

Technology PUBLISHED BY MIT SINCE 1899 Review

Measuring
the Polar
Meltdown
p54

MIT NEWS
Outsmarting
the Flu
pM12

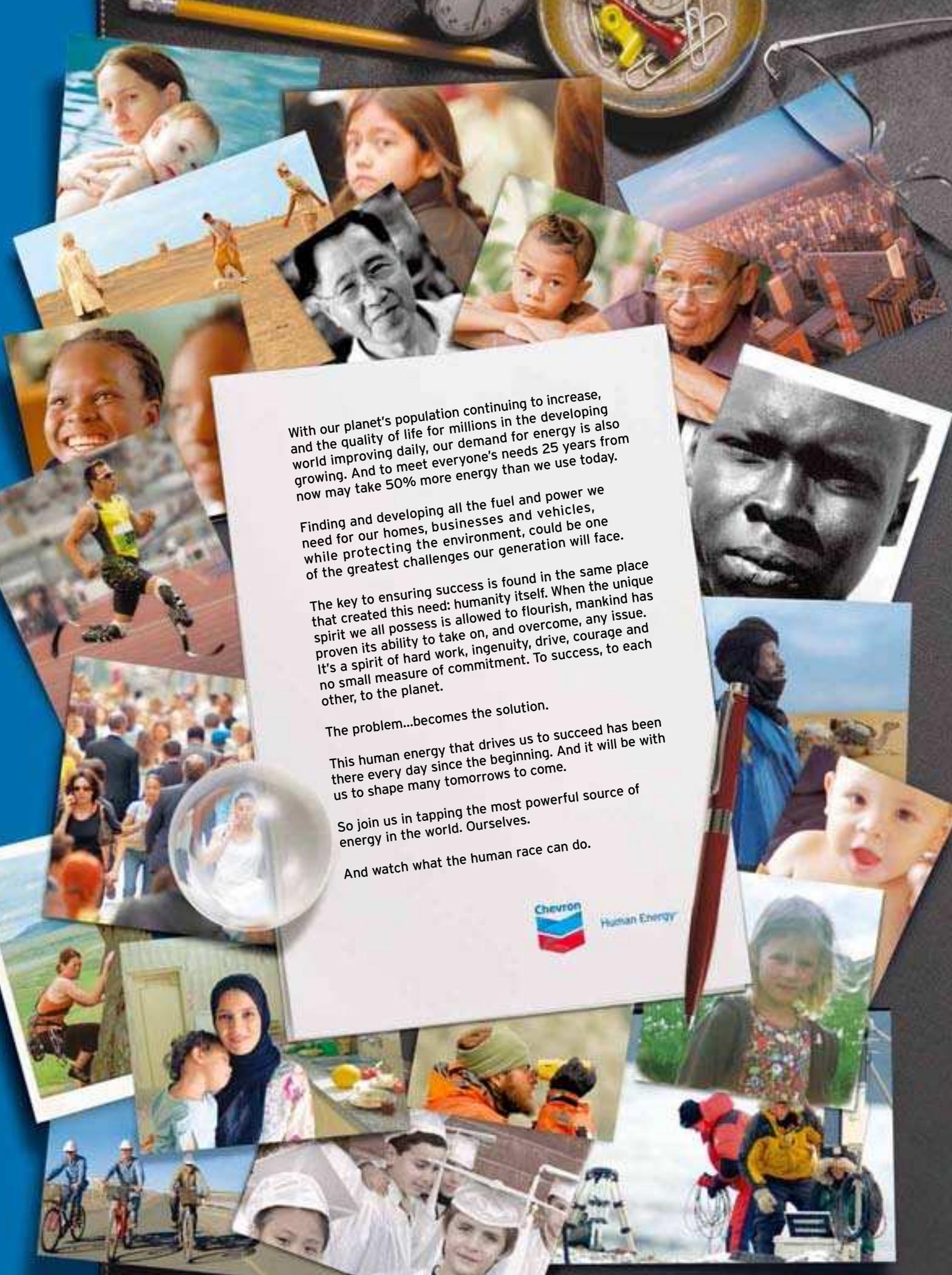
On Wednesday, August 8, not long after the markets closed, 200 of the smartest people on Wall Street gathered in a conference room at Four World Financial Center, the 34-story headquarters of Merrill Lynch. August is usually a slow month, but the rows of chairs were full, and highly paid financial engineers were standing by the windows at the back, which looked out over black Town Cars below and the Hudson River beyond. They didn't look like Masters of the Universe; they looked like members of a chess club. They were "quants," and they had a lot to talk about, for their work was at the heart of the most worrisome summer market in decades.

The Blow-Up

By Bryant Urstadt Page 36

**The world is growing by more than
70 million people a year.**

So is that a problem, or a solution?



With our planet's population continuing to increase, and the quality of life for millions in the developing world improving daily, our demand for energy is also growing. And to meet everyone's needs 25 years from now may take 50% more energy than we use today.

Finding and developing all the fuel and power we need for our homes, businesses and vehicles, while protecting the environment, could be one of the greatest challenges our generation will face.

The key to ensuring success is found in the same place that created this need: humanity itself. When the unique spirit we all possess is allowed to flourish, mankind has proven its ability to take on, and overcome, any issue. It's a spirit of hard work, ingenuity, drive, courage and no small measure of commitment. To success, to each other, to the planet.

The problem...becomes the solution.

This human energy that drives us to succeed has been there every day since the beginning. And it will be with us to shape many tomorrows to come.

So join us in tapping the most powerful source of energy in the world. Ourselves.

And watch what the human race can do.



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What's New on Our Website



[technologyreview.com/ googleearth](http://technologyreview.com/googleearth)

In this month's Hack, we dissect the popular online tool Google Earth (*p. 20*). Experience a fly-through tour for yourself by visiting the *Technology Review* website. Videos show how Google attempts to portray the real world in three dimensions.

technologyreview.com/blog

Technology Review has enlisted new expert bloggers to provide thoughtful

commentary on the latest research. Ed Boyden, an assistant professor in the MIT Media Lab and MIT Department of Biological Engineering, blogs about the rapidly developing field of brain engineering. Boyden, a leading innovator in the field, develops and deploys novel tools that analyze and modify brain circuits to help correct aberrant activity. John Maeda, a graphic designer, visual artist, and computer scientist at the MIT Media Lab, offers insight on a unique and eclectic collection of design oddities in his blog, Technohumanism.

[technologyreview.com/ emtech/videos/](http://technologyreview.com/emtech/videos/)

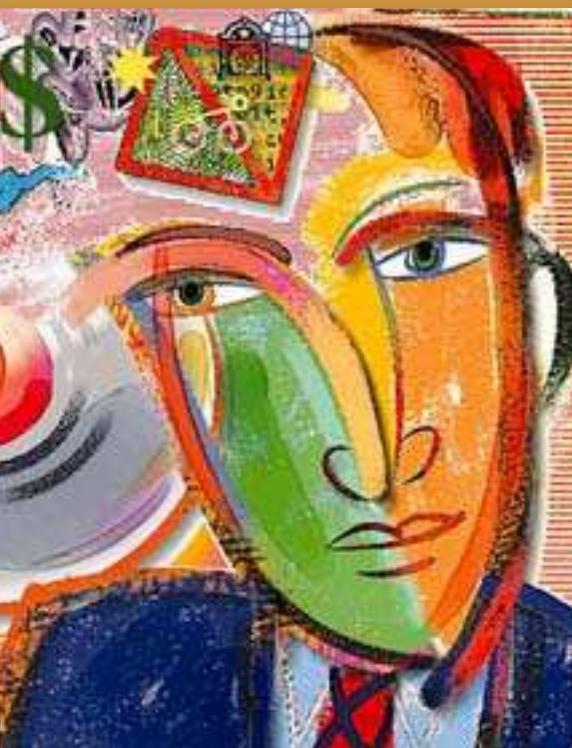
Those who couldn't make it to this year's EmTech, Technology Review, Inc.'s annual conference on emerging technologies, can watch videos of all its workshops, keynote speeches, and

breakout sessions online. Even if you did attend EmTech 2007, you might want to catch up on what you missed. It's all here.



technologyreview.com/mars

Technology Review's first graphic story ("*Mission to Mars*," *p. 26*) also gets special treatment online. Watch the story of the *Mars Observer* unfold by scrolling from frame to frame in a Flash application. Got crayons? Download a black-and-white version for your children to color.



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Bryant Urstadt wrote this issue’s cover story, on Wall Street “quants”—mathematically trained financial engineers and managers—and the role their work played in this summer’s



upheaval in the financial markets (“*The Blow-Up*,” p. 36). “This was one of the most intimidating pieces I have ever been involved in,” says Urstadt. “But as my reporting developed, I noticed that I wasn’t alone in my confusion, in that a lot of people were slightly unsure about what was going on in their own domain. It wasn’t like people were panicking—it was just that there was a general sense that things were a bit mysterious. One thing was clear, though: these were some of the smartest people I’ve ever talked to.”

Urstadt is a freelance writer whose work regularly appears in *New York, Outside*, and *ESPN*.

Asaf and Tomer Hanuka illustrated “Mission to Mars,” a graphic story written by Erica Naone, which chronicles NASA’s various attempts to



explore that planet (p. 26). “There is a sense of the fantastic struggling to coexist with the real, which we found very appealing,” says Tomer. “When we thought about the people involved, we imagined geeky kids reading sci-fi novels: now they’re all grown up and redefining the future.” Tomer and Asaf, who are identical twins, are the creators of *Bipolar*, an award-winning comic-book series. Work they did separately has appeared in the *New Yorker*, *Spin*, *Rolling Stone*, *Time*, and *Forbes*. “We grew up in Israel and spent the majority of our childhood reading

comics,” says Asaf. “It’s very hot in that part of the world, and everything is constantly bathed in yellow. We took four-color trips to Gotham City and at some point never came back.”

Bruce Sterling is an American novelist and journalist. A leader of the “cyberpunk” literary movement, he now writes and speaks on a wide range of subjects. In the story that appears in this issue (“*The Interoperation*,” p. 69), an architect fights the creative limitations



imposed by computer automation. “I love to hang out with industrial designers, engineers, and architects—people whose business is creating the physical world,” Sterling says. “Word processing transformed my line of work 30 years ago, but every year, design software eats up more of these guys’ time-honored enterprises. I had to ask that classic science fiction question: what happens if this goes on?” Sterling is moving to Turin, Italy, which the International Council of Societies of Industrial Design has designated World Design Capital for 2008.

Greg Egan is an Australian science fiction writer and computer programmer; his new short story “Steve Fever” appears in this issue (p. 60). “People often lament the way some politicians and celebrities end up believing their own public relations,” says Egan. “I thought it would be interesting to imagine what might happen if we developed technology that was capable of believing its own hype.” Egan recently completed his seventh novel, *Incandescence*, which he says “concerns an alien society with very simple technology struggling to understand general relativity, as a matter of life and death.”

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Letters

Who Wants to Live Forever?

In "The Enthusiast" (September/October 2007), David Ewing Duncan discusses the scientific controversy surrounding Harvard biologist David Sinclair's longevity research but fails to mention a more sinister controversy, one that exists outside the scientific community. As a bioethicist, I am unhappily aware that many of my fellow bioethicists oppose in principle any attempt to extend the human life span. They think people should accept the "natural" limits on longevity, although they do not oppose electric power on the grounds that we should accept the "natural" limits on indoor light and warmth. As a future old person, I hope that scientists will continue to ignore such small-mindedness and that someday your magazine's feature on outstanding innovators in the early stages of their careers will feature innovators under 150 rather than just those under 35.

*Felicia Nimue Ackerman
Providence, RI*

Conservative British philosopher Roger Scruton is profoundly uneasy about the morality of seeking to live for hundreds of years, and he makes elegantly referenced arguments about why such a quest is a bad idea ("The Trouble with Knowledge," May/June 2007). However, his arguments overlook one simple fact: each new breakthrough will offer us not immortality but simply the opportunity to *not die today*. That is how longevity has been achieved over the last 100 years: each wave of miracle drugs has helped push the grim reaper back a few years. The

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by-product of medical progress is that one day, someone may wake up for his 1,000th birthday. If on that day pain lashes him and the world goes gray, he will cry out, "Please! Of course I do not want to live to be 2,000. Who would? But I do not want to die *today!*"

*William Bains
Royston, Hertfordshire, England*

On Chess

Philosopher Daniel C. Dennett reaches the verdict that computers are the equal of humans in chess ("Higher Games," September/October 2007). To the contrary, computers cannot play chess at all. Chess is a game; games are for having fun; computers cannot have fun.

*Daniel Pratt
Laurel, MD*

Bright Lights in Stockholm

I loved the 1962 photo that accompanied James Watson's essay recounting his part in the discovery of the structure of DNA ("Letter to a Young Scientist," September/October 2007). Six brilliant men posing side by side with their Nobel Prizes: five great scientists and ... John Steinbeck! I wonder who, as they sidled together for the picture, was more in awe of whom?

*Larry Casey
Huntsville, AL*

Alieu Conteh

I found inspiration in the most unlikely place this morning. I ran across your Q&A with African entrepreneur Alieu Conteh (September/October 2007), in which he recounts the fascinating tale of his successful attempt to build a mobile-communications network in war-torn Congo. What a remarkable story of vision, energy, and optimism. I've enjoyed a subscription to your publication for several years, but this is the first time I'm circulating an article not simply because it informed me about technology but because it moved me.

*Bill Cooke
Dearborn Heights, MI*

Patent Law

I was very pleased to see the magazine publish an accurate patent law article written by a patent attorney ("Patent Law Gets Saner," September/October 2007). Scott Feldmann provided an excellent lay summary of the impact, especially on patent "trolls," of three very important (and notably concurrent) United States Supreme Court patent cases: *eBay*, *MedImmune*, and *KSR*, which many patent attorneys (me among them) had been avidly following. The soundness of these decisions may be due in part to the unusually large number of *amicus* briefs that were filed by organizations and academics.

*Paul F. Morgan
Rochester, NY*

Artificial Intelligence

I enjoyed the thought-provoking essay by Yale computer scientist David Gelernter about the state of artificial intelligence ("Artificial Intelligence Is Lost in the Woods," July/August 2007). It *does* seem as if AI research is lost in its quest to emulate conscious thought. However, artificial life, a small offshoot of AI research, makes the subversive presumption that, as in nature, conscious behavior emerges from the bottom up: that is, it arises from the daily toils of simple systems evolving into complexity.

Two recent achievements come to mind: the entries in the DARPA Grand Challenge robotic road race and the twin Martian rovers. In both cases, the coupling of software with robotic sensors and mechanics seems to have achieved a close approximation of a prime component of intelligent systems: proactive self-preservation.

Even though imbuing conscious thought in computers is not on the radar screen of those in artificial-life research, there is a sense that it may be just beyond the edge of the screen.

*Maurice Havelday
Morgan Hill, CA*