

Zen and the art of appliances

Computing's future lies in smart devices—and with the Japanese. BY MARK WILLIAMS

The Invisible Computer
By Donald A. Norman
340 pages, \$25
MIT Press

We Were Burning: Japanese Entrepreneurs and the Forging of the Electronic Age
By Bob Johnstone
320 pages, \$27.50
Basic Books

BETWEEN THE hammer of increasingly unwieldy software and the anvil of ever-more-powerful chips, the Wintel duopoly has forged the experience of the personal-computer user. Donald A. Norman, the author of *The Invisible Computer*, recalls hearing Nathan Myhrvold, Microsoft's chief technology officer, breezily explain "Nathan's First Law": "Software is a gas, it expands to fill its container...we build bigger, fancier software that requires you to get a bigger and faster computer, so we can use up all that space too."

If the experience of today's PC user can be compared fairly to being held in Wintel's tongs and beaten, then it's not surprising that the 60 percent of Americans who don't own PCs have not sought this experience. And most of us who are properly grateful for our computers' word processing, spreadsheet, and Internet capabilities see few reasons to upgrade to bigger, faster bells and whistles.

So what's the computer industry to do? Just what Mr. Norman says in *The Invisible Computer*: think in terms of developing information appliances that suit people's needs and don't require manuals. Concentrate on products that will become part of a vast, semi-invisible network of ubiquitous computing.

A COMMONNESS MANIFESTO

Mr. Norman advocates little that's different from what you've read in the *Herring* or, probably, what you believe yourself. Most of us agree now that smart consumer appliances are the near future. Still, Mr. Norman is a knowledgeable student of both the history of technology and human psychology—he spent 27 years with the University of California at San Diego's psychology department and has worked at both Apple and Hewlett-Packard—and usefully addresses how

companies from Edison onward can talk the talk yet miss the point entirely.

He describes, for example, how the product development process necessitates design trade-offs among engineers, marketers, and usability experts, who champion conflicting ap-

proaches that are each valid in terms of their departmental responsibilities. In high tech, he says, this has translated

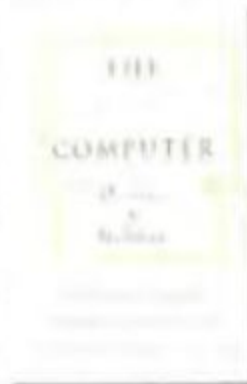
thus: engineers aim for continual improvements in power and increased features at decreased cost; marketers interrogate existing customers, who are usually technology-driven early adopters, and then pressure engineers to add features that these customers say they want, frequently without regard for the product's coherence—the usability experts' concern.

But when technologies mature, the game changes. Customers enter the marketplace indifferent to technological glamour; they want reliability, simplicity, and low costs. And successful companies fall victim to inertia when confronting new technologies that are rough compared with their existing products. Spending money on refining established products invariably makes better short-term sense.

Mr. Norman has diagnosed industrywide symptoms. We've all heard software vendors complaining that if they develop an application worth more than \$50 million, Microsoft will either acquire them or beat them up in the marketplace—and that anything less than \$50 million just isn't worth the effort.

Meanwhile, anybody who's tried downloading a Netscape product through Internet Explorer knows how routinely the world's biggest software company abuses its users. Obviously, both of these factions—those uninterested in applications worth less than \$50 million and Microsoft, with its Soviet-like disregard for users—exhibit assumptions about profit making that'll play badly in the consumer-appliances market.

Not only will smart consumer appliances lack the high profit margins



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that, say, Intel is used to, but brutal competition in various market niches will lower profits further. And companies won't be able to peddle endless upgrades to their existing customers; instead, smart appliances will need to last for years without maintenance.

NATION AFIRE

Yet appliance markets can be huge. If we're going to talk about electronic appliances, of course, we should consider the Japanese, who used them to move their resource-poor island nation from war-devastated postfeudalism to status as the world's second-largest economy. To do so, we need to rethink our idea of Japan, for a second time. Just as ten years ago Americans worried that the Japanese would own the 21st century (remember Michael Crichton's *Rising Sun*?), today we've written them off as a moribund society in economic freefall. But in *We Were Burning*, Bob Johnstone writes that al-

though "our stereotypical picture of the Japanese...exactly alike in their dark blue suits and gold-rimmed glasses" doesn't square with images of "brave risk takers, betting their companies on some new and unproven technology," the record shows that this is what they have repeatedly done.

To name but a few of Japan's consumer-technology breakthroughs: In 1964 Sasaki "Doctor Rocket" Tadashi developed the first transistor-diode calculators, putting the first solar cells and liquid-crystal displays into them for Sharp. Seiko Epson's Nakamura Tsuneya applied microprocessor technology to watches, then produced color LCD screens for TVs and laptops. Yamaha's Kawakami Gen'ichi and Mochida Yasunori introduced digital synthesizers to musicians everywhere.

Mr. Johnstone takes the title of his book from one researcher who, recalling the days when Japan began to rebuild after World War II and the

Japanese encountered transistor technology, explains: "We were afire, totally afire and we poured ourselves into our work." Despite our present near-sighted image of Japan as a permanently impaired force, that entrepreneurial fire hasn't abated.

Sanyo is planning to mass-produce photovoltaic cells for solar-generated power to run ordinary households, with excess electricity sold to local power companies. The company envisions a global network linked by superconducting cables; 800 square kilometers of such cells could meet the world's energy demands. Companies like Matsushita and Stanley are gearing up in LEDs, which will eventually replace all the planet's lightbulbs.

Such are the formidable competitors that U.S. companies will face in the smart-appliances market. ●

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