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Some Xbox Fans Microsoft Didn't Aim For

By SETH SCHIESEL

AFTER a 31-year-old Manhattan financial executive received Microsoft's Xbox video game system as a gift in January, he walked to a store and bought a half-dozen game titles. The video game industry would have been pleased to hear it.

After he played those games a few times against computer-controlled opponents, he got a bit bored and signed up for Microsoft's Xbox Live service, which enabled him to play against other people online. The video game industry, again, would have been pleased.

After a few months on the Xbox Live network, in May, he got a bit bored again. This time, however, he opened his Xbox and soldered in a chip that allowed him to change the console's basic computer code and bypass its internal security technology. After installing a new hard drive, he transferred about 3,000 MP3 music files to the system and downloaded illegal copies of 3,500 old-time arcade games. Then he installed the Linux operating system, which allowed him to use the box essentially as a personal computer.

Needless to say, the video game industry would not have been pleased.

When Microsoft released the Xbox in November 2001, it was heralded as far more than a game machine. Even as the Xbox took aim at Sony's PlayStation 2 game empire, the console was meant to lead Microsoft's broader invasion of the living room. Incorporating a hard drive, which made it more readily adaptable than other consoles, the Xbox had the potential to be a digital-entertainment nerve center.

Bill Gates, Microsoft's chairman, said at the time, "We're going to put new software that runs on Xbox that, both in the gaming dimension and other dimensions, will amaze people with the power that's in this box."

That is happening, but not necessarily as Microsoft planned. All sorts of new software is indeed running on Xbox consoles these days, and they are in fact becoming home-entertainment hubs, but it is not Microsoft doing the amazing.

Rather, an online confederacy apparently numbering in the thousands - including accomplished hackers of varied motives and everyday technophiles like the Manhattan financial executive (who shared his experience on the condition of anonymity) - is taking the lead. Those involved often call their efforts "unleashing" or "unshackling" - freeing the Xbox to express its inner PC. Technology industry executives, however, often call such activity a bald attempt to hijack the Xbox illegally.

It is a battle that involves many of the ethical and legal issues facing the technology and media industries at this digital moment. What rights do consumers have to tinker with products they own? How far should companies go to protect their intellectual property? What happens when the desires of consumers conflict with the business models of companies they patronize? Who gets to decide just what a particular product may be used for?

The Xbox is a particularly attractive target for hackers because while it is essentially a standard PC modified to do only a few things, like play Xbox games, it is much cheaper than a PC. It is like an economy car modified to follow only a few roads - but one potentially as powerful as a far more expensive model.

In the Xbox, that power comes in the form of a 733-megahertz Intel processor, comparable to a midrange personal computer, and sophisticated graphics and audio systems. Its limited operating system, based on a version of Windows, can be used by a programmer to run simple software like a music player - or the machine can run a new operating system...
altogether, namely Linux. "The reality is that if you could bypass Microsoft's operating system you would end up with a fairly powerful computer for less than $200," the Manhattan financial executive said.

In fact, Microsoft lowered the price for Xbox to $179.99 in May. In a sense, Xbox hackers are exploiting Microsoft's business model, which is to sell Xbox hardware at a loss (to build penetration of the system) and make the money back on royalties from the sale of Xbox software. A PC manufacturer like Dell, meanwhile, has to recoup its costs and generate a profit from the initial sale.

So someone who buys the Xbox hardware, modifies it into a general-purpose computer and does not buy Xbox games potentially undermines not only Microsoft but also the personal computer industry. But that is not how some Xbox hackers think about it.

"Especially in Europe, computers are more expensive than they are here, and the Xbox is the cheapest computer you can get," Andrew Huang, author of a new book called "Hacking the Xbox: An Introduction to Reverse Engineering," said in a telephone interview. "Basically," he added by e-mail, "once you have Linux, you have everything."

It is unclear just how many Xbox hackers there are. Officials of the Interactive Digital Software Association, a trade group of video game publishers, said that Xbox hacking appeared more prevalent in parts of Asia than in North America. Michael Steil, a 24-year-old German who is project leader of a group that calls itself the Xbox Linux Project, said by e-mail that a full version of Linux software for the Xbox had been downloaded more than 220,000 times.

Whatever the numbers, Microsoft does not appear eager to discuss Xbox hacking. In recent weeks, a Microsoft public relations representative repeatedly declined to make any company executives available to discuss the matter. Instead, the company issued a statement through a public relations firm that said in part: "Microsoft is a company passionate about innovation and creativity. We are also very committed to respect for others' intellectual property and we request the same respect applied to our innovations."

The statement made no reference to the potential use of hacked Xbox consoles as personal computers, saying Microsoft's "primary concern" was with the sale of modified chips for the boxes "that enable game counterfeiting." And that is the area that most clearly raises legal issues.

Although there are several methods, hacking an Xbox typically involves obtaining a special chip called a modchip, available on the Internet, and soldering it into the machine. (For those who find the process daunting, there are also vendors on the Internet who sell "pre-modded" Xbox units.)

Modchips, of which there are several varieties, allow users to load new versions of the basic computer code, known as the BIOS, that tells the machine how to operate. A hacked BIOS generally incorporates modified versions of copyrighted Microsoft code and so is generally illegal. The main Web sites that deal with Xbox hacking do not include links to hacked BIOS, and hackers generally find their forbidden fruit in Internet chat rooms.

Once the modchip is installed and the BIOS modified, the console can do a number of things it cannot do "out of the box." Xbox games normally must be run from an optical disk, and a hacked Xbox can "back up" a game to the unit's hard drive and run the game without the disk. This technique could be used simply to avoid having to insert and remove disks - or it could be used for piracy (say, by renting a game, putting the software on the hard drive and returning the game).

Until passage of the Digital Millennium Copyright Act in 1998, the mere sale of a modified chip would not have appeared illegal. That law, however, prohibits the sale of devices that are primarily meant to circumvent copyright protection.

Companies and technologists will fight over the exact legal meaning of those provisions for years. For now, however, the software industry is relying on them.

"Our view over all on modchips is that they are illegal infringing devices, that where we find people engaged in the widespread manufacturing and distribution of them, we and our members, individually and collectively, are committed to doing what we can to shut down their manufacturing and go after the distributors," said Doug Lowenstein, president of the Interactive Digital Software Association.
Some advocates, however, say that while software piracy is illegal and morally offensive, the mere act of modifying hardware should not be illegal. "The most important dimension of this debate from our view is that people should have the right to tinker with the stuff that they own," said Fred von Lohmann, senior staff attorney at the Electronic Frontier Foundation, a civil-liberties group in San Francisco.

"Others will say that this is about piracy and all that, but they forget that the principle of tinkering with the stuff that you own was the principle on which the entire personal computer industry was founded," he added. "This is basic business and basic science in the technology world and we think that this right to tinker, this freedom to tinker, remains legally protected."

For now, however, the federal government seems to agree with Mr. Lowenstein. Last December, David M. Rocci, a 22-year-old from Blacksburg, Va., pleaded guilty to a federal charge of conspiring to import, market and sell modchips for the Xbox. In April, he was sentenced to five months in prison and five months of home detention.

Simply from the standpoint of accessibility, the PlayStation 2 would seem to be a more likely candidate for hacking. IDG, the technology research firm, estimates that at the end of last year, 38.1 million PlayStation 2 units were in use in Europe, North America and Japan combined, compared with 6.7 million Xbox units in those regions.

In one sense, however, the hacking scene for PlayStation 2 is less developed than the one for Xbox because there is less appetite for it. Sony sells an official conversion kit for the PlayStation 2 that includes a hard drive and allows that system to run the Linux operating system, which in turn allows the system to run MP3's, movies, spreadsheets or any other program or data that works under Linux. It is relatively easy for Sony to embrace Linux because Sony, unlike Microsoft, is not in the operating system business.

The PlayStation 2 hacking community seems focused on developing chips that allow PlayStation 2 units to run illegal copies of games and games meant for far-flung parts of the world. (For marketing reasons, many PlayStation 2 games include regional coding, much as DVD's do.) In 2001, Sony sued an Australian for selling modchips that allowed Australian PlayStation 2 units to play games from other parts of the world. After the Australian government argued on the man's behalf, however, the Federal Court of Australia last July ruled mostly against Sony.

Mr. von Lohmann said that Microsoft had not been particularly aggressive in combating Xbox hackers but that Sony had actively fought them. A Sony spokeswoman did not respond this week to requests for comment about the company's approach to hackers.

For its part, Microsoft, through its public relations agency, indicated that it believed Xbox hackers were a relatively small band. "Aside from a set of hobbyists," it said, "the vast majority of Xbox owners are not focused on this niche."

But those who are appear quite focused indeed. By e-mail, Mr. Steil, the German leader of the Xbox Linux project, declared: "In very simple words: The Xbox is cheaper than a PC. The Xbox is a lot smaller than a PC. The Xbox looks better (next to a TV set). The Xbox is more silent. Therefore it's an ideal Linux computer in the living room."

That was probably not the vision Mr. Gates had in mind.