

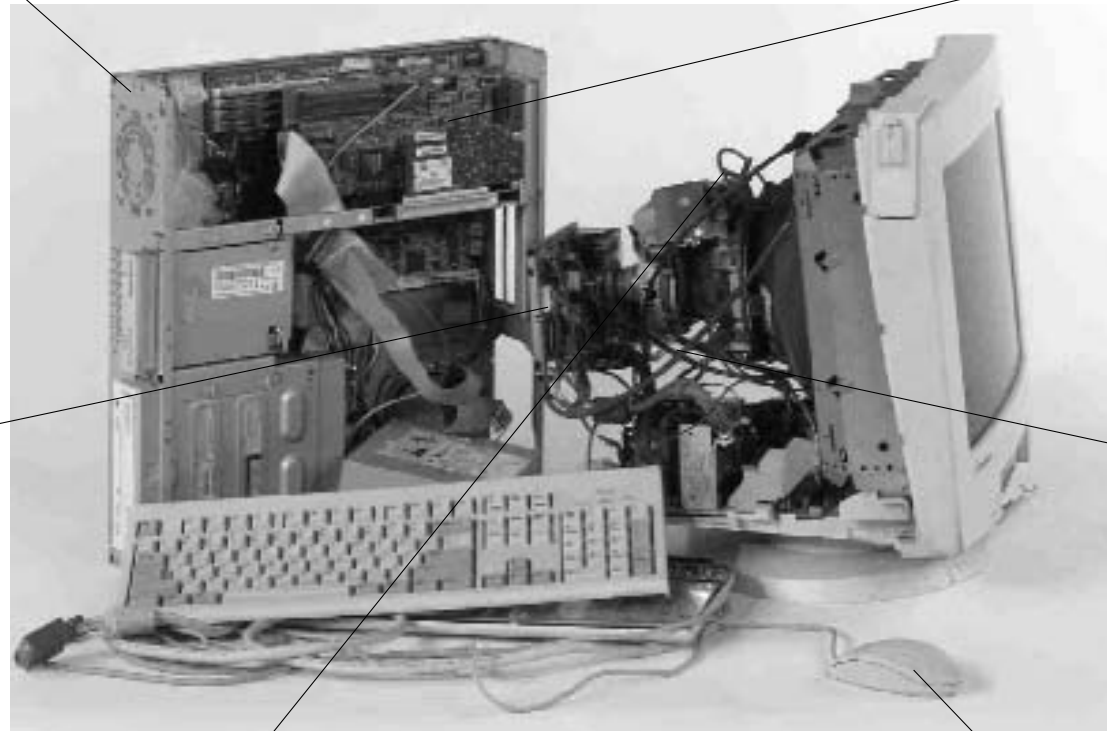
THE TRASH FOLDER

As waste, our computers are not so easily erased, by Matthew Power

Digital information, that ethereal commodity upon which our civilization now subsists, is borne by very real, very mortal vessels. Due to our hunger for increased processing speeds and ever more stunning graphics, the working life of a computer is now roughly two years; by 2006, it is estimated that some 163,240 computers, weighing 3,513 tons, will become obsolete in America every day. A U.S. household on average has two, possibly three, of these once-valuable machines collecting dust in an attic, basement, or garage, and to free up closet space we increasingly turn to the computer “recycling” industry: a Carnegie Mellon study found that in 2002, 12.8 million computers were turned in for recycling, and this number is projected to grow at 18 percent per year. What few Americans know, however, is that many of their “recycled” computers will themselves travel the world as widely as the Web, but with far more corporeal consequences.

The half-billion computers rolling toward obsolescence in America contain 6.3 billion pounds of plastics, 1.6 billion pounds of lead, and 630,000 pounds of mercury, along with cadmium, barium, arsenic, and a periodic table of other hazardous elements. This monitor, for example, is likely to contain four pounds of lead. The U.S. imposes no export controls on e-waste and is, moreover, the only developed country to have refused to sign the Basel Convention, which was designed to prevent the export of toxic wastes from rich to poor countries. According to industry sources contacted by the Basel Action Network (BAN), an environmental nonprofit, an estimated 80 percent of computers turned in for recycling are quietly parceled off to e-waste “brokers,” who in turn ship them to any of a number of developing-world dumping grounds: Chennai, India; Karachi, Pakistan; or Guiyu, China, a former rice-farming village east of Hong Kong, where 100,000 migrant gleaners wring every last yuan from yesterday’s hot desktops.

Perhaps the most carefully designed objects in our culture, computers have never been built with ease of dismantling in mind. This copper yoke on a cathode-ray tube (CRT) monitor is worth about 80 cents—more than half a day’s pay to a gleaner in Guiyu, whose job it is to break off the yoke with a hammer. The rest of the monitor’s leaded glass is smashed and dumped in drainage canals running through town. Independent tests by investigators from BAN and Greenpeace found levels of lead in Guiyu’s river that were 190 times the safe limit for drinking water. Chinese media have reported elevated levels of tuberculosis, birth defects, and respiratory problems there. CRTs are among the most dangerous components of e-waste, and their replacement by mercury-laden flat-panel displays now promises to dump millions more tons of toxins into the environment.



This circuit board will undergo an almost alchemical process to harvest the \$2 worth of precious metals therein. In one method, the board is immersed in molten lead-tin solder that has been heated in a wok, over an open coal fire, by a worker with no protective clothing or ventilator. The silicon chips are then plucked out with pliers and smothered with *aqua regia*, a mixture of hydrochloric and nitric acids. Trace amounts of gold dissolve into the solution, after which they are precipitated out and purified via a primitive smelting process. The acidic sludge is then dumped; one test at a site in Guiyu found a soil pH of 0. Guiyu is so awash in pollutants that for seven years the government has had to truck in drinking water. The town’s heaps of computers come from some familiar sources: BAN investigators found labels on computers from the Kentucky Department of Education, Xerox Corporation, and the Defense Intelligence Agency.

PVC-sheathed wires such as these are collected and burned in open ditches on the edges of Guiyu, after which the 9 cents’ worth of copper in each is collected and sold. In the process, the burning plastic releases dioxins and furans, two of the world’s most carcinogenic substances, into the air. Most of the burning is done at night, as the Chinese government banned import of e-waste in 2000. This has not dented the practice, though. Customs inspectors are well-lubricated by e-waste brokers, who themselves are amply compensated at both ends: they are paid in America to “recycle” the computers—\$10 to \$30 per machine, on average—and also sell them upon reaching China. As one broker told the *Washington Post* last year, “I could care less where they go. My job is to make money.” The workers of Guiyu, meanwhile, are given an untenable choice between poverty and poison.

Buried under glittering mountains of digital junk, Guiyu is like a post-industrial Norman Rockwell painting in which children, after sorting shredded plastics by color for reprocessing, merrily drag computer mice behind them as toys. In Guiyu, and across the developing world, where e-waste recycling has become the twenty-first century’s rag-and-bone trade, the clicks of these mice in far-off cubicles remain unimagined—just as the sufferings of Guiyu’s gleaners remain unknown to the Americans whose electronic detritus they scavenge. For now, at least, the physical side-effects of our wired existence can be shipped off to the poorer corners of the world. Like so many of the other inconveniences of our techno-fantasia, the environmental ravages of information technology have been cost-effectively outsourced.

Matthew Power’s last article for Harper’s Magazine, “The Poison Stream,” appeared in the August 2004 issue.