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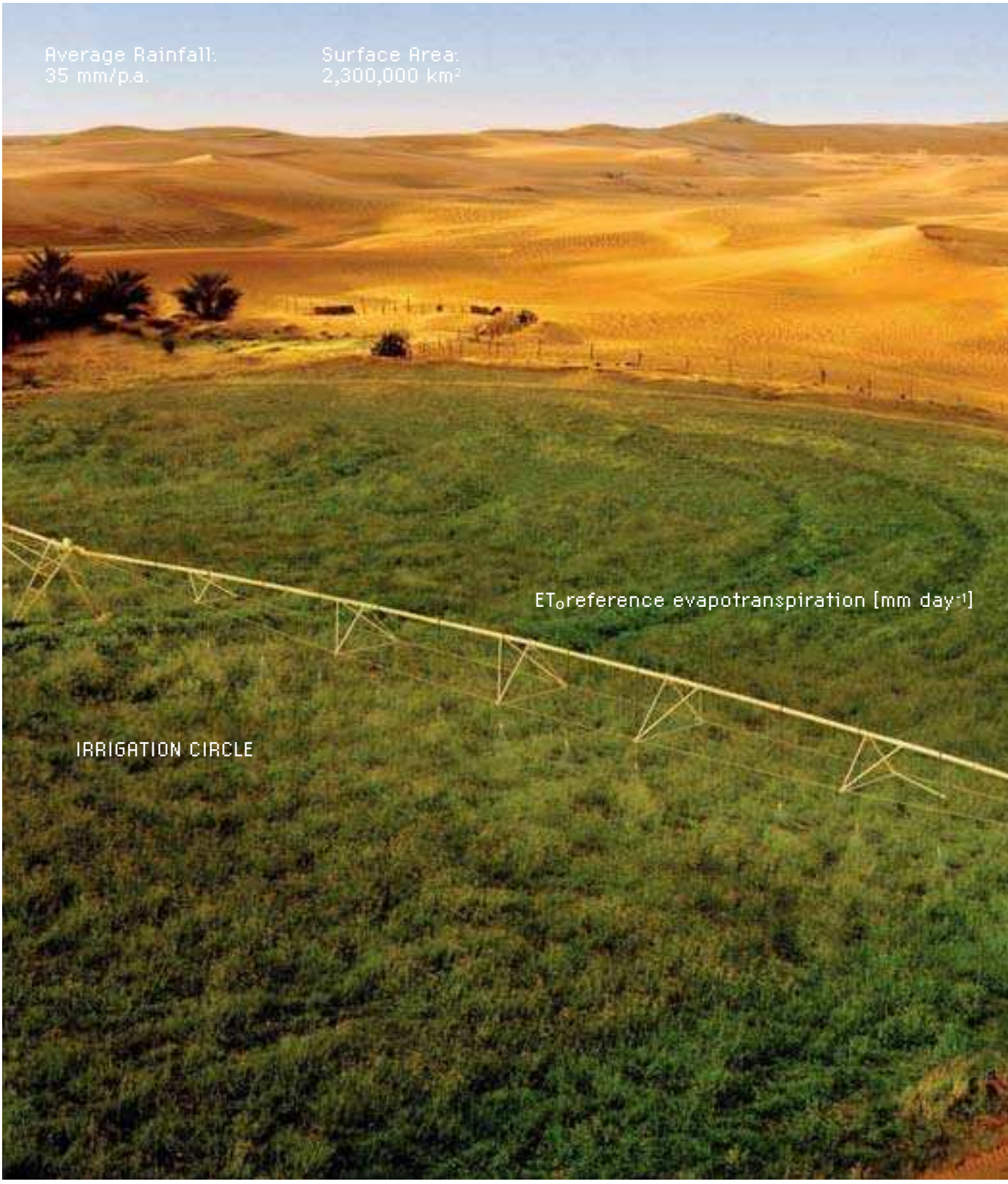

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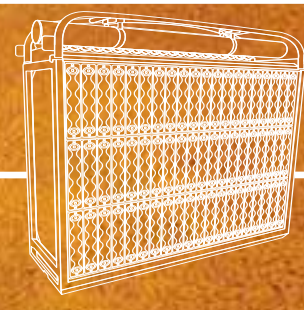

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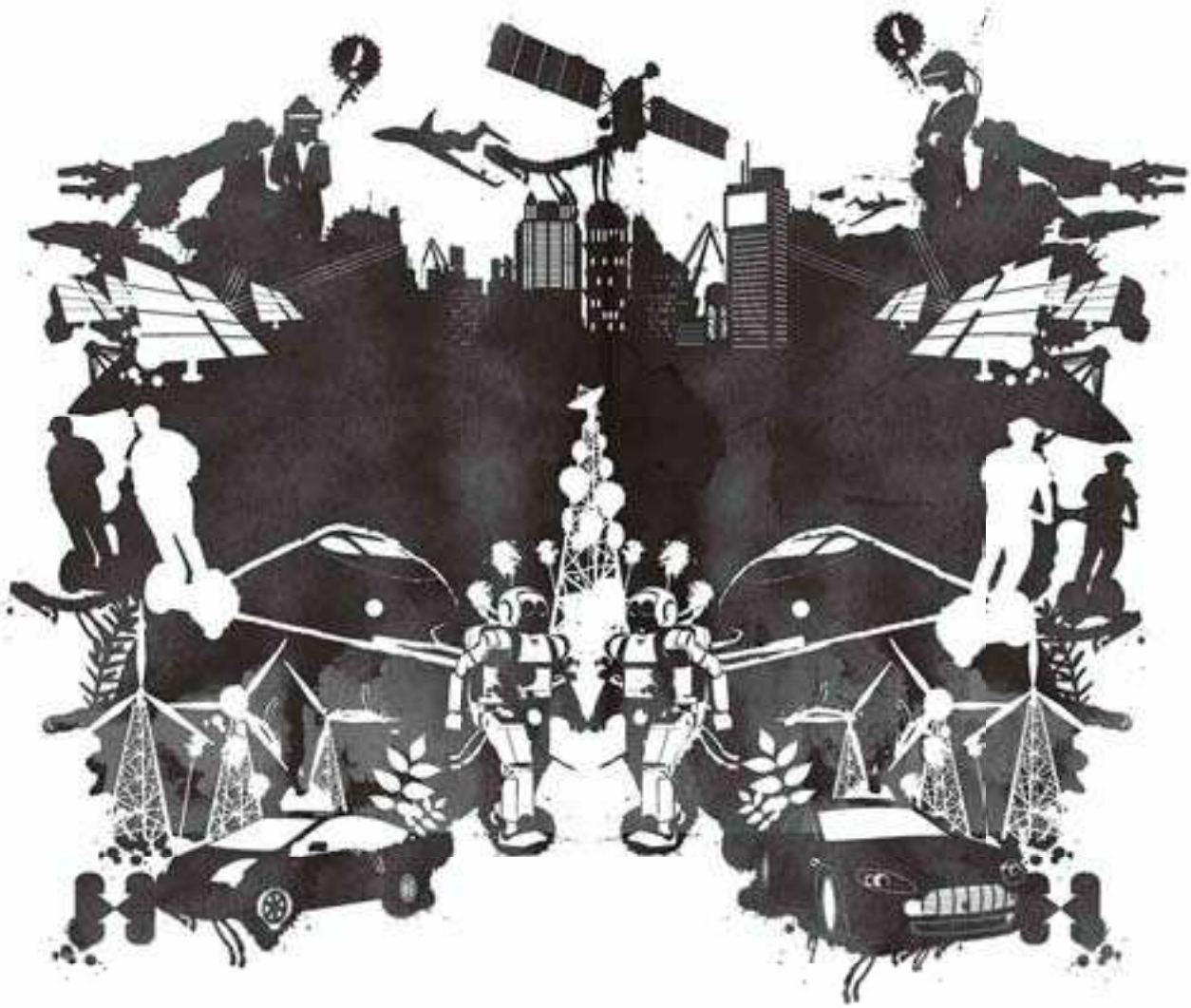

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CONTRIBUTORS

SETH LLOYD wrote this issue's review of claims by the Canadian company D-Wave to have made a prototype of a commercial quantum computer *("Riding D-Wave," p. 78)*. "Quantum computers store and process information at the level of individual atoms," Lloyd explains. "While such devices might seem like science fiction, you can find half a dozen quantum computers scattered around the MIT campus alone. It was only a matter of time before someone tried to commercialize quantum computation, and a few years ago, D-Wave set out to do so. At first, I was bemused by their attempts, as I know how difficult it is to build a quantum computer at all, let alone to sell one for a profit. But when it became clear that they were serious, I began to follow D-Wave more closely, particularly when their quantum computer was based on a design that my graduate student Bill Kaminsky and I had proposed. I will be very interested to see whether D-Wave's device can be made to function."

Lloyd is a professor of quantum-mechanical engineering at MIT. He was the first person to develop a realizable model for quantum computation and is the director of MIT's W. M. Keck Center for Extreme Quantum Information Theory. Lloyd is also the author of *Programming the Universe*.

AMANDA SCHAFFER wrote this issue's Demo, which showcases the work of the University of Minnesota's Center for Cardiovascular Repair *("Creating a Heart," p. 88)*. The center's director, Doris Taylor, wants to use the hearts of animal cadavers as scaffolding to build new organs. Schaffer got a good look at Taylor's work. "This bioartificial heart was the most visually arresting thing I've seen in a lab in a long time," she says. "It was pink and luminous—perfectly backlit—and beating. There was also this vibe in the lab that they were onto something very cool—and they knew it."

Schaffer is a science and medical columnist for *Slate* and a frequent contributor to the *New York Times* science section. Her work has also appeared in *Bookforum*, the *Wall Street Journal*, and the *Washington Post*.

ANA CECILIA GONZALES-VIGIL photographed the students in Arahuay, Peru, featured in chief correspondent David Talbot's story on the first major implementation of the One Laptop per Child project *("Una Laptop por Niño," p. 60)*. "I was overwhelmed by how gentle and friendly the kids were," says Gonzales-Vigil. "They were holding my hand, wanting me to play with them, and kept asking me to translate the English-language books on their laptops. When I was taking pictures of children in the classroom, they did the same with their laptops, laughing and shooting pictures of *me*!"

Gonzales-Vigil's work has appeared in the *Economist*, the *New York Times*, *Time*, *GQ*, and many other publications.

NICK BOSTROM wrote this issue's essay on extraterrestrial life *("Where Are They?" p. 72)*, which begins by throwing a decidedly wet blanket on the quest to find life in our solar system and beyond: "I hope our Mars probes discover nothing. It would be good news if we found Mars to be sterile. Dead rocks and lifeless sands would lift my spirit." The remainder of the essay is an explanation of why Bostrom believes that the lack of life elsewhere would offer the best hope for us on Earth. Bostrom is director of the Future of Humanity Institute at the University of Oxford. Before taking that post, he was a postdoctoral research fellow in Oxford's Faculty of Philosophy, and before that, a lecturer at Yale University.

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EXTELL

TECHNOLOGY IN IRAQ

In "A Technology Surges" (March/April 2008), David Talbot detailed the importance of the Tactical Ground Reporting System to ground forces in day-to-day operations in Iraq. DARPA has enabled rapid sharing of information and intelligence among lower-echelon forces, leading to improved effectiveness and force protection. Despite limited training in counterinsurgency, our forces have learned to use available resources to achieve desired effects, whether that is capturing insurgents, protecting themselves against IEDs, or achieving reconciliation in a given neighborhood.

However, our forces' resourcefulness should not be a substitute for learning from our experiences in Iraq at the level of the Department of Defense. That "there is a whole list of enhancements that users have requested" to this system, as Talbot reported, suggests that DOD's current intelligence processes are not necessarily a good fit for counterinsurgency operations. Better to adopt a bottom-up rather than the current top-down process designed for conventional major combat operations. Specifically, intelligence systems and architectures should be revisited to better support lower-echelon forces in a timely fashion.

Larry Lewis
Center for Naval Analyses
Suffolk, VA

THE AMAZON KINDLE

It is a little strange to see an assessment of Amazon's Kindle book reader ("What's Wrong with the Kindle," March/April 2008) by Jason Epstein, the purveyor of a rival technology, On Demand Books. It is no surprise that Epstein downplays the Kindle.

Indeed, he may well be correct that people of my age (77) are unlikely to abandon the tactile pleasures of traditional books for e-books. But that is irrelevant. My grandchildren and their cohort will surely embrace a technology that is in its infancy and can only improve with time.

Anthony Ralston
London, England

Jason Epstein, like many reviewers of the Kindle, overlooks one feature of the device that sets it apart from the competition and represents a huge advantage over physical books and the printing of such books on demand, even at a point of sale: the Kindle offers the ultimate in try-before-you-buy. You can download a book sample, usually the first chapter, in a couple of minutes, for free. The Kindle is a portable bookstore, and its freedom from the computer is genius.

Oliver Bogler
Houston, TX

THE POWER OF PLUG-IN HYBRIDS

In the Forward section of the March/April 2008 issue, you analyze the level of emissions that plug-in hybrid cars produce when they use electricity from different sources—everything from conventional coal burning to nuclear, wind, and solar power ("Plug-In Hybrids: Tailpipes vs. Smokestacks").

A major criticism of wind and solar power is that the energy produced is seldom available when it's needed. Plug-in hybrid cars might solve this problem. Commuter cars are usually stationary—either in the driveway, at work, or at the mall. As such, they can be viewed as portable energy storage devices instead of merely transportation vehicles. When the wind is blowing or the sun is shining, excess energy can be stored in the car batteries, and during peak load demand, the system can draw power from the plug-in hybrids to help system performance.

By thus utilizing nuclear and hydro power and by fluctuating between wind, solar, hybrid batteries, and combined-cycle gas-fired power plants, we could mostly eliminate the need for CO_2-intensive coal plants. And CO_2 emissions—both from electrical-power generation and from transportation fuels—could be significantly reduced.

Joseph Yarusinski
Orlando, FL

NOTES ON STAYING YOUNG

I enjoyed Jason Pontin's stimulating editor's letter on technology, creativity, and aging ("How to Stay Young," March/April 2008). In my 49 years, I've found that the key to staying creative is inductive logic. If one reads widely with an uncritical eye, processes information from unlikely sources far afield from one's area of "expertise," and manages to maintain the curiosity and awe of a child, one increases the chances of seeing patterns and identifying connections that would otherwise remain invisible. Deductive reasoning, in which truth and solutions flow only from the proven and tested, often serves as a drag on creativity.

Jerry Theodorou
West Hartford, CT

I agree wholeheartedly with Jason Pontin's notion that "we should try to be as little attached to the past as teenagers, and to satisfy our creativity not in the disparagement of new technologies but in the contemplation of how it might change our lives."

Nowhere is this more apparent than in the emerging economies of the Middle East, Africa, and India. These countries have not had the luxury of continuous technological updates, and hence neither have they had the burden of legacy systems. Fast-emerging economies such as the UAE, Qatar, and Saudi Arabia deploy the newest technologies to leapfrog over existing or absent infrastructure.

Shaheen Husain
Boston, MA

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