

Frontlines

FALL 2006

DUMP TRUCKS, DISCOS, DEAD BEARS, ETC.



Guiyu, China, is a huge dumping ground for used electronics.

The World Confronts Its E-waste Nightmare

Our computers, televisions, and cellphones are laden with toxins—but new Chinese laws may help bring about major changes in electronics design

BY TAM HARBERT

Do a quick inventory. How many old PCs, cell phones, TVs, game consoles, and other discarded electronic gadgets are gathering dust in your closets, basement, or garage? Now multiply that by 100 million households—and that's just in the United States.

Discarded electronics are now the fastest-growing waste stream in the industrialized world, according to the Basel Action Network (BAN), a watchdog organization based in Seattle. As much as 80 percent of the

Freelance writer Tam Harbert specializes in business, technology, and public policy.

world's high-tech trash ends up in Asia—and 90 percent of that flows to China. There Chinese laborers dismantle it by hand, exposing themselves to the toxic contents, including lead and mercury, contaminating the soil, and making groundwater undrinkable.

But a worldwide wave of legislation may not only stem the tide of e-waste but ultimately force companies to change the way electronics are designed. The European Union was the first to adopt these new laws, and China is now following suit. One E.U. law, a directive called the Restriction of Hazardous Substances (RoHS), limits the

amount of toxic materials that manufacturers can use in a broad range of products that use electronic circuitry (medical devices, which have extremely high performance requirements, are among the few exceptions). Instead, companies will have to use non-toxic components, for example replacing lead solder with tin, silver, or copper alloys.

Another law, the Waste Electrical and Electronic Equipment (WEEE) directive, requires manufacturers to take back discarded products at no cost to the consumer. More regulations are on the way, including a law known as REACH (Registration, Evaluation,

and Authorization of Chemicals), which will require manufacturers to register all the chemicals used in their products in a central database, explain to regulatory agencies how they are used, and assess their toxicity.

China will soon have its own alphabet soup of new laws, and there are encouraging signs that the Chinese government is serious about enforcement—not always the case with the country's environmental laws. China's RoHS directive may be even more stringent than the European version; it restricts the use of the same six materials—lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs), and polybrominated diphenyl ethers (PBDEs)—but allows fewer exemptions in the range of products affected.

The law also requires that manufacturers submit their products to Chinese labs for certification. According to Richard J. "Tad" Ferris Jr., a partner at the law firm of Holland & Knight in Washington, D.C., and an expert in Chinese regulation, manufacturers will have to include a label or some type of disclosure with each piece of equipment, telling consumers whether it contains toxic substances, how long before these start breaking down and leaching into the environment, and whether the product can be recycled. These labeling and disclosure provisions will come into force in March 2007.

Environmental considerations have never been part of the electronics design process, and this new legal climate poses a serious challenge to manufacturers. The industry's mantra is faster, smaller, and cheaper, with

a business model that depends on bringing out a constant stream of new products. But now, says Michael Kirschner, president of Design Chain Associates LLC, an electronics-industry consultancy in San Francisco, "What Europe and China are really driving toward is keeping these products in use longer, [which] goes against the industry's grain of shorter and shorter product life cycles."

The U.S. government has been notably slow to join the international legal trend, and U.S. manufacturers have been unable to agree on a common approach to the e-waste problem. In 2000 the Environmental Protection Agency began meeting with industry leaders, government agencies, and environmental groups, but the effort was abandoned in 2004 after PC and TV manufacturers failed to reach a consensus. Their basic disagreement was whether consumers should pay a recycling fee at the time of purchase (as the TV manufacturers preferred) or at the time of "take-back" (the option favored by the PC industry).

In response to the legal vacuum at the federal level, some states have adopted their own e-waste laws. At least four—California, Maine, Massachusetts, and Minnesota—have now banned lead-laden cathode ray tubes (CRTs) from landfills, requiring them to be sent instead to a state-certified recycler. (A

deluge of discarded CRTs seems imminent as consumers replace their TVs and computer monitors with sleek new flat-screen models.) California, Maine, Maryland, and Washington have already passed electronics recycling laws, and at least 20 other states are considering them. Some municipalities, such as New York City, are also adopting their own rules.

The regulatory noose seems likely to tighten, especially as China increases its share (now about 30 percent) of the world's consumer-related electronics manufacturing. Realists in the industry seem to accept that the new standards will end up becoming a worldwide norm. "We don't see this as a China and E.U. thing," says Dave Douglas,

HOW ARE WE DOING? NOT GREAT

According to the U.S. Government Accountability Office, more than 100 million computers, monitors, and TVs are thrown away each year. The Basel Action Network in Seattle (www.ban.org) works to prevent the flow of e-waste to Asia through its e-waste stewardship project. The Silicon Valley Toxics Coalition (www.svtc.org) and the Computer Takeback Campaign (www.computertakeback.com) publish an annual "report card" on corporate take-back programs. Major U.S. corporations such as Apple, Dell, and Hewlett-Packard now offer such programs, though their terms vary.

vice president of eco-responsibility at Sun Microsystems. "We see it as a global thing."

In the meantime, by forcing manufacturers to disclose more information about the environmental safety of their products, the new laws should at least encourage consumers to vote with their dollars—which is, after all, how the free market is supposed to work.

MARCHING BOOTS AND DANCING FEET

Spare a thought for the American soldier trudging through the Iraqi desert heat, weighed down by full-body armor, M-16, field radio. Now imagine lightening his load, for example by getting rid of the heavy rechargeable battery for his communications gear. A decade or so ago, researchers at the Pentagon's Defense Advanced Research Projects Agency (DARPA) began to consider the possibilities. What they came up with was a device called a "heel-strike" generator, which senses kinetic energy and turns it into electrical current. When embedded in marching boots, these devices can generate as much as 6 watts of power.

Now a British firm, The Facility Architects, is proposing to spread this energy-

harvesting technology into the civilian realm. The potential is mind-boggling. Office workers climbing stairs, commuters riding escalators, the rumble of passing traffic—all these vibrations could be captured by devices that work on the same principle as the heel-strike generator. Facility, which plans to unveil prototype devices in December, claims that this kind of energy harvesting could save \$200 billion a year in the United States alone.

Reporting on the project, a BBC blog asked readers to contribute their own ideas. Our favorite was the self-powered disco, with dancing feet supplying the power for the floor lights, the strobes, and of course the indispensable mirror ball.





Drowning in Corruption

Crooked politicians, sleazy developers, and governors who eat roadkill: Welcome to Carl Hiaasen's Florida

In 30 years as an investigative reporter, newspaper columnist, thriller writer, and comic novelist, Carl Hiaasen has managed to upset almost every politician, developer, and crook (these terms often being synonymous) in South Florida. Reviewing his novel *Skinny Dip* in the *New York Times*, Janet Maslin put Hiaasen in the same league as humorists Preston Sturges, S. J. Perelman, and Woody Allen. His books teem with outlandish characters but also with serious environmental themes. In *Lucky You*, for instance, a lottery winner named JoLayne Lucks schemes to protect a primeval forest from strip-mall developers. Several of Hiaasen's novels feature a renegade former Florida governor named Skink, who flees the corruption of the state capital, holes up in the man-

grove wilderness of North Key Largo as a hermit, and eats roadkill. Fellow Florida writer Bill Belleville recently caught up with Hiaasen at his home in Vero Beach.

When we worked together at *Today in Cocoa, Florida*, I knew you as a mild-mannered newspaper reporter. Now you're Carl Hiaasen. What happened?



I always imagined working on novels in my spare time along with the newspaper work. But I never imagined the books would take off—being as peculiar as they are and as peculiar as I am. I thought it would be a rather limited audience. But I found out there are a lot of sick individuals out there.

Especially in Florida. There's that special weirdness here that makes it the

perfect stage set for the kind of stories you write.

Well, I think Florida has always been such a desirable place. I'm reading a great book called *The Swamp* by Mike Grunwald about the history of South Florida and the Everglades, and it's really a 200-year chronicle of greed. How do we drain the place? How do we make some money down there? Let's push the Seminoles down into one place we can't figure out how to drain—the Everglades. And then let's steal everything else. Historically, you had this incredible engine of greed—and it's larger and more dangerous today than it ever was, at any time. I would have to say Louisiana is probably the only place that could match Florida crook for crook, sleazebag for sleazebag.

You've created some wonderfully strange characters—like Skink, or the demented hitman, Chemo in *Skin Tight*, who has a Weedwacker grafted to one arm. When did they begin to take shape in your mind?

Every journalist I know has sort of an unconscious Rolodex of people they've bumped into, things that stick with them. In the novels, you pull all these odd parts together. And then you add to them. Skink is a good example. Certainly I had never met a governor of Florida who had either the environmental credentials or the moral impatience of Skink. I mean, most people who go to Tallahassee are appalled by the politics, but they grit their way through it. Skink just went nuts and went running through the woods naked—which I thought was a perfectly reasonable response to that situation.

How do you think Jeb Bush, the real-life governor of Florida, is doing?

I think his legacy could have been a lot worse. I disagree with him on many issues, but I do think he actually reads—which is somewhat different from his brother. I think he has made a real effort on the Everglades, although the reconstruction project is put together with an eye toward future development, future water use for big business. We need to have an Everglades in order to have an aquifer, so I don't care what his motive is. It would have been easier for him to flat walk away and ignore it, and he didn't.

So does that mean you're optimistic about the future of the Everglades?

I like to think the Everglades are going to get fixed and everything is going to be wonderful. But you and I both know that so much money is out there. How much is going to be stolen from the program? Beyond that, you still have Lake Okeechobee being flushed into the St. Lucie River and into the Caloosahatchee River and estuary—all that sediment and tons of cattle s**t and fertilizer and pesticides. The damage is beyond imagination—fish mutated and deformed, and awful stuff like blue-green algae, where you literally can't breathe. We are not going to flood Disney and we are not going to flood all the subdivisions when it rains. We're going to put all that crap somewhere and it's going to be in the water.

You're still writing your column for the *Miami Herald*, where you hammer the greedy developers and corrupt politicians.

It may be pushing its endurance. In my 30 years at the *Herald*, there have been a lot of publishers and a lot of editors and a lot of advertising managers who were ticked off at one time or another. You stay because it's a tremendous thing to be able to write about your own state or your own town and have a platform—whether it's funny or whether it's angry. Next week they might forget what you wrote, but at least you were there when the fire was hot. That's a tough thing to give up.

Does what any of us write make any difference?

I think exposure is what these giant companies fear the most, whether it happens on the front page of the *St. Petersburg*

Times or on a blog. Someone dumping dioxin in a river really doesn't want to read about himself on the front page of anything. You let the shareholders know it's going to cost them a lot of money to clean up the mess.

You've written two children's books, *Hoot* and *Flush*. What's that been like, writing for kids?

These are real simple stories, stories about kids making a difference. In one case they

"I disagree with Governor Jeb Bush on many issues, but I do think he actually reads—which is somewhat different from his brother"

try to save a little burrowing owl that is going to be plowed under in a development. In another case, they try and figure out how to stop ships from polluting beautiful places in the Florida Keys.

I was totally flabbergasted by their success. But having hope is essential. And if you read the letters—and I get thousands of letters from kids and classes all over the country—you understand that kids know right away what is right and what is wrong. There are no superheroes and nobody is in a cape and nobody has superpowers. They are just kids who see something they love

very much and connect with very much. In these novels the kids are almost always smarter than the grown-ups, which I find to be true pretty much in real life. And they dig that. Their sense of humor is very good, you don't have to hammer them into a coma. They get it.

Did you have experiences like that yourself as a kid? Is that where your feelings about greed and developers came from?

Absolutely. It was the thing that started me down this path from a very young age. Every day it was something new, something being paved over or drained, torn down, trees and creeks disappearing. I was angry and bitter about it then—and I am now. I think the humor in my writing is both therapy and a weapon.

Is it true you keep snakes?

I used to keep quite a few snakes, and I used to breed them too. A year or so after I got married, when we had a new baby, my wife decided my energies were better spent taking care of the new addition than traipsing up and down the highway picking up rats from pet stores. Snakes need a good supply of rats.

If Florida is so fraught with environmental peril and its leaders so unrepentant, why do you stay? Wouldn't it be easier to simply move to, say, Cat Island in the Bahamas?

You know, there are days that I feel like it, and I don't know anyone who doesn't. But I think you have to find places you care about, and when you do, walking away is not easy.

CANADIAN FOLKLIFE ON DISPLAY



The 40th annual Smithsonian Folklife Festival in Washington, D.C., this summer was quite a show. From Chicago came artists who provided a visual complement to Latino grassroots music; from New Orleans, concerts of jazz, gospel, and R&B; from Hawaii, demonstrations of traditional basket weaving. And from the Canadian province of Alberta, a 100-ton yellow dump truck loaned by the Caterpillar Co. Its contribution to folklife? Razing thousands of square miles of pristine boreal forest to make way for strip mining and drilling to extract oil from the underlying "tar sands." Oh, Canada.

FRONTLINES FACT

5000
MILLION

cell phones in the United States are broken, obsolete, or left unused.

SOURCE: U.S. ENVIRONMENTAL PROTECTION AGENCY

The 55-seat Angry Trout Café is housed in a onetime commercial fishing shanty.



Now on the Menu

George Wilkes and his family run a café that offers a lesson in sustainability (and awesome trout chowder)

As you pull into Grand Marais on Minnesota Highway 61, which snakes along the shoreline from Duluth to the Canadian border, after Harley's fish shack but before the American Legion hall, there's a grub stop right on Lake Superior called the Angry Trout Café. It's open only from May through October, when the co-op shopping, canoe-toting, ex-big-city types arrive in droves that outnumber the mosquito, Minnesota's unofficial state bird. George Wilkes and his wife, Barb LaVigne, run the place, and you'll find their teenage daughters, Marybeth, 17, and Martha, 14, working in the kitchen (making salads and washing dishes, respectively).

George, tall and lanky with wire-rimmed glasses, is a man of few words. He's deeply

involved in town politics, an advocate of a moderate expansion of the harbor and increased fishing rights. He likes duck hunting, enjoys a good round of sporting clays with his daughters, and keeps his favorite fishing hole (where he often spots moose) a closely guarded secret.

For most of its history Grand Marais depended on logging, mining, trapping, and fishing, and although tourism pays the bills today, not everyone likes the change. For his part, George straddles the line: You won't hear him using the word *environmentalist*, but his actions suggest that he knows what it means to be one.

The herring served at the Angry Trout is caught by a neighbor, Harley; the wild

rice is hand-harvested in northern Minnesota; the poultry and dairy come from an organic farm cooperative in southwestern Wisconsin; and the vegetable selection varies according to the harvest schedule of the community-supported agriculture outfit about an hour outside of town.

As you poke around the joint today, you'll notice that the chairs on the deck overlooking the water look a lot like old tractor seats; that's exactly what they are, the handiwork of the town blacksmith. Each indoor table is engraved with the name of the species of tree from which it was made (all local, all sustainably harvested). The entryway is paved with beach stones that Barb collected by hand.

The Angry Trout's metamorphosis from a dockside shack where Barb nuked hot dogs for boaters began in 1993, when George read *The Ecology of Commerce*, whose author, Paul Hawken, argued that businesses face three basic issues: taking (resources), making (goods, services, and money), and wasting (resources and money). Hawken's ideas made sense to George. He gave the book to Barb, and she thought so too.

A few winters ago, during the off-season, George started work on a book of his own. *The Angry Trout Café Notebook*, published in 2004, is a compendium of short profiles of the friends and neighbors who supply the café with products and services, philosophical musings on the culture of sustainability, facts about energy consumption and global warming, and enticing recipes.

"We strive not to be pretentious or elitist," George says. "We aim to provide quality food and service at a reasonable price while taking care of our environment and our community. That's just plain old good business practice." Wise as it may be, George's philosophy isn't necessarily what draws his patrons. On a recent Saturday evening, Doug Larsen, a patron from Minneapolis, was celebrating his birthday at the Angry Trout. The sustainability thing is nice enough, he conceded, but the real reason he comes back is much simpler: the trout chowder.

—Laura Wright

Out There

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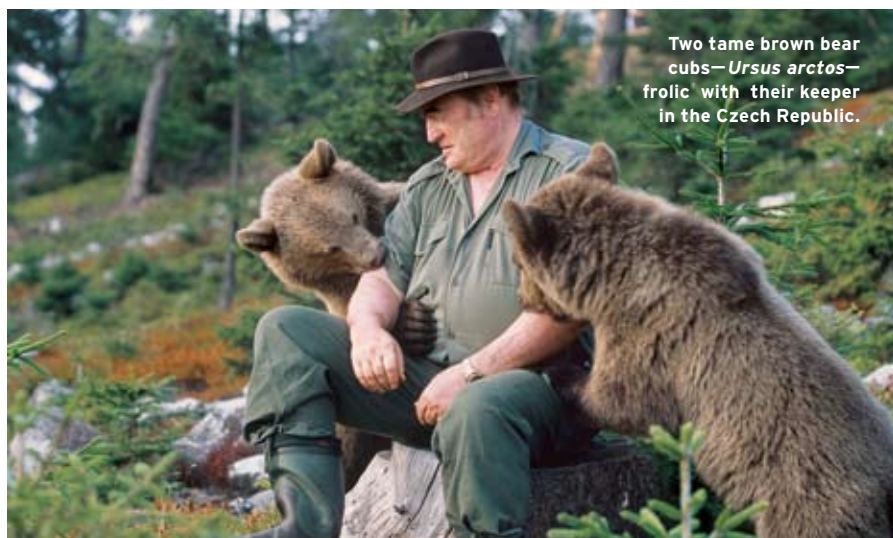
My grandfather rode a camel, my father rode a camel, I drive a Mercedes, my son drives a Land Rover, his son will drive a Land Rover, but his son will ride a camel.

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SHEIKH RASHID BIN SAEED AL MAKTOUM OF DUBAI, BEFORE HIS DEATH IN 1990, ON THE COMING MIDDLE EASTERN OIL CRISIS

Beasts From the East

How the fall of the Berlin Wall helped bring big predators back to Western Europe



Two tame brown bear cubs—*Ursus arctos*—frolic with their keeper in the Czech Republic.

At dawn on June 26, after a month of raiding beehives and killing 35 sheep, the first brown bear to set its paws on German soil in more than 170 years was shot and killed near the Austrian border. The death of Bruno the Bear caused a minor diplomatic scandal, with the government of Italy (where Bruno began his travels) lodging a formal protest at the killing.

After centuries of merciless hunting and destruction of habitat, bears, wolves, lynx, eagles, and moose had all but disappeared from this part of the world. But now they're back, migrating westward from Eastern Europe and the Balkans. Moose from Poland have made it to the gates of Munich. Brown bears from Slovakia and Slovenia have now established a resident population of about 30 animals in Austria. Italy's national parks

are home to more than 100 bears, and roughly the same number live in northern Spain and the Pyrenees. Wolf packs hunt in Italy, Spain, Portugal, and the French Alps—and, since 2002, on a German army firing range. The lynx, virtually extinct in Europe, has re-established itself in the Alps, the Pyrenees, and the Carpathians. Eagles have bounced back, and so have bearded vultures. River otters are advancing west at the rate of six miles each year.

The rewinding of Western Europe is the result of dramatic political and demographic changes. The fall of the Iron Curtain 17 years ago eliminated a major obstacle to their westward trek. Parts of the former no-go area in the heart of Germany, once dotted with landmines, have now been set aside as a "green band" to protect plant and

animal habitat. A shrinking population is steadily abandoning mountainous and wooded areas, and European agricultural policies are turning away from using every acre of land for food production.

Best of all, popular attitudes seem to be shifting. Once upon a time the big bad wolf was a staple of European fairy tales, but today people have an appreciation for the presence of these wild creatures. "We are now learning that red deer, bison, moose, wild horses, wolves, and bears not only are a luxury but play a key role in maintaining natural habitats," says Christoph Heinrich of the German Society for Nature Conservation. And while Bruno's manners may have been inappropriate, thousands mourned his untimely passing. The German chocolate maker Haribo even produced a candy bar in Bruno's honor, with part of the proceeds going to the World Wildlife Fund.

—Bernhard Poetter

LOGGING CREWS IN THE STREETS OF CHICAGO

Chuck Blumenthal, owner of the Chicago furniture company Bean Products, tries to use the most eco-friendly wood he can find. In the past that meant Forest Stewardship Council-certified hardwoods from American forests. But this year he found a better option: He started using only urban timber from the Chicago area. A supplier called Horigan Urban Forest Products collects dead, dying, or storm-damaged trees (or those that are in the way of building projects) and turns them into lumber.

Previously, the oak, elm, maple, walnut, and cherry trees—often larger than those logged from rural areas—would have been ground up for mulch or used as firewood. Now they end up as benches, paneling, flooring, even a bar top in one of the city's most popular nightspots, RiNo. Blumenthal especially likes the tight-grained oak, from trees that are 150 to 250 years old and not available on the regular market. According to the USDA Forest Service, approximately 3.8 billion board feet (or 30 percent of all U.S. hardwood lumber) could be produced from urban tree waste each year.

—Jen Uscher

THE SILK ROAD

California artist Linda Gass finds beauty in unlikely places, hand-painting silk crepe de chine to make exquisite quilts. This one depicts Interstate 5 crossing the California Aqueduct, a man-made river built to irrigate farm fields that were once desert. Gass sees this transformation of the landscape as California's "second mining"—hence the title of this piece, *After the Gold Rush*.

