

Avatar Update

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*A subscription newsletter
to bring you bits and pieces
that clarify understanding
as I come to learn more
in my own Rabbit Hole
discoveries*

Gifts of War

When your land is occupied by strangers, they bring with them their ways and things. We know the stories of native Americans taken by adulterated “firewater” and pots and pans for which they traded furs and hides. We have not heard the stories of the white man’s containers arriving elsewhere in the world and how they were received. So here is one by Anwar Accawi from Magdaluna, Lebanon:

Tin, of course, came first. The big war brought it to us, as it brought many other things, such as cars, radios and telephones. My father was among the first people to bring home food in tin cans. He said the strange red and black words on the cans were English, the language used by the army he worked for as an interpreter, and that the English used tin cans to keep their food from going bad. I could not believe the funny-smelling things in the tins had been packed months and maybe even years earlier, and I wondered why anybody in his right mind would want to eat anything that had been cooked so long ago. But my father insisted the food was all right ... he opened a can of something he called “bully beef,” cut off a chunk, and popped it into his mouth. When he smiled and licked his fingers, I was sold. ...

Canned food was good, but the tin can it came in was wonderful. You could store nails in it; you could use it to pour water over your head during a Saturday bath, or you could keep your coins or marbles in it, safely hidden in a chicken coop or behind a vat of pickled olives. Even Grandma, who abhorred the food that came out of the cans, found the cans themselves useful. She stored the deeds to her house and land in a big coffee can that she hid in the attic under the sacks of chicken feathers she was planning to stuff into a mattress someday. [...]

I was six when my mother asked my father to get her a garbage can. I wondered what a garbage can was. She said a garbage can was a container for things that had to be thrown away because they had no use whatsoever. That was news to me. We’d never had to throw away anything before. Paper bags, for instance, we crumpled and rolled around and then used in the outhouse. Bran left from sifting the wheat flour to make the bread was given to the chickens, as were potato peels and other vegetable skins. Table scraps went to the puppy, and rotten fruit and vegetables were returned to the earth, which gave them back to us the next summer in red and yellow and green. Nothing was wasted. So I could not see why Mother would need a garbage can, not at first. But it became clearer to me as the days went by. We had new things in the village, things that could not be fed to the dogs or the chickens or the earth, things that would not even burn.

Plastic first came to the village in my cousin Albert’s back pocket. ... Albert was a “man of the world” – a real city slicker – because his father had landed a job with an oil company in Beirut. ... When my mother told me that Albert’s family was back in Magdaluna, I ran over to see my cousin. ... Before we shook hands, Albert turned around and slapped the palm of his left hand with a comb, then flexed the comb a couple of times and stuck it into his back pocket. ... He flexed it a couple more times and handed it to me. I could not believe it didn’t snap in two. ... I whistled and said, “What in the world is this? It’s incredible!”

...
“But what is plastic?” I asked. “What’s it made of?” “I’ve got no idea,” said Albert. “All I know is that it’s all over the place in Beirut. ... Take a look at this.” He held [a small drinking glass] up high and then let it go. I was horrified. I expected to hear a crash and see bits of glass fly everywhere.

But down went the glass to the floor, where it bounced with a hollow thud and fell back down. It rattled and rolled around until it finally came to rest ... intact! Not even a small crack. I couldn't believe my eyes. ... What I had just seen defied everything I knew.

A Two-Handed World

I had lived all my life in a world where almost everything was breakable. Combs were made of brittle wood or bone, and jars, plates, and cooking pots were mostly oven-baked clay. When a bowl or cup broke, it was a major loss and a great inconvenience to the family. A broken water pitcher meant half a day's walk to Kittermaya to buy another one from the potter there. We were, therefore, a two-handed people – everybody used both hands when handing someone something or when receiving something from the hands of another. At a very early age, I had to learn to use both hands when handling a jar of honey or a pitcher full of drinking water or a cup of hyssop tea. I could get into serious trouble or even get a whipping if I broke something precious, especially if it had been in the family for a long time, like Grandma's freshwater jar. Grandma told me that her mother gave it to her as a wedding present. That was the year of the locusts, when a hot wind from the desert blew in dark clouds of winged thunder that hid the very face of the sun. The locusts ate everything in their path, and within days the village was wiped clean. People got so hungry they ... even stripped the bark off trees and boiled it and ate it. Through it all, and for many more difficult years to come, Grandma hung on to that jar, her mother's precious wedding gift.

For days after Albert's return to the village, my head was full of nothing but plastic. I tried to imagine how much easier life would be for everybody in the village if everything – plates, jars, pitchers, chairs, tables, chicken coops and cabinets – were made of that wonderful stuff. We would never again have to worry about anything wearing out or breaking. I fantasized about that plastic world. ... I prayed that it would come to my village soon. ... "Our Father who art in heaven, send us the plastic in the name of Jesus."

...

That summer, plastic hit Magdaluna in all shapes, colors and sizes. It came on the backs of little gray

donkeys and big red mules, and it came on the backs of beady-eyed men who smelled like rancid yogurt. All the village women fell in love with plastic and traded just about anything they had for it. They traded dried figs and almonds and olive oil; they swapped cast-iron pots and brass bowls that had been in their families for generations; some gave up their jewelry—earrings, bracelets, red-gold chains that they had gotten from their mothers and their mothers' mothers – for plastic.

My mother used to carry Grandma's clay jar on her head all the way down to the village spring every morning before sunrise, fill it up with sweet freshwater, and set it in the window in the east room. The window was the perfect spot because the northerly breeze blew through all day and kept the water cool. My father said the jar had tiny invisible holes in it called pores, and as the water seeped out through the holes it evaporated and kept the water fresh and cool even in the hot summer months.

Less than a year after plastic inundated the village, Mother was setting the jar down early one morning and she missed the hole in the wooden seat where it fit securely. It was a little dark and her eyes were not good, and the jar came crashing down. Everybody in the house woke up and ran to the window, where Mother was crying with her face in her hands. Grandma was very kind and said, "Don't worry about it, daughter, it's the evil that's been broken." (In Magdaluna we comforted ourselves when something precious broke by saying that.) Eventually we got ourselves a green five-gallon plastic jar to put our drinking water in. There was no chance of this container breaking, ever. Our water was safe now. But it did not stay cool the way it did in Grandma's jar, and it tasted funny. I did not know what to compare the taste with because I had never tasted water from a plastic jug before.

As time went by, I got used to drinking water that tasted different. I also got used to dates and olives that smelled a little strange after being stored in plastic jars for some time. Eventually, however, we did not even notice it. Plastic had come to our world to stay, and that was that.

There Is No More Away

Two times now I have watched a documentary, *Inside the Garbage of the World*, made by new friends from Ventura County, California. The first time was on YouTube (<https://www.youtube.com/watch?v=LtoGdrkt9EY>); the second time was last night at a screening. I had already seen “Our Synthetic Sea” by Captain Charles Moore – 20 minutes long, perfect length to wake up the slumbering. Philippe and Maxine’s film is much longer (1 hour 19), with dramatic flair that I now recognize to be Philippe’s particular touch, phenomenal sound (as he is a professional sound engineer) and a fine script written by Maxine. Today Philippe and Maxine Carillo live on a 40-foot sailboat in Oxnard. The water—and its lovely, peaceful energy—is right under their feet. It was a half-hour walk on the beach, during which the universe showed them an empty sack and loads of trash to put in, that became their inspiration for the film.

It is a people-driven film, with interviews from all perspectives, including scenes from a helicopter (if we are talking about perspective), from which you look down on a blue velvet ocean. Little would you know that in that dark liling water are millions of specks of foreign material, floating and bobbing, some big enough to grab by hand from a boat, some small enough to scoop up in a net, but most the size of dandruff. This is degraded plastic; it looks just like zooplankton, and all the baby fishies eat it. The ratio of plastic dandruff to real zooplankton (the animal form of algae) is now 36-to-1. It used to be 6-to-1 only a few years ago. The dark blue beautiful ocean is not so beautiful anymore. And the problem is the floating stuff really can’t be taken out.

It’s too small. Half of the plastic debris (millions of tons) is already on the ocean floor, where it is covering and smothering marine life. The famous Pacific and Atlantic gyres we have heard about are not “islands of trash” that stretch for miles in the water; they are a broth, a soup of indestructible crap that swims in the water, brought there by the currents to collect and show us the meaning of “away.”

Throw it away. As one ocean lover says in the film, “There is no more away.” There is no place we can put or send or place our unwanted materials such that they disappear. The many and various compounds we have created with our many and various technologies have indeed allowed us to become much more free, giving us that wonderful “free hand” that people of a bygone age did not have to multi-task with, carrying earthen pitchers as they did and carefully safeguarding their breakable or irreplaceable possessions as they carefully navigated their lives. Now we can *sail* through

our lives – reaching for this and that on the way on sheer whim – for cheap, light unbreakables dance and beckon from all sides, brimming with their yummy and bright contents. *Single-use plastic.* I ask a few people if they know what a flying toilet is. “No,” is the answer. “It’s used in Africa,” I say. “In Nairobi, where people often don’t have a toilet, they poop in a plastic bag.” What becomes of this plastic bag is up to the user; it is often left abandoned or tossed into the street. The faces of Americans register horror. They cannot imagine as reality the image in their mind. “What?” I nod. “We have flying toilets too,” I say. “Who uses them?” they demand. “Our dogs.”

Yup. The single-use flying toilet has arrived in the lives of American dogs. The single-use grocery bag is being banned in American cities, but the single-use coffee cups and plastic glasses have not; nor have the single-use deli containers, the single-use veggie bags in grocery stores, the single use tampon applicators, drinking straws, bottle caps, candy and food wrappers, eating utensils and coffee stirrers. Walk on any beach and inspect the rack line (a.k.a. “the high-tide line”) where the waves leave bits of things that make their way to shore. Besides clumps of tar and seashells, you will see man’s little leftovers: fragments of colored things you cannot identify, bright blue and white and red, lying like strung confetti along the wet sand. Wisps of dark wet sea grass mask them from the stroller’s eye, but to anyone who bends over and looks they are there—billions of them. At some beaches they now *comprise* the “sand,” meaning they constitute half of it—impossible to sort or filter out except by dropping scoopfuls in tubs of water and then skimming with a sieve to catch what floats, as the real sand sinks first.

Shoreline debris-removal programs concentrate on what is big and discernible. Helpful people (thankfully there are some) clad in sweatshirts stoop and gather things by hand, dropping them in plastic bags that get emptied into trucks, the offending materials carted away. But what is *away*? “To the dump,” says one Hawaiian islander in the film. “But it always comes back.” *Away*, then, is just another place where the unwanted is out of sight, and *back* is the arrival of more unwanted crap, bobbing in from all parts of the world, as currents are global travelers. Certain spots on our shorelines are destinations for this flotsam, as there are ocean dynamics that bring things to one place, even in still pristine and untrammled parts of the world. Thus you might be wandering a tiny island and come across gobs of man-made foulness—crunched steel lobster traps, tangles of nylon rope, buoys, empty gallon jugs, barrels and things of all shapes and sizes that once had a use but now ... no more.

Don't Sweat the Small Stuff

“There’s nothing we can do about the smaller stuff,” says someone else in the film. She is on her knees in a wetsuit, dumping sand in a tub of water and skimming off the plastic that floats to the top. *There is no way to remove the smaller stuff.* There is too much of it; it has become part of the seascape and part of where the water meets the land.

Sand, writes Cornelia Dean in her phenomenal book *Against the Tide: The Battle for America's Beaches* (1999) is the natural consequence of ocean upon land: a ribbon of tiny solids capable of moving like liquid when necessary. Sand is like a lot of tiny ball bearings, rolling and fluid. The meeting point of water and land must be a mixture of both; thus when God made everything in the world he also created sand. Shorelines must be moving and dynamic, Dean (a career science writer) points out, because:

When a beach is threatened by a storm, it rearranges itself to cope. Harsh storm winds quickly carry lighter sand particles on the surface of the beach to the dunes, where the beach has already established reserves of sand. The heavier particles left behind form a kind of protective covering of coarse grains too heavy for the wind to pick up. If waves do bite into the dunes, the sand they carry away collects in underwater sandbars. These are exactly what the beach needs to break the waves offshore and weaken them before they hit the beach itself. The reserve battalions of sand are turned into frontline troops. Eventually, the storm passes. Now gentle swells pick up sand from the offshore bars, carry it inland and return it to the beach.

That which floats or is light gets deposited on the beach. Yesterday I took a walk with a geologist and he pointed out the little black dabs of beach tar: “Warm water’s coming in early this year. Tar is lighter than water, so it floats.” He picked up a piece and sniffed it. “Santa Barbara,” he said. “You can tell where the tar is from by smelling it?” I asked. “Yup—Santa Barbara has a high sulfur content. This is seepage from Santa Barbara.”

So the floating plastic bits find their way to the shore where they mix with the sand. There are plenty of beaches now where the sand is flecked with bright colors—all mixed with plastic. When oxidation and erosion make that plastic even smaller and it bleaches into a nondescript beige, it will look just like the sand, and because it is lighter than real sand, it will rise to the top while the sand goes to the bottom of the

sediment layer and *it* will be our beach covering, a brand-new kind of AstroTurf!

In the ocean itself, dots of bleached plastic stream through the water, masquerading as zooplankton and fooling marine life. How much plastic can a fish swallow before its guts are clogged and it dies? The albatross population is radically down because mother birds cram all kinds of plastic treasures down their babies’ throats – *must be food!* It is not uncommon to find beached ocean creatures—big and small—with plastic objects nestled in the dried-out carcass, exactly where the stomach would have been. This is what has been swallowed. In the case of whales, it is hundreds of pounds of plastic.

The estrogenic effects of chemicals added to those plastics are having their day in the ocean. *Inside the Garbage* does not go into this, but I did tell the filmmaker about hermaphrodite species showing up on land and in the water, for the additives to plastics (called *phthalates*) are endocrine disruptors and may someday make ocean life reproductively inviable. Imagine the opportunity for designers of synthetic life, who will be called upon to re-supply the ocean with genetically engineered replacements, in far fewer varieties, of course. *Laboratories* will fill the world with new life, and it will have the added bonus of being reliable, as there will be plenty more where it came from. We already have the synthetic, self-replicating algae called Synthia from the J. Craig Venter Institute; we have genetically engineered salmon to replace the spindly stock of natural ones. Imagine the fun we could have with the new GE’s at Sea World: Children, can you tell the real ones from the scientific ones?

Now to us. My geologist friend did not seem to know a thing about how additives to polymers (derived from petroleum, his specialty) were affecting the human population. I spun a long, interesting theory for him, which has been building itself in my head for a long time. I always recommend the Canadian documentary *The Disappearing Male*, which can be found on Vimeo. It is a convenient place to go for some important birthrate statistics, which have undoubtedly increased since the film for made for Canadian TV a decade or more ago. I have mentioned it before to you and will do so again, for in it you will see experts with credentials telling you what is happening to male babies being conceived in a world that is teeming with xeno-estrogens—foreign estrogens—estrogen mimickers, as they are also called. These are the *phthalates*, or plasticizers, used in our personal-care products to make our hair glossy and our world fragrant and clean-smelling, and they are also the additives to polymers that make them into flexible or rigid containers.

A Vuarnet Paradise

It's all those containers—especially the single-use containers—that are cluttering up the ocean floor (the place we call “away”) and coursing downstream in our rivers to be dumped into the sea (“away”) where they will beckon to ignorant birds and fish and pinnipeds and fill their stomachs (“away”). But it is also all of our crap that we spend our money on, that we let go of (“away”) because we can always buy another one. A friend's story from the 1980s:

I was anchoring my boat when I was a lifeguard at Island Beach (Connecticut) when my \$100 Vuarnet sunglasses fell into about 15 feet of kelp-laden water. I took bearings on my exact location and waited for the tide to drop. I maneuvered the boat into position with two anchors and dove down into the black bottom and started to feel around. On the first dive I came up with a pair of Vuarnets—however they were not mine.

On the second dive I was amazed to grab another pair of Vuarnets—again not mine. On the third and fourth dives I came up with a pair of Revo Glaciers and another pair with no name. On the next 20-30 dives I came up empty-handed. Never found my own Vuarnets. But because the first Vuarnets were in fine condition, I cleaned them up and wore them. The second set was scratched so I sent them back to Vuarnet (they have a lifetime warranty) and they replaced them. I gave the Revos to another lifeguard and he wore them for the next two years.

At least these ocean finds were put back into use! My friend says he still ponders the string of empty dives that followed those first four instant successes, but this may be one of those things that has no significance other than it made it to my newsletter three decades later. It is amazing to think that going to the ocean floor (in this case the Long Island Sound) and scrabbling about for a few seconds with your hands would yield expensive sunglasses time after time, but obviously it does. I wrote about my other friend's dive to recover his anchor and his amazement at how much *stuff* was at the bottom of the sea (again the Sound)—all those big ugly tires! Poor fishies—what have we done to their world?

We have heard of the Pacific “garbage patch,” but as Captain Charlie Moore says in the *Garbage* documentary:

The average depth of the ocean is two miles. The Eastern Garbage Patch is half as big as the

continental United States and it carries thousands of tons of trash, but that quantity is not, for the most part, touching another piece of trash. It's not concentrated to where it's an island. People have got this myth of a trash island. It's not an island. ... The currents are such that they tend to converge debris into that area. But even with that convergence, you don't have what we think of as a patch. You have more of a plastic soup, a kind of a weak broth with bits and pieces of plastic swirling around in it that constitute a place where the [floating] detritus of humanity concentrates. Now there are other aspects to this problem of plastic in the ocean because about fifty percent of plastics will sink. So they will never make it to the Eastern Garbage Patch. The Eastern Garbage Patch can be thought of as a place where half of the plastic that pollutes our ocean goes. The other half is on the bottom of the ocean, in the water column, and we don't see it there.

...

The North Pacific Gyre has two garbage patches: It has the Eastern Garbage Patch and the Western Garbage Patch. The North Pacific Gyre itself is a huge system, probably the largest single climatic system on earth, about the size of the continent of Africa—about ten million square miles. That is a clockwise rotating current that takes about six years on the periphery to make one rotation. Now within that gyre, that rotating current, there are sub-gyres; there are vortexes within that and the Eastern Garbage Patch is one and the Western Garbage Patch is one.

...

We've made several trips to this area [the Eastern Garbage Patch] and each time it appears that we're seeing more plastic. The last two visits we made—in 2007 and 2008 and then again in 2009, the average change was a factor of six. In other words, we study the ratio of plastic to plankton, and what we determined was that all these plastics don't just stay as whole objects, they break into fragments, and these fragments compete [as] food with the zooplankton. The zooplankton are the tiny organisms that feed the fish, and the plastic is the same size—a lot of it—so it's important to understand the ratio of plastic to plankton. In 1999 the ratio was 6:1. Now, averaging 2007/2008 in the wintertime and 2009 in the summertime, we came up with 36:1. So it's six times worse in the same area that we studied in 1999.

Translated, this is mind-boggling. Six-to-one means six parts plastic to one part plankton in 1999, and 36 parts plastic to one part plankton ten years later. I would like everyone to understand (please picture it) that there is *way more* plastic in the ocean than there is plankton. Ideally, there should be *no* plastic at all taking up space in our water—only the swirling organisms called zooplankton, the animal form of plankton that billions of small marine creatures feed on. (Phytoplankton is the plant form of plankton eaten by zooplankton.) But with the enormity of small bits of plastic in the ocean, no wonder so many species are dying: there is little else that makes its way into their mouths. *Plastic fragments have taken the place of food in this world.*

Trophic Carriers

It is too late to recycle, and too late to get the plankton-size plastic out. Enough is out there, with more coming, such that bio-integration is well underway. Says Dr. Anthony Andrady, Adjunct Professor of Chemical and Biochemical engineering at North Carolina State University (in the film):

In my research I have [focused on] the fate of plastics—what happens to plastics when they are in the environment. That particularly includes the marine environment because there have not been enough studies done on the marine end of it. ... I've looked at the degradation of plastics in the marine environment, the partition of chemicals and other small molecules that are in the environment *into* the plastic, and the impact that the plastics may have on the biota, all the way from zooplankton, which are very tiny animals, to the birds and turtles that all eat these plastics. And in consuming these plastics, the chemicals that are concentrated in the plastic become bio-available to these animals.

What plastic does in the marine environment is that it concentrates [chemicals]. So you have a tiny piece of plastic which has maybe 10,000 times the concentration of a chemical that is present in seawater. Now the issue is, if this concentrated pellet—which has a high level of chemical—is ingested and is able to move up the trophic chain, can it reach the human consumer? It certainly is already a part of the trophic chain, because you know the zooplankton eat these beads. Therefore, it is being passed up [the trophic chain].

What he is referring to are what the industry calls “nerdles”—plastic pellets the size of pomegranate seeds, which are the

pre-fab form of plastics shipped worldwide to be made into other things. There are zillions of nerdles in ocean water, and one super-duper characteristic of plastic (another wondrous aspect of its “container” characteristics) is that it manages to draw and hold other chemicals in it. This is one reason plasticizers are used in personal products: they hold chemical fragrances.

The trophic chain is the food chain, starting with *producers* (creatures that make their own food) which are eaten by various levels of *consumers*, which are in turn eaten by apex consumers. There are different food chains, depending on the ecosystem. Every chain ends with *decomposers*, which are the bacteria that turn organic waste into inorganic nutrients for use by producers. It's all very cool. What's not cool are toxic game-changers working their way up and down the trophic chain, altering gender and blocking reproduction. When will humans appreciate that the convenience of crunching up a ball of shrink wrap as you dig into a salad someone else put together, or stopping for a tall, frothy caramel-flan-creme frappuccino handed to you in plastic is a ding on the trophic chain? I don't think they will ever register this, as that free hand plastic gave us has only sped up our ability to do what we like to do – getting around the tedium of nature. If it means we lose our gonads and can no longer have babies, if it means that men begin to look like women and women die of more reproductive-system cancer, maybe even then we will not do anything because (1) we will consider ourselves helpless; (2) we will have new and different sexual preferences, adjusting to the new look and feel of humans of the day; (3) there will be so many different tentacles of cancer that one or another topping the list will be like the winner of the Superbowl – it varies from year to year.

In the end, the decomposers on the trophic chain will add another group of toxins to the base materials of the planet – soil and water—and the producers will manage to integrate it so that they survive, and it will be handed up and up and up, to and into all the consumers – this now elemental gift of war. *Decomposers complete the cycle of life.* One day the producers of the planet will have made the collective announcement: *We have turned the gift of war into biofood. It is not useless anymore.* And there will be a celebration in all things, for this will have solved the problem of Away.