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## Overwhelmed by Tech

*Gadgets were supposed to make life simple. But some just make people crazy*

**By James Lardner, David LaGesse, and Janet Rae-Dupree**

He was America's master gadgeteer. Al Gross inspired Dick Tracy's famous two-way wrist radio, he invented the walkie-talkie (because he "wanted to walk around and talk to other hams"), and he held patents on plenty of other wireless wonders. To many, Gross was better known as Phineas Thaddeus Veeblefetzer, the preposterous handle he invented for himself. However he's remembered, by the time Gross passed away last month, the sense of simple fun he had infused in nearly all his gizmos was entirely lacking from the endless numbers of personal organizers, portable phones, and multiple-function whatsits no self-respecting millennialist can afford to be without.

But wait! Call it Veeblefetzer's revenge, but this year's bumper crop of just-in-time-for-Christmas gizmos is gathering dust on store shelves. Sure, people continue to plunk down money for the things, but not as eagerly as they were six months or a year ago. So with the technology industry enduring its first bear market since gadgets became the hot new thing, many companies are scrambling to find out why consumers aren't falling in love with the latest stuff. The answer? Most folks are still trying to figure out how to work the devices they already have. Americans have poured billions into electronic equipment. That orgy of spending has brought—along with the prospect of semi-godlike powers—paroxysms of befuddlement, self-doubt, and anger. The complexities of the personal computer are a well-documented topic of complaint. (Dissertations have been written.) But now a host of smaller devices—pagers, cellphones, digital cameras, and fancy remote controls—are coming into their own as fiendish new instruments of mental torture.

It wasn't supposed to be this way, but the evidence of consumer angst has been piling up. According to a recent study by the market-research firm Gartner Group, 43 percent of the time Americans spend with electronic appliances when they first get them is devoted to fiddling or figuring out how they work; even then, hardly anyone figures out *all* the functions. "Most people use about 35 percent of the capacity of any one technology they get their hands on," says Michelle Weil, a psychologist and product-design consultant, "and then they stop."

No wonder. Computers promised to save us time. But what technology giveth, it also taketh away. Lydia Ferrante-Roseberry's Sony laptop has been plagued with problems since she bought it a year ago. "Sometimes it won't shut down fully or start up fully, and sometimes it just freezes in between things," says the 35-year-old minister at the Eden United Church of Christ in Hayward, Calif. The laptop has even, God forbid, caused Ferrante-Roseberry to lose a few sermons. But she endures her machine's quirks, she says: better that than a two-hour call to tech support.

Why can't all those savvy Silicon Valley engineers design phones and computers that are easier to use? Actually, they can—witness the runaway success of the Palm personal planner, hailed for its straightforward and intuitive design. When Jeff Hawkins conceived the original, he carved the prototype out of a small hunk of wood. But even pros like Hawkins, who knows the difference between a USB and an RS-232C, can be tripped up. "I went out to buy a middle-of-the-line Sony TV. I figured I'd also get a Sony VCR and a Sony camcorder, and they would all talk to each other," he says. "What a disaster it's been. The control on this TV has 25 input modes, and I can't figure it out. Sometimes, I can't even get the stations. My wife yells at me. 'Why don't you fix this?' Hey, I didn't design it."

Hawkins is perhaps Silicon Valley's leading apostle of simplicity and elegance. But he hasn't exactly picked up lots of disciples over the years. The high-tech industry as a whole has a bad

case of what design critic Donald Norman calls "feature-itis." Which means? Products are "engineered by engineers for the sake of engineering," he says, "as opposed to for the sake of the person at the end."

**Simple sells.** The message, slowly, is being heard. The legions who simply can't fathom why it takes four remote controls to operate a single television are finally making themselves heard—loud and clear. And an industry that has historically equated complicated with cool is starting to change. A few companies, tuned in to the waves of consumers tuning out, are beginning to rethink things. Simple, they believe, may now be the ticket that sells. "Consumers are starting to revolt against the complexity of these everyday items," says Norman. "They're fed up."

The revolt is being felt at the cash register, which cast a pall on this week's Consumer Electronics Show, the huge annual gathering in Las Vegas where more than 1,800 vendors display their latest goodies. Sales are anything but brisk, compounding the disappointment of a sluggish holiday season. Analysts blame this on a slowing economy, but some say that's not the only culprit. "I probably use 10 percent of the capacity on my computer," says Andrew Paton, a 43-year-old lawyer shopping at Manhattan's upscale Sony Style store last week. "You buy one, and six months and \$2,000 later, it's out of date. I think it's a con." This year, Paton is just browsing, and he's not alone.

The slump in sales is driving the point about simplicity home to a growing number of manufacturers. "Simple sets you free," says 3Com in an ad for computer-networking products. It's part of a \$100 million campaign to convince the beleaguered that the company understands people's pain. In that spirit, the company now is promoting its new Internet appliance, fetchingly named Audrey, that lets owners surf the Web or check E-mail. The device, says Don Fotsch, general manager of 3Com's Internet appliance division, is designed to let users "spend less time with technology and more time doing the things they really want to do."

That same spirit may finally be infecting the PC marketplace. Gateway is pushing an initiative to "improve people's relationship with technology." As part of the plan, the company is offering an array of classes and workshops at Office Max outlets and the company's own "Gateway Country" stores. Consumers need help, says Gateway CEO Jeff Weitzen, and the computer industry had better provide it.

The stakes are high. Consumer interest in digital photography and downloadable music has created the potential, Weitzen says, for a "big wave of penetration" by computer makers into untapped segments of the marketplace. But that won't happen, he warns, if consumers remain turned off. If the industry won't help, "people will start saying, 'Well, thank you very much for your latest gizmo, but we still haven't figured out the last one.'"

**Easy is hard.** Getting from here to there won't be easy, though. It takes enormous computer power and programming know-how to make something complicated look simple. Clifford Nass, a Stanford University communications professor, studies how people interact with computers. "Easy to use is hard to do," he says, describing the challenge of building simpler devices. Donna Dubinsky is the CEO of Handspring and, with Hawkins, helped make the original PalmPilot a success. At Handspring, as at Palm, Dubinsky says, consumers are videotaped and studied as they interact with prototype models. After studying the tapes, designers refine the devices accordingly. But that kind of patience is unusual, says Alan Cooper, an industry gadfly and the author of *The Inmates Are Running the Asylum: Why High-Tech Products Drive Us Crazy and How to Restore the Sanity*. Usability generally gets short shrift, Cooper says, because manufacturers are driven to bring more products to market faster with more features than the competition. In the typical product launch, says Cooper, a former programmer, the design role ends up being ceded to software engineers, whose thought patterns tend to be "more sympathetic to silicon than to humans."

The transition from complex to simple, if it's really going to happen, could come in a number of ways. One promising solution is the "usability labs" now the rage at some tech companies. Others look to boutique design firms to lead the way. Still others say it could be the big guys. Microsoft has been considered one of the worst offenders in "feature creep," but Chairman Bill Gates is

now preaching the simplicity gospel with the fervor of a convert. Simplicity, Gates says, is crucial to Microsoft's continued growth. Microsoft now includes "usability engineers" in each group developing major products, and consumers are testing new versions in labs before they are finished and shipped. Developers and usability experts watch through a one-way mirror as consumers struggle with products. Tapes of consumers wrestling with software glitches are shown in company cafeterias to humble cocky developers. But old habits die hard. Says John Pruitt, a Microsoft usability engineer: "Everybody's fighting for their own pet feature."

**Holy Grail.** The Internet also is forcing simplicity on the tech world. Unlike software, Web sites are prominently reviewed for ease of use. That's because consumers have little invested in visiting a new site. If they find it hard to use, they just switch to one that offers similar information or services. The same will happen for software, which Microsoft and other companies plan to deliver over the Internet as a "service," rather than boxing disks and sending them to store shelves. That's a key component of Microsoft's .NET initiative, in which Gates has said the company will integrate all its products with the Internet. An early example is MSN Explorer, a Web program launched in October that can be updated through the Internet without the consumer even knowing. "This is the Holy Grail for us," says Hillel Cooperman, a manager of MSN Explorer's development. "You can't write a perfect piece of software and ship it—it's impossible."

So what makes for good design? The electronics industry could take a lesson from automakers. Cars once were hard to use, notes usability expert Norman. Cranks and manual chokes were needed just to get the car rolling. It took about 30 years before a simple turn of the key started the engine. The computer has been around for more than 50 years; no doubt desktops are easier to run than early punch-card models, but nobody thinks they are simple to use. The solution, says Ben Shneiderman, founding director of the Human-Computer Interaction Lab at the University of Maryland, is not to eliminate functions but to hide them. Automobiles do this, he says, by putting the engine under the hood and letting everyone but people willing to get their hands dirty operate the car from the driver's seat.

Think of the Palm, then, as a computer that doesn't need to be cranked to fire up. Unlike a desktop computer, Hawkins's hand-held doesn't take time to boot up. "No one has given them enough credit for the fact that the sucker just turns on," Stanford's Nass says. "The 'instant on' is a huge, huge, huge psychological benefit." Designers are also finding ways to hide gee-whiz features wanted by a few tech aficionados while presenting major features for everyone else on a device's front panel or a program's main menu. Well-designed digital cameras, for example, hide extra ports for connecting gear behind flaps and doors. "Designers usually want everyone to notice the cool stuff," Nass says, "but the real genius is to hide things elegantly."

Ironically, technology may help make *itself* more simple. Continuing leaps in processing power and computer storage promise more horsepower to make complex products easier to use. Andy Hertzfeld, who helped design the original Macintosh in the early 1980s, recalls that early hard drives that held all of 5 megabytes and were the size of small refrigerators made it possible to produce the Mac's groundbreaking graphic interface. Two megabytes now fit in a remote control produced by Philips Consumer Electronics, whose Pronto model combines the dozen remotes that can come with a sophisticated home theater system. The Pronto doesn't come cheap, at \$400. But, as with all technology, the price is bound to drop, probably sooner than later.

Likewise, personal computers are getting powerful enough to allow them to understand voice commands, hand gestures, and other cues. Accelerating that revolution is the goal of the Massachusetts Institute of Technology's "Project Oxygen," a \$50 million effort funded by government and industry that aims to make computing as effortless as breathing. "We've been forced to operate the way computers do, rather than the other way around," says Michael Dertouzos, director of MIT's Lab for Computer Science. In a new book, *The Unfinished Revolution*, Dertouzos describes prototypes of simpler products that could be adopted and produced by industry. Start-up companies, less burdened by the profit expectations of companies with existing product lines, could be crucial.

Big companies like Microsoft and Gateway are understandably loath to abandon products used by more than 100 million people. "Such an abrupt turnabout," Dertouzos says, "could be suicide

for them." He and other analysts think it will take five years for most of the big high-tech players to adopt more intuitive designs.

Maybe, but everything still hangs on the consumer. No matter how well designed the personal planner or cellphone, most people still need to read the manual. The original Palm has changed little since it was created to do a few things—organize addresses, a task list, and appointments. But not even Palm can promise an effortless transition to its hand-held for newcomers. "You want technology to be as intuitive as possible," says Michael Mace, Palm's chief competitive officer. "But there are still times when you need to learn about a new technology."

**Death spiral.** That's true for most of today's digital tools. Many users complain, for example, of being overwhelmed by E-mail, but they won't devote an hour or two to learn how the software can filter messages and automatically route them to different folders, or even to the trash. Voice mail has similar shortcuts. But few take the time to learn how to skip past a long, unimportant message or save important ones. Consumers also should accept that absent a friendly neighbor or relative who's a tech geek, they'll need to buy training and support for today's complicated gadgets. There's a reason companies budget big sums to maintain their computers: Systems crash.

Still, people want the cool stuff. Call it the "consumer-driven death spiral," says author Alan Cooper. "You interview a thousand people, and each one says, 'I want these 10 general features plus this specific feature,' " says Cooper. "So you build a device with 1,010 features. But no one wants 1,010 features."

Actually, some people do. Downstairs in the Home Entertainment Lounge at Sony Style last week, Walter Mihatov, a 37-year-old network administrator for a bank, was shopping for a big-screen TV. But which one? On the one side is the wide-screen flat television, "the future," he calls it. On the other is the 4-by-3-foot screen, which is "more conventional." At about \$2,000, the 4 x 3 is half the price of wide-screen technology. But in about five years, Mihatov confesses, he would have to convert to wide screen anyway, because digital will be the rage.