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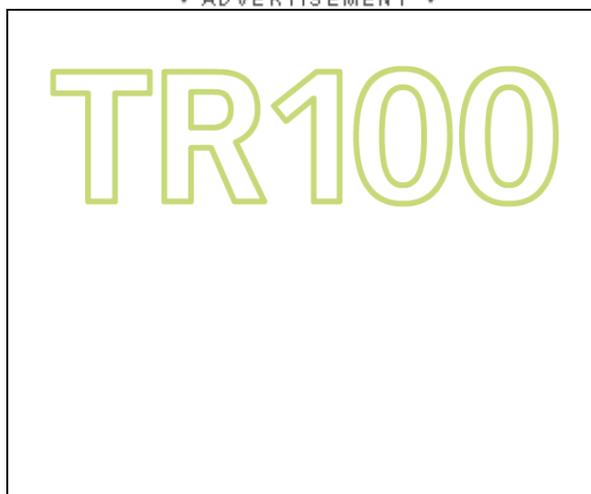
Losing Control of Your TV

The latest anti-piracy move will prevent you from making high-quality copies of broadcast TV programs. And the new "broadcast flag" technology enables all manner of other restrictions.

By Simson Garfinkel
[The Net Effect](#)
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In the future, the Motion Picture Association of America will control your television set. Every TV sold in the United States will come equipped with an electronic circuit that will search incoming TV programs for a tiny electronic "flag." The MPAA's members will control this flag, putting it into broadcast movies and television shows as they see fit. If the flag is present, your TV will go into a special high-security mode and lock down its high-quality digital outputs. If you want to record a flagged program, you'll have to do so on analog tape or on a special low-resolution DVD. Any recording will be limited to analog-quality sound. This security measure is not designed to protect the television from viruses or computer hackers—it's designed to protect TV programs *from you*.

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This future arrives on July 1, 2005.

Legally known as the Advanced Television Systems Committee Flag, but better known as the broadcast flag, this little bit of Machiavellian technology was folded into the Federal Communications Commission's rulebooks last November. Reaction since then has been mixed. Most journalists writing about the flag have said that it won't affect most consumers—unless they try to record high-quality digital video in their living room and play it back in their bedroom. The Center for Democracy and Technology called the FCC's ruling a historic compromise that will preserve many consumer rights while preventing rampant video piracy as television goes digital, but CDT also notes that the FCC's whole process for approving the broadcast flag sets a dangerous precedent that could easily turn against consumers. Indeed, many technologists that I've spoken with believe that the broadcast flag introduces dangerous Trojan Horse technology—a technology that could be rejiggered with even stronger anti-consumer provisions as time goes on. "Any broadcaster who uses it should lose their license because it is a misuse

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of the public's trust," says Andrew Lippman, a senior research scientist at the MIT Media Lab.

In fact, all of these things are true.

To understand why the MPAA lobbied so hard for the broadcast flag, you need look no further than the world of recorded music. Twenty years ago the music industry started putting pop tunes on optical compact discs. The music was completely unprotected—meaning that there was nothing to prevent it from being copied—but at the time nobody really cared. Each CD stored far more information than did many mainframe computers of the era. So even though the data was there for the taking, if you took it, there was no place that you could put it.

I bought both an Apple Macintosh computer and a Sony portable CD player in the spring of 1984. The digital music on my *Dark Side of the Moon* album took up nearly 600 megabytes of space; the Mac had on its floppy disk a mere 400 kilobytes of storage. There was no way that I could rip that music!

Three things changed this balance. The first was the relentless march of technology. By 1988, my desktop computer had a hard disk that stored 20 megabytes; in 1992 I bought a drive that could store a full gigabyte—big enough to hold the contents of a CD. The second factor was a real scientific breakthrough: the MP3 sound compression technique, which let me squeeze that Pink Floyd classic down to 50 megabytes. The third factor, of course, was the widespread deployment of broadband Internet connections, which made it possible for me to share those 50 megabytes with 10,000 of my closest friends.

Not that I would ever do such a thing, of course.

That's all history, and for much of the past five years the Recording Industry Association of America has been trying to put the technological genie back in the bottle. They shut down the original Napster, they recently raided the offices of Kazaa in Sidney, Australia and they've started filing lawsuits against small-time users of file-sharing software. It's a messy and expensive business, but the RIAA doesn't see any other choice.

The MPAA would like to avoid repeating the RIAA's contentious experience with digital media. But the MPAA's first attempt didn't go so well. Realizing that DVDs were sure to be popular, the major studios got together and designed an encryption scheme for DVDs that was supposed to prevent movies copied onto a hard drive or burned onto a recordable DVD from ever being played. But just a few years after the technology hit the market, the DVD encryption scheme was cracked. Free software that you can download from the Internet lets you take a DVD, decrypt it, and then crunch it down so that it will fit on a single 700 megabyte CD. You can make copies for your friends or, if you want, take that brand new *Cat In the Hat* DVD and upload the files to the Internet so that everybody in Sri Lanka can mock its production values.

"And that is not all!" said the Cat. "Oh no, that is not all!"

Within a few years, all of the TV signals moving over the airwaves will be digital. And unprotected digital content moving unrestricted over the airwaves is the MPAA's nightmare scenario. The industry's great fear is that high-quality digital broadcasts would be scooped up by techno-geeks with digital television cards wedged in to the back of their PCs. These merry pranksters would presumably then leak Hollywood's precious bits onto one of those high-speed international broadband circuits—perhaps one that goes from California to Hong Kong.

And that, says Fritz Attaway, the MPAA's executive vice president for government

relations and Washington general counsel, is the flag's real purpose. Speaking to Wired News last month, Attaway explained that the purpose is to protect the industry's lucrative overseas syndication market. Why would people in Malaysia, Singapore, or Hong Kong want to watch American television shows months or even years after they are aired in the United States—as they do now—when instead they could see the shows the following day?

Of course, the broadcast flag will do more than stop such international retransmission: it will keep you from sharing your high-quality digital recordings with *anyone*—like those annoying people who are always sending out e-mail messages asking if anybody in the office remembered to tape last week's episode of Buffy, because they didn't have their own VCR set up properly. As if! Once the broadcast flag is operational, we'll all be spared from these requests.

Even though I don't watch much broadcast TV, I am still strongly opposed to the broadcast flag. The first reason is "mission creep." Having successfully lobbied a regulatory agency to put anti-consumer copy protection technology into the television set, what's to stop a greedy content industry from asking for more? The broadcast flag could be expanded into a whole family of little flaglets, and together giving the system a much more expressive repertoire. One flag might say, "you may not time-shift this program." Another flag might tell your TiVO "you may not fast-forward or skip this program's commercials." A very special flag might disable your TV's channel changer and "off" buttons. There might even be a Mission Impossible flag that makes your digital video recorder self-destruct in five seconds (or at least erase every movie owned by Universal Studios.) Who knows what Hollywood will dream up next!

And yet, the broadcast flag is not some poor ghost created to walk the airwaves until the foul crimes done against the recording industry by the likes of Napster are burnt and purged away. No, it is instead just another step in Hollywood's ongoing project to remake both consumer electronics and desktop computers so that they are more to the industry's liking.

After all, the flag won't achieve its goal of eliminating off-the-air piracy. For starters, it applies only to equipment that will be sold after July 2005; naturally, the hacker weblogs are advising people to stock up now on unencumbered digital TV cards for PCs—cards that don't implement the broadcast flag. After July 2005, every new digital TV card will be encumbered with this spiffy new technology.

Another lurking problem with the broadcast flag proposal is that it only applies to material that's broadcast—not material that's sent through cable or beamed down from a satellite. Those systems have their own copyright protection technology. But the more standards that industry deploys, the greater the chance for something to go wrong. Not only will compatibility be difficult, but it's likely that some pieces of equipment won't properly honor the copyright control technologies and some of Hollywood's valuable content will sneak out.

So what happens when the broadcast flag has obviously failed? The MPAA will be back, this time demanding that even stronger anti-consumer technology be bundled into consumer electronics and desktop computers. Ultimately, Hollywood will settle for nothing less than the elimination of any consumer technology that can make high-quality recordings.

After all, we've been down this road before—just a little more than 25 years ago, in fact.

Many consumer groups like to point out that Universal Studios filed suit against Sony in 1978, arguing that Sony's Betamax VCR could be used to illegally pirate movies

transmitted over the airwaves. Universal wanted to kill home video recording. But the U.S. Supreme Court held in 1984 that the primary use of the Betamax was not piracy but rather time-shifting—a practice that the court said was a permissible fair use under the copyright laws. Had Universal been successful, the argument goes, consumers wouldn't have bought VCRs and the whole videotape rental industry would never have been born. Blockbuster never would have happened, say these groups, noting ironically that Hollywood has made a tremendous amount of money off the very technology that it tried so hard to kill.

I don't believe this argument. If home VCRs had been deemed illegal, it's quite likely that the movie rental revolution would have been delivered instead on videodiscs. We had videodisc players in the early 1980s, and their phonograph-sized discs delivered truly excellent image quality far superior, in fact, to that on videotape. It might have taken a few years longer, but videodiscs would almost certainly have become the media of movie rentals. Blockbuster still would have happened, just not with those tiny bags.

Indeed, Hollywood was always set up to be one of the winners of the home technology revolution. What would have been different if the movie industry had won in its lawsuit against Sony is that the revolution in camcorders, amateur video productions, and independent moviemakers never would have happened. Steven Soderbergh would never have created *Sex, Lies and Videotape*. Rodney King's beating by the police wouldn't have been filmed. Perhaps a generation of creativity and political change would have been lost. And Hollywood would have been happy.

This is why I'm so passionately opposed to letting the movie industry dictate design specifications for consumer electronics and home PCs. Hollywood's moguls want consumers to purchase one-way devices that jack-in to today's business models. They're terrified of creativity that they can't harness and monetize. Instead of sharing the golden eggs with the world, they'd rather kill the magic goose. The broadcast flag's ability to stamp out the recording of high-quality digital signals is probably the largest step in this direction since Congress passed the Digital Millennium Copyright Act back in 1998—a piece of legislation that has had astoundingly negative impacts throughout the high-tech world.

As citizens of a democracy living in a technological society, we must take away Hollywood's seat from the table where our future is being designed.

Simson Garfinkel is an incurable gadgeteer, an entrepreneur, and the author of 12 books on information technology and its impact.

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