

# Technology AN MIT ENTERPRISE Review

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Conexus  
By James Fallows p76

Imagining Pain  
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MIT NEWS  
Reverse-  
Engineering  
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pM12

Special Report

## It's Not Too Late

The energy technologies  
that might forestall global  
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Cleaner coal,  
smarter nuclear,  
bioengineered ethanol,  
and more... Page 37





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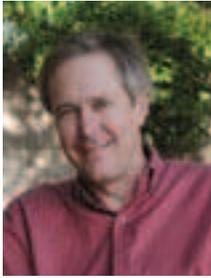
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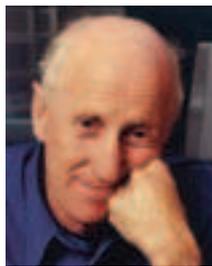


**James Fallows**, a national correspondent for the *Atlantic*, recently took a look at the new wave of online applications sometimes collectively called Web 2.0 (see “*Homo Conexus*,” p. 76). “Thinking about this article,” he says, “gave me an excuse to try a lot of sites, features, and applications I’d been curious about but hadn’t taken the time to look at seriously. Half of the things I did seemed like fritterware—for instance, proving that I could write an entire article online, just so I could say I did so—but the other half left me thinking Hmmm, here’s another little trick I should pay attention to! I have a shtick in this article about being too old for Web 2.0, but most of these sites would make anyone feel stimulated and young.” Fallows’s book about the Iraq War, *Blind into Baghdad*, will be published in August. He is now based in Shanghai.



**Jamie Shreeve** contributed a piece about producing ethanol from plant cellulose, a promising way to make cheap and plentiful fuel from biomass waste (see “*Redesigning Life to Make Ethanol*,” p. 66). “When talking to scientists on the cutting edge of cellulosic-ethanol research,” he says, “I was struck by how close they are to bringing technologies

to market that could have a really huge impact on one of the most critical issues facing us. The barriers to solving our energy needs and reducing global warming are very real but seem more a matter of societal and political inertia than lack of technological expertise. Thanks to ethanol, Brazil is already free of dependence on foreign oil. Granted, it has a head start with sugarcane—but if Brazil can be energy independent, so can we.” Shreeve’s most recent book is *The Genome War: How Craig Venter Tried to Capture the Code of Life and Save the World*, named by the *Economist* as a 2004 Book of the Year. He has also written for *National Geographic*, the *New York Times Magazine*, *Wired*, and other publications.



**Stewart Brand** reviewed *Rainbows End*, the new novel by science fiction luminary Vernor Vinge, whose books have long influenced the imaginations of coders and system designers (see “*Vinge’s Singular Vision*,” p. 86). “Studying up on Vinge’s interests led me to his recent enthusiasm for Terry Pratchett, the British satirical fantasy writer,” he says. “Vinge devoured Pratchett’s copious writings, to the point, I suspect, that *Rainbows End* is an homage. Now I’m devouring Pratchett.” Brand is the founder of the *Whole Earth Catalog* and cofounder of Well, the Global Business Network, and the Long Now Foundation. In 1973 he was the first to write about hackers (in *Rolling Stone*), and he is the author of *The Media Lab*, *How Buildings Learn*, and *The Clock of the Long Now*.



**Matthew L. Wald**, who in “The Best Nuclear Option” (p. 58) expounds the advantages of current nuclear technology over the Bush administration’s Global Nuclear Energy Partnership, has been writing about nuclear energy and nuclear-weapons materials for the *New York Times* since 1979. “Nuclear power as it exists today was fossilized in early-1970s designs,” he says. “The commercial industry would like to build new [reactors], incorporating their last 40 years of experience, but the Energy Department has gone off on a noncommercial tangent of uncertain feasibility and relevance.”



**Mark Bowen** profiled climate scientist James Hansen, who says he’s being muzzled by politicians (see “*The Messenger*,” p. 38). “I was impressed by Hansen’s modesty and honesty,” says Bowen. “The way he called attention to even the slightest errors I made in interpreting his work, and his courteous treatment of critics, taught me not only about the honesty required to tackle scientific problems but also about the courage it takes to lead an honest life.” Bowen has written for *Natural History* and *Climbing* and recently published his first book, *Thin Ice: Unlocking the Secrets of Climate in the World’s Highest Mountains*.



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### Sony and Spyware

I just read Wade Roush's piece on Sony and the rootkit affair ("*Inside the Spyware Scandal*," *May/June 2006*), and I was curious about his decision not to discuss the spyware made by SunnComm, whose MediaMax DRM was also a cause of legal action against Sony BMG. SunnComm made spyware DRM software that phoned Sony and let them know what you'd been listening to, and when you ran their uninstaller, it left your PC vulnerable, so you could be hijacked just by looking at a malicious Web page. Even worse, SunnComm installed its malware even if you declined the user agreement and never played or copied the disc.

Also missing was material about the labels under Sony BMG that decried the use of DRM and complained that corporate was hurting their customers. I was also looking for some balance on the DRM stuff from an organization like the Electronic Frontier Foundation; surely EFF was highly relevant to the story, since it was key to the class action settlement Sony reached.

All in all, this seemed like a very incomplete account, especially for a postmortem so long after the dust had settled. It seemed to me to take too many of Sony's claims at face value without delving into the lessons to be learned from the most significant DRM debacle of the decade.

*Cory Doctorow*  
*London, England*

"Inside the Spyware Scandal" focused entirely on Windows/PC systems. I would be interested to know whether the software on the music CDs at-

---

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tempted an analogous intrusion on other operating systems, particularly Mac OS X.

*Brian Aull*  
*Lexington, MA*

*Wade Roush responds:* Regarding Mr. Doctorow's letter: the article made it clear that the same Sony BMG CDs that contained First 4 Internet's XCP copy protection software also contained a dual Windows/Mac OS X program called MediaMax, from SunnComm. To answer Mr. Aull's question: MediaMax did not employ a rootkit, as XCP did, but did attempt an analogous intrusion. As Doctorow and other critics have pointed out, MediaMax installed itself even if users declined the license agreement, came without an uninstaller, and spied on users by sending their Internet addresses to SunnComm servers when they played protected CDs. The uninstall utility that SunnComm eventually developed to allow consumers to remove MediaMax from Windows PCs created a security vulnerability that exposed their computers to hacker intrusions, but this problem did not affect Macintosh computers.

### Legitimate Complaints about Rootkits

I was very surprised by Jason Pontin's comment in his "From the Editor" column regarding the Sony rootkit that "the complaints [from customers whose computers were infected] were much more heated than any damage to users' computers warranted."

The common early "repair" for the rootkit-damaged computers was to reinstall Windows. This is a hair-raising task even for those rare few of us who try to maintain proper and timely computer backups—a process that Microsoft's security upgrades in turn frequently break! And the need to reinstall Windows often becomes the motivating factor for one to throw away one's computer and start afresh. Worse, to those 99 percent of Windows users who do not maintain proper backups

and who store their work at Microsoft's default locations, reinstalling Windows may well mean losing months or years of their work. And all because customers purchased and listened to a Sony CD on their computer?!

*James L. Adcock*  
*Bellevue, WA*

### An Opportunity?

One of the most interesting things about technology is the surprising ways that its various fields influence each other. I was reading the *May/June 2006* issue, and a missed opportunity struck me as I finished reading the "Forward" piece on GE's work to drive the hydrogen economy by delivering "a potentially inexpensive, mass-manufacturable version of the technology" for electrolysis of water ("*Hydrogen on the Cheap*"), and then flipped a few pages further to find a "Notebook" essay by Professor Schrock regarding his work on producing ammonia ("*Nitrogen Fix*"). He writes, "In the presence of protons and electrons in a nonaqueous medium, dinitrogen is reduced to ammonia with an efficiency in electrons of around 65 percent; the remaining electrons are used to make dihydrogen, which is in this context a wasteful and undesirable product." I'm thinking the scientists at GE would find this of great interest; dihydrogen is exactly what they're striving to make. While I'm sure there are difficulties (of, say, transportation and logistics) in using the waste stream from Professor Schrock's work, an industrially viable process to make both ammonia and hydrogen sounds like a winner to me.

*Jeff Goldberg*  
*Framingham, MA*

### Clarification

In the *May/June 2006* article "Nanocrystal Displays," Jonathan Steckel was identified as one of the key researchers behind the technology of the featured company, QD Vision. He is also one of the company's founders.