

»»STRATEGY | CAN DESIGNERS SAVE THE WORLD?

Computer waste will be a thing of the past if ecodesigners have their way.

BY JENN SHREVE

ACCORDING TO environmentalists, it's lurking in every laptop, cell phone, beeper, and PDA. It's integrated into each new digital camera, DVD player, CD burner, Zip drive, and scanner, and built into every faster processor, vibrating battery, emailing BlackBerry, singing iPod, talking Furby, and dancing AIBO to come shooting off the assembly line and into consumers' hearts. It's a pint-size ecological apocalypse that adds up to some-

More likely than not, your gadget will end up in a landfill, its batteries, copper, lead, mercury, halogenated flame-retardants, and water-wasting circuitry left to poison the earth for all eternity. And you, thoughts clearly elsewhere, will replace it with yet another new, exciting electronic toy, thus renewing the destructive cycle.

This is an extremely cynical view of technology, to be sure. Nonetheless, it's

rain and flipper babies leap to mind each time you ogle the latest consumer electronic product. And that's only the beginning.

Sustainable-design advocates believe industrial designers and product engineers also need to assimilate these negative associations through a process known as Life Cycle Assessment (LCA, or ISO 14040, as it's called by the very hard-core). LCA typically uses compara-

good, but it's not as advanced as the European system, because it doesn't add up all of the impacts into a single-figure score. The single-figure score is much easier to understand," says Philip White, who runs Orb, his own environmental design firm in Portland, Oregon, and who chairs the Environmental Responsibility Section of the Industrial Designers Society of America.

The lack of a single-digit rating is not

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for the environment." In other words, environmental impact and product life cycles would sit next to form and function as equal design considerations.

If products were built from benign substances, used processes that cause little harm, mimicked nature in the way they functioned (biomimicry), and were designed to be easily recycled, then we could rely less on consumers to put the Earth's long-term health before

cling, and the *Whole Earth Catalog*. So far, these uprisings have only served to counterbalance the prevailing trends of our time: industry, capitalism, and progress. But real change—altering the way products are designed and produced rather than simply influencing the choices of a few informed consumers—is afoot. Take the field of chemistry.

"Up until the '70s and '80s, chemists were perceived as the designers of new

According to the EPA, 24 million computers were trashed in the U.S. alone in 1999. Currently, much computer waste is shipped to Asia, where governmental controls aren't as strict as in the U.S. Image courtesy: Silicon Valley Toxics Coalition/Campaign for Responsible Technology.



thing horrific. And it's not just waiting to happen. It's happening.

Even before it hits retailers' shelves, your fancy-pants Palm Pilot, multicolored cell phone, or sleek notebook computer may have caused a birth defect in a factory worker's baby, or given some unlucky kid asthma. While you're using it, your high-tech tool is probably consuming more energy than it needs, and, thanks to built-in obsolescence, the thing will break in a year, or seem weak in comparison to the latest gadget on the market. If you're an upstanding citizen, you might do a little research, drive 20 miles to the nearest recycling center, or actually try to fix the damn thing.

an important one to note, because it is becoming more familiar as the dark side of progress rears its ugly head.

"When someone comes out with a new product, like the PDA, your first reaction is, 'wow, that's cool.' You want to get it. Most people don't say, 'there are environmental implications if I buy this,'" says Sophia Wang, who co-founded the Bay Area chapter of O2, an environmental design group.

This devil-may-care attitude is exactly what folks like Wang, an environmental engineer and product designer, want to change. As assuredly as lung cancer is synonymous with cigarettes, so, sustainable-design advocates hope, will acid

tive analyses to measure the impact a product has on the environment and on people at each stage of its life: extraction of raw materials, processing, packaging, transportation, usage, and disposal. In Europe, a different system is used to translate the total environmental impact of a product during its life cycle into a single number called an Eco-Indicator. Sustainable-design advocates say the standard in the U.S., BEES (Building for Environmental and Economic Sustainability), lags behind Europe.

"What's happened in the U.S. is that industry has been very cautious. Government has not been as supportive, in my opinion, as it could be. BEES is

the only hurdle facing U.S. ecodesigners. "The current production models are based on speed and functionality rather than life-cycle concerns. It just hasn't been built into the models themselves," explains Ted Smith, founder of the Silicon Valley Toxics Coalition, one of the first groups that challenged the pollution created by Silicon Valley's high-tech industry. Environmental design (also called design for the environment, green design, sustainable design, and ecodesign, depending on who you talk to) is, in Smith's words, "a completely different view of the future. Rather than just being driven by issues of speed and low cost, we rethink it so we are driven just as much by concern

their own whimsical desires. Businesses wouldn't be forced to follow flimsy regulations anymore because design would make compliance natural and cost-effective. The long wait for government-funded recycling programs and tax breaks for ecofriendly corporations would finally be over. Or so the thinking goes.

It's salvation through process, a macro change with micro impacts. This vision is at once pessimistic and naive, but wouldn't it be great if it really worked?

Environmental design movements have sprung up fairly frequently over the past century. Think Buckminster Fuller, the Arts and Crafts movement, '60s-flavored anticsumerism, recy-

materials and placed among the gods in the pantheon of the science community," recalls Dr. Dennis L. Hjeresen, a senior program manager of environmental management programs at Los Alamos National Laboratory and director of the American Chemical Society's Green Chemistry Institute. Then came the '80s and '90s with their ozone depletion, global warming, acid rain, cancer, and birth defects. "All of these things we thought were viable processes turned out to have consequences," Hjeresen says.

Now, he says, chemists are looking to use their skills to fix and prevent the problems they helped cause, and the

green chemistry movement has risen over the past ten years to support that shift in focus. Sustainable chemistry is being taught in universities, green chemistry conferences are well-attended, and the Environmental Protection Agency hands out annual Presidential Green Chemistry Challenge awards.

Green chemistry isn't the environmental movement's only success. Thanks to the lingering effects of past environ-

starting to take notice of these things as well. Three business basics came together at the same time."

In the ten years since founding its program, HP has done things like make all the screws on its printers the same size to facilitate assembly and disassembly for recycling. It has reduced packaging materials, placed manuals online, and banned certain toxic substances. And HP isn't the only one. Kodak

replace their old TVs with new energy-efficient ones. Laws have been passed in Europe and Japan (leading countries in ecodesign legislation) that ban components like lead in consumer electronics, and environmental designers say it is only a matter of time before the U.S. follows suit.

Still, we have a long way to go. A cursory glance at *Eco-Design: The Sourcebook* by Alastair Fuad-Luke (Chronicle Books, May 2002) reveals that most earth-friendly design products are still boutique items: expensive, fabulously designed, but beyond the aesthetics and price range of the mass-market consumer. Toxic materials are still used in electronics, because they're affordable and legal. Designers working on small budgets and short timelines don't have time to worry about the environment. The technology industry still thrives on the built-in obsolescence model, forcing customers to buy the same thing over and over again.

But ecodesign activists are optimistic, in a pessimistic sort of way. They say widespread adoption of their approach to design is the inevitable outcome of years of bad environmental practices. "The importance of the natural environment will only continue to increase as the number of people on the planet increases," says White. With each new horrible discovery—water pollution, cancer in factory workers, global warming, habitat destruction—comes media attention, activism, and, ultimately, White says, change. |d

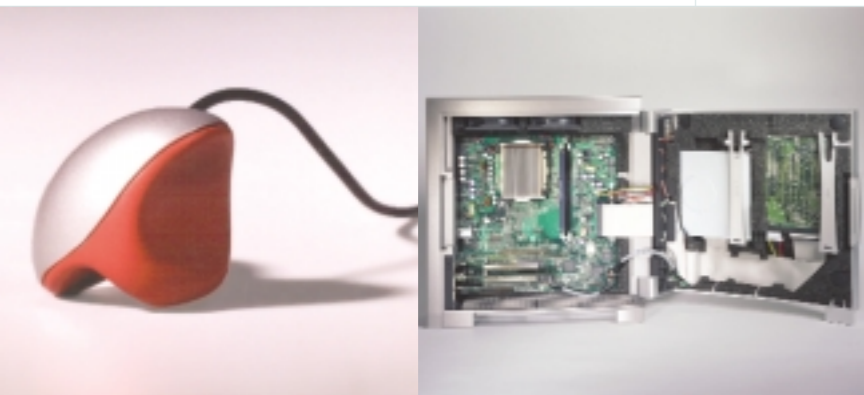
While businesses can ignore a few do-good designers within their ranks, they can't ignore consumer demand. Add government regulations and lawsuits and you're speaking the international language of money.

mental design movements, a large body of consumers are demanding ecofriendly products. While businesses can ignore a few do-good designers within their ranks, they can't ignore consumer demand. Combine that with government regulations and fear of lawsuits, and you're speaking in the international business language of money.

In the early '90s, for example, HP customers "started to show an interest in environmentally designed products," recalls Mark Heinz, head of HP's environmental stewardship program. Not only that, but "regulations started to creep up on these kinds of things—there were actual laws being talked about and enacted. Competitors were

dramatically redesigned its disposable cameras to increase recyclable parts and reduce the materials and energy required to make them. IBM, IDEO, and Apple have all won prestigious Industrial Design Excellence Awards, which weigh environmental issues equally with other design issues.

Industry has embraced ecolabeling systems such as the EPA's Energy Star program and Germany's Blue Angel Mark. International sustainable design organizations, like O2, are thriving. Panasonic won the EPA's Energy Star Partner of the Year Award for four consecutive years and, in a smart (though not totally ecologically sound) marketing twist, encourages customers to



The Cycle Cellular (left) designed for Philips by Orb uses a dynamo to allow bicycling commuters to power their cell phones. Orb's Akeru Server (right) uses poly-propylene foam instead of screws to hold it together. Disassembly takes less than a minute, which adds to the recycling value of the case, components, and foam.

[FYI] www.orb-design.com; www.epa.gov; www.svtc.org; www.O2.org