

CAN TWITTER MAKE MONEY?

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**BRIEFING**  
PERSONAL  
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p63

# Technology Review

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SPECIAL  
REPORT



MOST **INNOVATIVE**  
COMPANIES  
IN THE WORLD

P33

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The Authority on the  
Future of Technology  
April 2010  
[www.technologyreview.com](http://www.technologyreview.com)

Smarter technology for a Smarter Planet:

## Can the boundaries of a business be defined by its people instead of its walls?

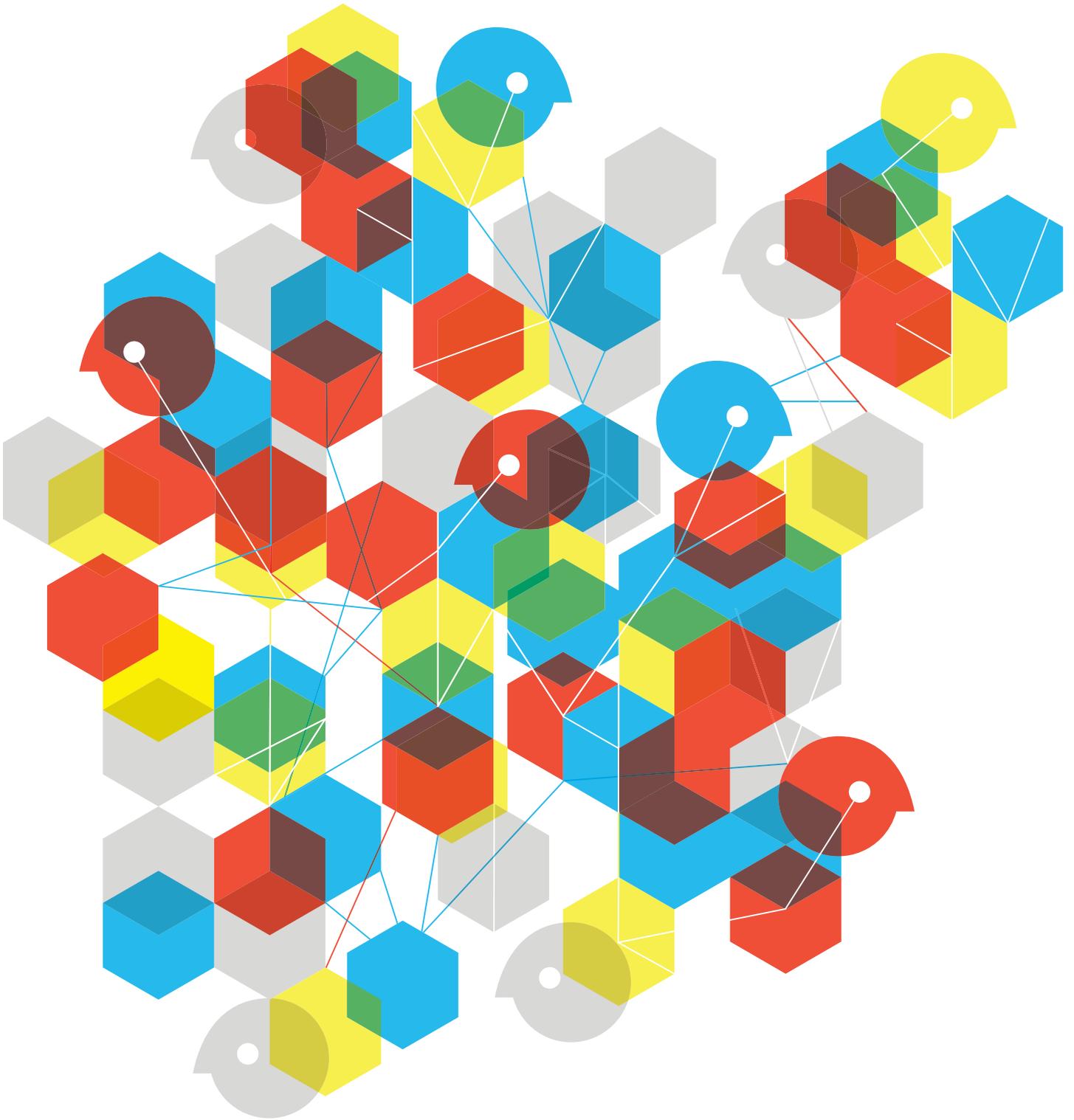
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COVER

Photograph by Ian Allen outside IBM's Watson Research Center. IBM is one of the TR50, the most innovative companies of 2010.

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TR presents the 50 most innovative public and private companies of the year.

By TR EDITORS

■ [www.technologyreview.com/TR50](http://www.technologyreview.com/TR50) Research the TR50 further with our database of companies.

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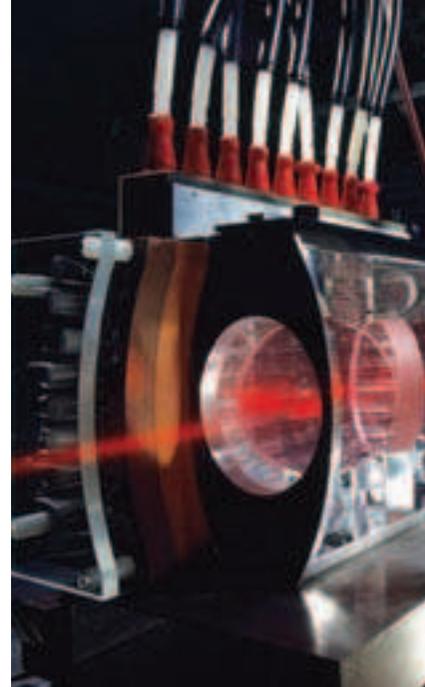
Hybrid moped, faster portable drive, pocket projector, plastic paper, TV on the go, toy drone, graphene ink, and more.

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## Sick Capital

WHY IT MATTERS THAT VCS WON'T DO THEIR JOBS.

If venture capital is sickly, does it matter? Put another way: Would the startups in the TR50, *Technology Review's* new list of the 50 most innovative companies (p. 33), be more innovative and sustainable, or even different, better ventures altogether, if venture capital were healthier?

Venture capital isn't what it was. Funds launched in 1996 and 1997 saw returns of 80 to 100 percent, according to Cambridge Associates; those launched in 1999 and 2000 lost money. Since then, many have returned less than zero, and only recently has the industry showed signs of life. In "What's Wrong with Venture Capital" (p. 74), James Surowiecki writes, "As Fred Wilson, a principal at Union Square Ventures, bluntly puts it, 'Venture capital funds, as a whole, basically made no money the entire decade.'" What went wrong? The reasons are summarized by Surowiecki (and by Howard Anderson, cofounder of Battery Ventures, in "Good-Bye to Venture Capital," June 2005 and at [technologyreview.com](http://technologyreview.com)).

First, the markets for new technology stocks, the most important means by which VCs recover their investments, are nearly frozen, and the valuations of companies that do enjoy public offerings are no longer irrational. In 2009, just 13 venture-backed companies went public, down from 271 in 1999. Worse, as Anderson wrote, "rational markets value companies at two and a half times their sales at an [IPO]." That's bad for VCs: since most startups fail, a return of 250 percent on those ventures that succeed isn't *that* great, considered over the lifetime of the investment (typically, at least five years). Anderson may be forgiven for having written, "We need a little irrationality to earn a living." VCs once expected that one wonderful success in every 10 of their investments would justify their failures; no longer.

Second, no one buys as much technology as they once did. IT spending by enterprises grew at 15 percent during most of the 1990s but has grown only by single digits for most the last decade. More striking, as Surowiecki points out, "much of the value that new businesses are creating in fields such as social networking is ... 'nonmonetized.'" Users think Facebook and Twitter should be free, and there is no reason to think that VCs' investments in social technologies will be as lucrative as their investments in enterprise software and networking equipment during the 1990s.

Third, there is too much venture capital, but entrepreneurs need less funding. The venture industry now manages about \$200 billion, twice what it did in 1998, and invests \$20 billion

to \$30 billion every year; but the cost of launching startups, at least in the software and Internet sectors, has fallen "by at least an order of magnitude," according to Fred Wilson, because of open-source and outsourced software development and the falling price of processing, storage, and bandwidth. In the absence of an irrational market for technology stocks, there's no way for venture capitalists to generate handsome profits on \$30 billion of what is, we must remember, called "risk capital."

Does all this matter? Surowiecki writes, "What we care about, after all, is not whether investors get good returns or VCs are well paid. We care about whether new companies are getting started and innovations are being funded."

But the sickliness of venture capital does matter to entrepreneurs, and it should matter to you, too. VCs no longer perform their historical functions: recognizing a few potentially disruptive technologies, finding great entrepreneurs who burn to commercialize those technologies, providing measured seed funding, and worrying startups to profitability. Instead, the partners of the typical fund invest more money, much later, in more companies, selected according to some risk management philosophy.

A well-known Silicon Valley investor (who asked that I not name him, lest he offend his partners) expressed the consequences: "VCs spread themselves over six to 12 portfolio companies, often spending as little as a day a month on each. This is terrible for both entrepreneurs and the country." There's research to back him up: Josh Lerner, a professor at Harvard Business School, has shown that the advice of VCs is an important reason why venture dollars are "three to four times as potent" as corporate R&D in spurring innovation. (On page 12, read why Lerner thinks governments are so bad at encouraging entrepreneurs.)

Past venture capitalists funded the technology companies that became the engines of the world's economic growth: Intel, Microsoft, Genentech, Compaq, Apple, Cisco. But there have been just two really transformative venture-backed companies in the last decade: Facebook and Twitter.

Might Twitter have sooner answered the question that we pose on page 52 ("Can Twitter Earn Money?") had its VCs been more like their predecessors? My unnameable investor told me: "I wish the VCs on the board at Twitter would drop everything else and help Twitter build the solid business that the service so richly deserves. In the past, they would have." Write and tell me what you think at [jason.pontin@technologyreview.com](mailto:jason.pontin@technologyreview.com). —Jason Pontin

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## KEEP IT IN THE LAB

A professor of science, technology, and society at Colby College responded to Kevin Bullis's article on the serious attention now being paid by prominent scientists to geoengineering schemes to combat global warming ("The Geoengineering Gambit," January/February 2010).

At MIT's "Engineering a Cooler Earth" symposium last October 30, audience responses to "Should We Try?" were more supportive and robust than those to "Can We Do It?" Of course we cannot and should not do it, since climate engineering is untested and dangerous. The American Meteorological Society's policy statement on geoengineering (also adopted by the American Geophysical Union) recommends more research of an interdisciplinary nature on any proposals to geoengineer climate. It urges coordinated study of the historical, ethical, legal, and social implications of geoengineering, and it calls for the development and analysis of policy options, including restrictions on reckless efforts to manipulate the climate. As I recently told the U.S. House Committee on Science and Technology, support is urgently needed for historical studies of existing environmental treaties, international accords, and efforts to govern new technologies. Any other geoengineering research should be conducted in labs and with computer models, not out of doors.

James Rodger Fleming  
Waterville, ME

## THE PRICE OF EVERYTHING

Commenters on Bryant Urstadt's article on high-frequency trading ("Trading Shares in

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*Milliseconds," January/February 2010) had a vigorous debate over the legitimacy of the practice. Urstadt's reporting highlighted the ways by which high-frequency traders seek to use technology to exploit opportunities in the market—but also the dangers to markets that some experts feel are introduced in the process.*

Tell me exactly what product or service these companies provide? I understand they make money by gambling on being faster than the next guy, but what do they produce that helps America's GDP? ... [T]he value of America is in the products and services. Finance is a support function. We need our engineers building things, not moving money.

jjs

Those that have the view that high-frequency trading does nothing for the economy also probably think that equity markets do nothing for the economy and that the whole thing is simply a huge casino. Right ... ? Wrong.

Equity markets price capital. In an increasingly automated world, this is the single most productive task humans are capable of engaging in. Said pricing leads to an efficient distribution of capital, which in turn results in a better quality of life in the aggregate. High-frequency traders simply engage in arbitrage: they prevent pricing abnormalities from materializing and therefore make pricing more efficient.

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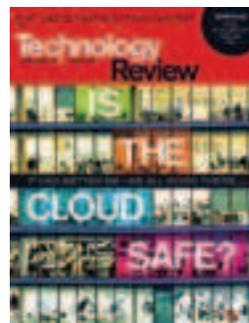
Why do I get the feeling that you were spinning exactly the same line about CDOs just a few years ago? And that in a few years' time you'll be saying just the same about the next brilliant idea to emerge from Wall Street after HFT has caused another financial crisis, impoverishing millions of people (except, of course, the traders)?

The most productive task in the world? The best paid, possibly.

chrisjmilller

My experience is that the financial markets work very well for small investors. I'm an "old-fashioned" buy-and-hold investor who makes small (~\$1000) purchases. Commissions are now very small (\$0 to \$5), trades are executed instantaneously, and, as mentioned in the article, the spreads are only a few pennies per share. Even in the depths of the market turmoil, everything functioned normally and I was able to execute trades. It is hard to imagine that HFT doesn't contribute to the proper functioning of markets. ... The real problems lie with investor psychology. Successful investing is about as interesting as watching paint dry. Investors, however, try to make it into a night at the casino.

hpwarren



January/February '10

## LOST IN SPACE

A reader wrote in support of one of the conclusions of the Augustine Committee's report on space exploration, reviewed by Jeff Foust ("The Future of Human Spaceflight," January/February 2010).

Given the challenges of climate change in the medium run and a new ice age in the long run, one cannot but

agree with the conclusion of the Augustine Committee that "the ultimate goal of human exploration is to chart a path for human expansion into the solar system." But NASA seems to be lost in space at present. Even keeping the International Space Station (ISS) in orbit beyond 2015 is now in question. As Jeff Foust put it, if people are going to live and work in space, the ISS is the ideal laboratory to test technology and human performance under long-term conditions. In addition, it may in time serve as a staging station for bases in the inner solar system—the moon, Mars, and the asteroid belt. In short, it is clear that the ISS must not be "deorbited" for lack of funds soon after its completion in 2011. There is an urgent need for an international space agency that would pool resources of all space-faring nations toward the fundamental goal of human