safe. We agreed that trying to shower-proof a Mason jar would be much more difficult than finding a plastic bottle to reuse from the dumpster.

I was leading an admissions tour about a week later, and we ran into Omri, from my Design Conspiracy club who is on the Hampshire Emergency Medical Service squad (EMS)

and was probably imagining me bleeding out in my shower. Though he and I had probably only spoken twice to date, he called out to me in the library.

"Wait! I have something for you."

"For me?" I asked, halting my group of twenty inquisitive prospective students and parents.

"Yeah. Just a second."

I paused my tour and used the moment to tell the prospective families about the EMS program at Hampshire while Omri fished around in his backpack. He eventually pulled out a small empty pump bottle that used to contain hand soap.

I was so stunned by his thoughtfulness--he'd been carrying around a pump bottle for me for days-- that my tour monolog jumped off the track so that I could grin like an idiot and thank him. I explained to the tour what was going on, and it turns out thoughtful classmates makes for a good admissions tour.

Transferring the conditioner into the bottle was a challenge; I didn't have a funnel. My friend Louisa volunteered to do it for me while I was working on something else, and it was time consuming and messy. The pump bottle distributes the conditioner perfectly, though.

For your enjoyment (schadenfreude), I have since tried out an olive oil avocado recipe:

$\frac{1}{4}$ cup Olive oil

$\frac{1}{2}$ cup Shea Butter

2 tbl Apple cider vinegar

1 sliced avocado

Put ingredients in a blender or smoosh it by hand until smooth. Apply to hair. Wait for 30 minutes. Rinse out.

I did this and smelled like guacamole for a while, but my hair looked decent after I managed to wash the olive oil out. This recipe works better on certain hair types than others. During my last two months of college, I ended up spending five weekends in a row away from school. One was at a friend's house, and the other four were at hotels on various school trips. Every time, I made sure to bring my own shampoo and conditioner and soap so that I didn't have to open and waste one of the teeny tiny hotel shampoo bottles. The Hampton Inn kept adding more bottles whether we'd used it or not resulting in us having eleven bottles.

I was thrilled to find that at the Four Points by Sheraton, they had refillable soap, conditioner, and shampoo dispensers built into the shower.



There are also recipes online for shampoo, deodorant, and toothpaste, most of which are baking soda based. Baking soda can also be used as dish soap.

On the domestic front, it can be difficult to determine who is pulling the most weight in cleaning and buying cleaning supplies when you live with nine people, all of whom have different standards of cleanliness. Two weeks into the year, it became very clear that I had not only been supplying my share of sprays, detergents, and powders, but all of it. Not a single one of my housemates bought garbage bags, dish soap, or any sink or toilet cleaners. None of them had brought any brooms, dustpans, sponges, or brushes, and none of them were acquiring any.

Finally, one of my housemates Alex bought a trash can, but I don't think we ever had bags for it.

I declined to be involved with my house's trash or recycling; I was composting all of my food scraps, saving all of my glass, and using nothing else. I washed my dishes with baking soda and a set of rags that I laundered when needed. Meanwhile, nobody else in the entire house could figure out how to wash their dishes without sponges and soap, and none of them would buy themselves soap or use baking soda. Vegetables went bad on shelves because nobody was cooking them, and our house became infested with fruit flies. The trash pile grew, the recycling pile grew, and there were no brooms or dustpans to clean the floor. Fortunately, the housing office provides all of the student housing with EcoSoft™ 100% recycled toilet paper which came in bulk in a big cardboard box with no plastic at all or all of my housemates would be running to the library any time any of them needed to go to the bathroom.

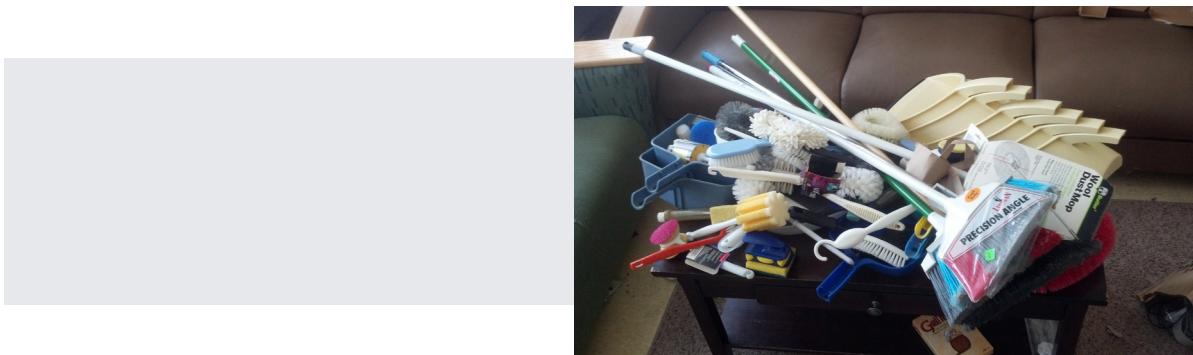
But as the kitchen hygiene got worse and worse, I actually moved a lot of my food to a friend's house and did much of my cooking there.

Then I remembered that I'd had a professor, Bob Cann, who had worked in the plastic forming industry, specifically designing dustpans and brooms, and literally had an entire garage full of his old competition's cleaning supplies. He had hundreds of brooms and mops and dustpans, and they'd all been sitting there for over a decade.

"Hey Bob, if you ever want to throw away any of those brooms, or any of the cleaning supplies, I can't buy any of the plastic supplies they sell at the stores, and my house is absolutely a wreck. I can take some off your hands for you if you ever decided you'd throw them away."

He nodded and smiled and said he'd think about it, and I was pretty sure that he probably wouldn't have time.

A week later I was in the machine shop and stumbled over a pile of-- a pile of cleaning supplies with my name on it. And when I say a pile of cleaning supplies, I mean 26 scrub brushes, 16 dustpans, 7 brooms, two spatulas, and a spoon. There was much celebrating and some riding around on broomsticks pretending to be Harry Potter.



I ran into him later and thanked him. "Was that enough? I'm bringing more over tomorrow afternoon."

"It was definitely enough! Thank you."

"Oh, good. Well, you can spread the wealth with the stuff I bring tomorrow."

My house steadily got better. Somebody finally bought dish soap, and some particularly problematic non-cleaning students moved out. All in all, it would have been more helpful to either live with folks with the same plastic goals as mine, or the same cleanliness goals.

Laundry was reasonably uncomplicated, though my mother would say that's because I don't do laundry often enough. I actually didn't run out of detergent until after I got the chance to visit River Valley Market to buy bulk detergent. There were a few options. I chose powdered detergent for easy storage, but there were liquid detergents and also soap nuts. Soap nuts are an actual plant nut from a tree that can be put in the washing machine like soap.

They foam up and wash the clothes.

One day, I was sitting in my significant other's dorm room and encountered his bag of Tide Boost Laundry Stain Release Duo Pac In-Wash Booster. This was a bag of little pouches with white powder and orange goop. Each of the pouches looked like they were encased in plastic, but the bag said that they could be inserted directly into the washing machine. I wondered if they were degradable, biodegradable, or compostable.

"What are these?" I mused aloud.

"I don't know. My mother got them for me and I have no idea what they're for," he said. I'm grateful she didn't send him soap nuts because he probably would have eaten them.

"No--what are the pouches made of?"

"If I don't know what they're for, do you think I'd know what the pouches are made of?"

"Do you think your mother would know?" I joked.

I couldn't find information on their material contents, so I asked on the Walmart page. Walmart responded quickly that the material was polyvinyl alcohol, which is water soluble and, according to Walmart, biodegradable.⁴¹ This biodegradable polyvinyl alcohol technology can't be applied in most cases because it does dissolve in water, and so requires the bag that holds the pouches to be a more durable plastic.

My significant other's mother came to visit a few weeks later from Germany and actually brought me a wooden toothbrush. Apparently, wooden toothbrushes and other eco-friendly products are easy to find in eco-conscious Germany. The bristles were still plastic, but the alternatives to plastic bristles are usually boar hair.



There were a few things that were unavoidable. I never did manage to find dental floss without plastic, so I used floss as efficiently as possible (because this project was not worth sacrificing my oral hygiene). Razors for shaving were difficult to find. My barber, Matt in Amherst (who stopped drinking bottled water for me) actually offered to give me a straight razor leg shave. I couldn't tell if he was joking-- either way I didn't think that was worth coming in for once a week, so I reused the same three disposable razors that I already had for the whole year. Theoretically, it's possible to find metal razors with replaceable metal blades. For people with facial hair, straight razor shaves are an option. I have a friend who actually blacksmithed his own straight razor.

My advisor and Professor Donna was cleaning out her house and found a waxing kit that had been sitting somewhere unused for fourteen years, she said. The kit itself had plastic in it, but she said she was going to throw it away otherwise, so she gave it to me. I'm embarrassed to say that I was too scared to try it; I hear waxing for hair removal is painful.

One joke that a lot of my friends made early in the year about my project was something like "condom wrappers are plastic! How are you going to get around that one?"

My response was "firstly, that's none of your business. Secondly, if I were to need any form of protection or contraceptives over the course of the year, even a thousand condoms' worth of plastic would require less plastic than any of the consequences like treatment for an STI or a pregnancy."

I am of the firm belief that any plastic used as preventative care is a good investment towards avoiding more plastic. When my grandmother was in the hospital, they changed her foam mattress; the old one got thrown away. Even though my visit to the dentist's office for a regular cleaning tripled the amount of plastic I'd used to date, an oral surgery or filling would require more. Even considering the plastic lenses in glasses, I asked my bespectacled friend Olivia:

"Those are plastic, right?"

"Yeah."

"Hmm, does that count as preventative care?"

"They prevent me from tripping."

I did receive two medicine bottles over the course of the year, and I do not recommend forgoing preventative care or medical treatment in order to avoid plastic, but this may be an area where education can put pressure on the system to make changes.

Self-Care & Household Environmental Checklist

Level	Achievements	✓
Helpful Consumer	Refrain from purchasing soap products with "micro beads" or "exfoliating beads" or "moisture beads." Search the ingredients list for polyurethane. ⁴²	
	Reduce the amount of shampoo and conditioner you use. Most people don't need more than the volume of a peanut M&M of shampoo, and a regular chocolate M&M of conditioner.	
	Bring your own shampoo and conditioner and soap when traveling to avoid using hotel soap.	
Tree Hugger	Buy shampoo and conditioner in bulk. Put it in an old shampoo bottle or soap bottle with a pump top. Do not put in glass!	
	Buy unpackaged bar shampoo. This doesn't even require a container in the shower!	
	Buy bulk laundry detergent.	
	Stay healthy; take advantage of preventative care in order to avoid the wastefulness of the medical industry, especially in hospitalizations.	
Environmentalist	Make your own hygiene products. Look up recipes online for using baking soda for soap and deodorant and toothpaste. Make conditioner out of avocados and olive oil.	
	Use soap nuts for laundry.	
Activist	Write to hotels where you've stayed asking for them to change to refillable soap dispensers.	
	Ask your local co-op to supply bulk shampoo, conditioner, household cleaners, etc.	

Shopping for Four

8

When I went home for winter break, I sat down with my parents and explained how my project was going, and asked them if I could use them and my brother as an opportunity to see how shopping plastic-free for four would be.

I started off by explaining to them why plastic consumption was bad for the environment and bad for their health. Then I talked about how I'd managed to live so far that year without plastic, which involved learning some new habits and changing some of my diet.

They agreed a little too quickly.

"This means no cheerios, no yogurt, no milk."

"Cheerios come in wax paper, don't they?" asked my dad.

"Nope. That's plastic."

"What about cardboard milk cartons?" asked my mom.

"Plastic coating."

They agreed to the the project as long as I'd try to find plastic free versions of everything on their grocery list.

Their list was...

- » Yogurt
- » Milk
- » Cheerios
- » Ling Ling potstickers
- » Rice crackers
- » Salami
- » Bread
- » World peace
- » A steady, well-paying job

I helped prepare dinner with my mother that night in December and she'd bought a package of four artichokes in a clamshell container.

"Well, I felt bad but not bad enough not to do it," she said. "I thought they'd be nice for dinner, and there were four of them and four for us." A lot of her process, I think, was adding flexibility with meal planning.

After my grandmother fell and broke her leg, my family traveled down to Southern California on New Years to visit her and my grandfather for a week. My first task upon arriving was to restock the kitchen and help buy goods for the family for a week and some staples for my grandfather living at home alone in the weeks to come.

Now, first of all, Southern California is where I encountered a Whole Foods that had peeled each banana and re-wrapped it in plastic for sale. Much of Southern California, especially Palm Springs, is not as environmentally conscious in culture as crunchy San Francisco. Secondly, my family isn't as familiar with Palm Springs as we are with San Francisco, so it was more difficult for us to locate the stores with my plastic-free requirements.

Meanwhile, I was also shopping for people with a little less flexibility. My grandfather wanted apples; I got apples with stickers. My grandfather wanted prunes; I got prunes, and felt bad when I got stale ones from bulk. I actually caught my mother searching through entire avocado kiosk to find avocados without stickers because somebody needed avocados.

When we were in Southern California with my grandparents, my mom decided she wanted to serve a rack of lamb. The plastic-free options cost twice as much as the vacuum-packed version in Costco. The grandparent who was funding the dinner was not happy with the increased price, so my mother bought the Costco one.

"In retrospect," she said, "I just had my mind set on lamb, and I probably should have planned a different meal."

Different people have different levels of flexibility due to dietary needs (when you need prunes, you need prunes), accessibility, and budget, but the more my mom learned about shopping plastic free, the more flexible she was able to become.

I called her a few months later to ask her how having me shop had been. I expected some jokes about how I wasn't a very good personal shopper, but instead she said that it "raised my consciousness and carried over to some things I'd already been thinking about like using reusable bags for produce that I already had, but hadn't been using. If I accidentally take a produce bag now, I use and reuse and wash them or use them for something else. I'm trying very hard not to purchase things in clamshells, and I've pretty much stopped going to Trader Joe's, because I realized as you and I did when you and I were there that it's no good--I don't think I've been there since the artichoke incident. Also, I've got glass containers and pretty much anything I have left over, I put in those."

Shopping plastic-free for many people can be inexpensive with sufficient education and flexibility. In fact, there were some options that become easier in bulk like my 2.5lb salami. I learned to make pulled pork, which is made from pork butt or pork shoulder. By my reckoning, I can make five to ten 1/3lb pulled pork sandwich with a freshly baked bun for under \$2.00 each (while pulled pork sandwiches are usually priced between \$6.00 and \$8.50 in restaurants). Pulled pork also lasts really well in a fridge or freezer. If you're feeding a lot of people, these giant cheese wheels in wax or natural skins also become an option.



My experience with feeding many people happened unexpectedly. Hampshire's dining commons closes over Thanksgiving break, and though students aren't required to leave, most do. I was left alone in my residence with Sam (who had laughed at me about the Chinese food take-out incident I described earlier).

I was sitting in the living room on Thanksgiving and Sam came down the stairs cradling a bag of Goldfish.

"Do you have any food?" I asked, knowing full well that he did not and was planning to live off of Goldfish and Coke for the break.

He confirmed my suspicions by holding up the Goldfish.

"Do you have any real food?"

"No. Do you?"

"Of course. Do you want some?"

"What kind?"

"Do you like pasta?"

"What kind of pasta?"

"Uh, plain or with sauce. It'll be a Thanksgiving feast."

We looked around the quiet house for a moment and then laughed.

"Sure," he said.

I started boiling pasta that I'd bought in bulk. A few minutes after I started, I remembered how much pasta expands.

"I think I made too much," I said.

"I can eat it," said Sam.

"Not this much. I'm going to post on Facebook that I've got extra pasta. I'm sure somebody wants food."

Both Sam and I posted that we were having a pasta feast and that anyone was welcome to come. Fifteen minutes later, two friends who I hadn't seen for six months showed up with a casserole and a plate of pumpkin scones. Then the first years (Freshmen) started showing up, and there were twelve of us. I started making more pasta.

There was a knock on the door. I answered and a friend from my acapella group, one of the residential assisting housing interns, was in the hall with a flock of his first year residents whom I'd never met behind him.

"Um...we heard that there was dinner?"

I laughed. "Yes, there's food. Do you want some?"

He hesitated and grimaced. "Um...is it free?"

I laughed.

"Yes, it's free. Come in."

Sam and I made eye contact across a living room full of people eating pasta and cracked up. Neither of us had imagined throwing a Thanksgiving party or feeding what felt like half the campus.

I did some math later, and by my reckoning, feeding the sixteen or so people had cost me about ten dollars. Bulk pasta goes a long way.

On Christmas morning, I opened gifts with my family, a family which included five boys between the ages of four and seven. Every single present for the kids was either packaged in or made of plastic. It was a Christmas miracle that I didn't cry.

My gifts for my extended family were a few servings each of hand-made sweet potato ravioli. I gave my dad a drawing with the subject of his choice, and I gave my mom 3 plastic-free assistance-free meals from scratch for four.

The only plastic related item I was somewhat involved with was my brother's gift. I gave him a certificate on heavily watermarked santa-themed paper which read "Redeemable for 1 lg Bag of Ling Ling Potstickers's worth of plastic, hassle free" because he was missing our favorite packaged item so much and being so flexible about giving up all other plastic items.

My gift style lent itself well to the plastic-free life; I believe that the best gifts are

experiences or items which are hand-made with the receiver in mind. I like taking people on outings for gifts, or to restaurants, or making them art or something they need (which could be anything from food to art to furniture). Upcycled items can make great gifts, and if you do it right, it doesn't sound like "Happy birthday! here's some trash." Go for "Happy birthday! You're saving the environment."

Shopping for Four Environmental Checklist

Level	Achievements	✓
Helpful Consumer	Buy goods in bulk. Grains, nuts, dried fruits, and chocolate chips can actually be cheaper in bulk than in plastic.	
	Buy meats like pork shoulder and stew meat in bulk. Freeze some of it, and slow cook the rest.	
Tree Hugger	Educate the people around you on plastic issues, and ask them if they'll humor you into trying to reduce plastic for a certain length of time.	
Environmentalist	Give plastic-free gifts. Give experiences, outings, food, or hand-made items.	
Activist	Throw plastic-free parties. Educate your party guests.	
	Encourage local stores to add bulk sections.	

Conclusion: Personalizing Plastic Reduction

After six months of refusing to purposefully buy or consume plastic, I had accidentally bought and acquired exactly 100 grams of plastic, which is about the equivalent weight of a small lemon. Here's a photo of all of the plastic I accumulated in six months:



The major contributors were my visit to the dentist's office, and accidental food service items such as straws, lids, salad dressing cups, and packaging. There is a pile of ribbon from Christmas gifts, a few gloves, and one mandatory event wristband. There are a few items not pictured above that should be in my plastic count; for example, there are many service and food packaging items that should be on this list. As I described earlier, I went to the meat counter and the butcher had already pulled out plastic tissue in anticipation for my order, and threw it away quickly when I explained the project. Many times a server would forget that I'd asked for no lid on my drink, and when I'd remind them when they were grabbing a lid, they'd throw away the lid instead of putting it back on the stack or giving it to me. There is one little plastic ball from the inside of a Guinness can, and there are no cans, or milk containers, or pieces of butcher paper pictured because by the time I found out they contained plastic, I had thrown them away. Also not pictured is a pair of synthetic pajama pants given to me by my aunt at Christmas, my school ID card which I needed to get into buildings and to pay for campus food, and the silicon DivaCup® and its packaging that I purchased in order to circumnavigate feminine products (most of which are made of and packaged heavily in plastic). I would highly recommend a DivaCup® to anyone who might need one.

On March 1st, I officially "stopped" the no-plastic portion of my project and began designing a sustainable plastic-light way for me to live. My friends cheered and one asked "so, what's the first thing you're going to get? Like, I bet what you need to buy is a whole bunch of that grass for the bottom of Easter egg baskets. Or--how about making your room into a ball pit? Let's make your room into a ball pit."

I rolled my eyes and face-palmed. "Uh, probably milk, actually."

I only discovered that cardboard milk containers were lined with polyurethane when

I went home for break. I missed baking something fierce, so one of the first things I got was a capless quart of heavy whipping cream for scones.

Another plastic item that I reincorporated quickly was a strong face-wash that I hadn't been able to replace. The soaps that I used all year were not strong enough to keep my skin clear.

I continued to buy dental floss with the highest string length to box ratio.

Another small convenience that I reclaimed was buying fruit even if it had a sticker. If there was fruit to be bought without a sticker, that would be preferable, but my diet improved significantly when I could buy local produce even if it had a sticker.

But my first day back "on plastic" was interesting, as it wasn't really back on plastic at all. On March 1st, I went with some of my roommates to a flower show at the Mt. Holyoke College greenhouses. We went to a coffee shop first, and I ordered a Chai latte with no lid,

please, and a chocolate croissant (which was excellent). We had lunch after the flower show, and I ate about half of my Chinese food and asked for two boxes--one for me, and one for my friend who had also left a half of a plate of food. The boxes came, and all of my friends looked to see what I'd do; the boxes were foam. I sat staring at the box uncomfortably for a minute or so trying to decide whether \$3 worth of leftover mediocre Chinese food was worth using a foam box, and then I asked my friend if I could put my food in with hers since orange chicken and sesame chicken taste basically the same anyway. The fortune cookies came in plastic, and I tried to give mine back, but one of my friends snagged it and "opened it for me." My friends can be a little unhelpful sometimes, but then again, according to my fortune cookie, "a calm sea makes a poor mariner." My friends said that, in the vein of the fortune, making my life more difficult was probably good for me and would help me learn discipline and self denial.

This process, for me, wasn't about self-denial, though. It was about creativity, patience, and flexibility. It was also about collaboration and community.

While I was home for winter break in the Bay Area, my aunt Pauline told me that "this neat plastic-free woman" was speaking for her activist group, the Pacifica Beach Coalition.

"Wait, is it Beth Terry?" I asked. "The one who wrote *Plastic Free: How I Kicked the Plastic Habit and How You Can Too?*" I'd already sent Beth an email asking if I could interview her.

"Yeah, I think so," said my aunt. "Do you know her?"

"She's sort of important," I said, understating how star-struck I was going to be at meeting the Beth Terry, the most prominent figure in the plastic-free movement. "Can I come to the meeting?"

"Yeah. I'm giving her a ride from BART, actually."

So I got to pick up Beth Terry from the BART (Bay Area Rapid Transit) station.

We drove to the meeting, and I tried not to flood her with too many questions.

The Pacifica Beach Coalition is a group that meets and cleans up the beaches in one of the Bay Area's coastal towns, Pacifica, and educates each other on sustainability and the environment. That night, we watched the documentary *Tapped* and Beth spoke. At the beginning of her talk, she actually brought me up to the front of the room with her, and we spoke together about our experiences, comparing notes and collaboratively answering questions from the audience of about seventy-five Pacifica activists. The experience of speaking with her to that group, all of whom cared and were planning changes in their lives based on our presentation, proved to me that with enough education, everyone can help make a change by doing what they can.

After I ended my official "Plastic-Free Life," I began designing a life that was a little

more sustainable. Even Beth Terry told me in an interview that she buys plastic, used, if she needs it, such as her computer, but my rules for the six months had prevented that.

In thinking about what rules to make for myself and items with plastic that I may consider re-incorporating to buy new, I considered the following ideals. I wanted to find:

- » Items with small amounts of plastic in proportion to the length of their useful life (such as the jam jar that turns into a glass that can be used forever and only contains a plastic label and safety seal tab, or a cotton shirt with a thin piece of plastic to connect the price tag).
- » Items with small amounts of plastic in proportion to their usefulness, necessity, irreplaceability (such as condoms and condom wrappers, medicine, glasses, and helmets)
- » Items with small amounts of plastic in proportion to their convenience (such as fruit with stickers)
- » Items with plastic in order to be safe (such as helmets and wiring)
- » Items with small amounts of plastic in proportion to extreme differences in affordability. (warm clothing, shoes, watches, meat, over time)

It was difficult for me at first to come up with examples for the last item listed, and when I did, there were usually still cheaper options than the plastic. For example, plastic furniture would be cheaper than leather furniture or natural fibered upholstery, but I would choose wood or used furniture (which may be cheaper) over ever buying plastic furniture new because furniture makes up such a huge portion of landfills. The same goes for carpeting. If I couldn't afford a carpet with natural fibers, I would save a used plastic carpet from the landfill. There were many no-plastic items that I chose to buy that, over time, were significantly more expensive than a version with plastic, like Atkins Country Farms meat instead of Stop & Shop meat. There were only a few items with sticker prices that outright shocked me in comparison with the plastic version; all-natural shoes, for example, can run up to thousands of dollars. Real leather or down or fur clothing is warm, functional, and trendy, but absurdly pricy, and watches with no plastic components are a luxury.

Based on these goals, on what was the most I could do that was reasonable for my lifestyle, and what significantly inconvenienced me and lowered my standard of living, I came up with new rules for my plastic consumption.

My New Rules

- I will not buy or receive any bottles or food containers or packages made entirely of plastic.
- I will not, with the exception of emergencies, order food that comes in plastic or that would need to be eaten with plastic silverware. I will not take food home in any plastic containers.
- I will not purchase unnecessary household objects made of plastic, be it decorations, furniture, or tools unless completely necessary to my health.
- I will not purchase appliances or necessities made of plastic unless no plastic-free alternatives exist. If I find them critical, I will attempt to purchase these items used from a thrift store or website like Craigslist.
- I may receive any plastic for preventative medical or dental care. I may use contraceptive devices. I may buy and consume prescribed or over-the-counter medication (such as antibiotics and antihistamines).
- If I deem that it would be more important to save gas by not commuting to another grocery store than to avoid plastic stickers, I may buy fruits and vegetables with stickers on them. This transportation vs. plastic trade-off carries through to any similar scenarios.
- If the plastic-free version of an item is completely out of my price range and is necessary to have, I will look for it first in thrift and only acquire it new if no other options exist.

In coming up with your own plan (whatever level of commitment that plan may be), my best suggestion would be to try to live plastic-free for a month. See what's most difficult for you, and you'll surprise yourself by finding new things that work better than your old habits, as the plastic-free time I experienced informed me. Stay positive when you accidentally get plastic. Then, at the end of the month, reevaluate. Re-incorporate items that you sorely missed (as I did with, for example, underwear made with synthetic fibers), and you'll have already forgotten about the ones that you didn't. I haven't missed most packaged groceries, take-out, impulsive decoration buys, or any cleaning or hygiene products that I can get in bulk. If a plastic-free month does not work for your lifestyle, that's fine! Start by picking a few items that you don't need that you may have been just using out of habit and eliminate them. Stay positive if there are plastic items that you can't or shouldn't give up--by doing any of these things, you'll be doing better than many in the world. If the challenges that you picked were easy, reevaluate a few weeks later and replace some more items. This document is full of suggestions, and when you incorporate any of them into your habits, check them off. Your positive actions and successes will encourage you on to further environmentally helpful accomplishments.

Plastic Environmental Checklist

Level	Achievements	✓
Helpful Consumer	Refrain from purchasing single-serve items with plastic packaging.	
	Tell your friends that you're reducing plastic. Tell them why. Make sustainability trendy.	
	Avoid using disposable grocery and produce bags.	
Tree Hugger	Refrain from buying anything made of plastic that has a short "life." This includes most or all of plastic food packaging depending on how you define "short."	
	Make rules about plastic consumption versus usefulness, necessity, and convenience, for example "Don't buy any plastic unless you can use it at least 20 times," or "don't buy items with plastic packaging unless the plastic makes up less than 10% of the packaging," or, from the health side, "don't buy plastic that comes into contact with food."	
	For those who can afford to consider the environment before cost, pay a little more for the plastic-free version, and consider it an investment in the future of the environment.	
	For those who have the time, choose inexpensive plastic-free food items that may take a little more time to prepare than their packaged counterparts.	
Environmentalist	Teach children about plastic. Help them form good habits early on.	
	Refrain from buying any food that comes in plastic packaging.	
	Give plastic-free gifts.	
	Throw plastic-free potluck parties to educate your guests.	
Activist	Join activist groups that clean up beaches and parks and make changes in their communities.	
	Try living without consuming any new plastic.	
	Write to local government encouraging them to create legislation that bans plastic items like bottled water and plastic bags.	
	Write to your favorite restaurants, stores, and other companies you patronize asking them to become more conscious of their plastic consumption.	

While doing this project, I was a 21 year-old fourth-year student at Hampshire College, which is a small, liberal arts college in Western Massachusetts. Hampshire students create their own majors called “concentrations,” and I created and studied the field of “Problem Solving.” I looked at all different schools of thought on how to identify, analyze, and solve problems. I studied design, engineering, computer programming, entrepreneurship, social entrepreneurship, business, and leadership. For my final year, I wanted to attack the biggest problem that I could find, which, in my opinion, is the environment. I care about social justice, and I care about hunger, and human rights, and health, and world peace, but none of that will matter if there isn’t a planet on which we can live.



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