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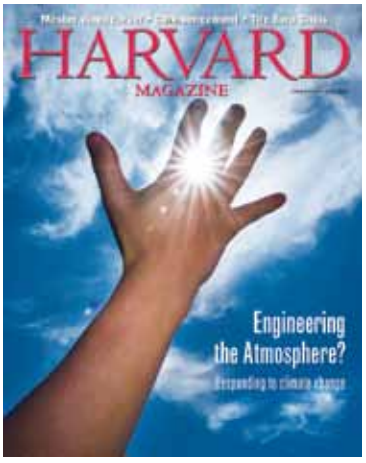
Energy divestiture, drug discovery, worker in wood

GEOENGINEERING AND CLIMATE CHANGE



David Keith's work on atmospheric engineering ("Buffering the Sun," July-August, page 36) is obviously both thoughtful and well-intentioned. However, several aspects are troubling, and though Professor Keith recognizes and responds to these concerns, they are still worth pondering. The broadest one has to do with the law of unforeseen consequences. If past human history is any indication, nature's secrets far exceed in complexity and depth our efforts to plumb them. We don't know what the consequences of geoengineering will be to the planet, but we can be sure that many of them will not have been anticipated.

Another concern, similarly born of caution, is more specific: if the greenhouse effect can be reduced, might that very fact allow us to relax our efforts to move toward a sustainable economy? Will we use that breathing space to soften our impact on the Earth, or to dig ourselves in deeper by maintaining our level of consumption? The model is clearly that of addiction. Any "success" in altering the climate would be comparable to finding an overlooked stash of heroin in the closet: the pressure to quit would be off. There is only one bottom line: humanity must learn to live in harmony with Nature's limits or die.

A third concern is the barely mentioned fact that climate change is only the most pressing of many ecological crises. Forceful attempts to solve this one could well make others more acute. As so often with technology, an abundance of enthusiasm combines with a dearth of perspective.

Finally, although one can argue that the need for decisive action trumps all, how easy it is to underestimate the messiness of human affairs. In movieland, the comet headed for Earth is blown up by a united, purposeful humanity. I doubt real life works that way, especially when economic motives are present, and the tools of deliverance are so like the ones of depredation.

I wish I had a better answer. Yet suspicion remains that technology is by its nature myopic: closer to what got us into our predicament than what will get us out.

Dan Breslaw '59
West Corinth, Vt.

I read with great interest about David Keith's work in "climate engineering," a term covering various attempts to combat global warming. It reports Keith as being "hopeful about technical innovation 'but deeply pessimistic about human behavior when it comes to protecting the natural world.'" From my perspective, that's often precisely the problem—human behavior. If it isn't the hubris that says "I know what I'm doing," it's the laziness or sloppiness that says, "That's good enough. What could go wrong?" Then we get the predictable "Oops!"

Examples of "oops" on a large scale are numerous. Gypsy moths introduced into New England in the late 1860s to develop a silkworm industry here. No silkworm industry today, but plenty of gypsy moths. The Indian mongoose was brought to Hawaii (from Jamaica) in the 1870s to control the Norway brown rat (which jumped ship, as rats do), but the diurnal mongoose hardly ever met the nocturnal rat, so today there are plenty of both animals but fewer native Hawaiian bird species. Kudzu, brought in by horticulturalists to control erosion, has been a great success, too, hasn't it? The Everglades are now home to breeding populations of Burmese pythons (maybe they can eat some of the imported South American nutria there), and I see from the Minnesota DNR's website that two large species of Asian carp, imported to control plankton in southern aquaculture ponds, escaped during floods (sur-

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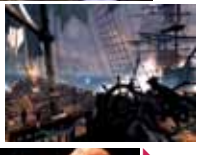
page 18 | Watch a video about Max and Trystan Sandvoss, the brothers behind First Light Farm and Creamery in upstate New York, who produce artisanal goat cheese. Plus, try their recipe for chocolate brownies with goat cheese.

Harvard in Allston
page 57 | See additional images of Harvard's planning for its campus center in Allston.



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prise, surprise) and are now established in the Mississippi River system.

So after threescore years of watching the human tragicomedy unfold, I quite agree with Keith. After all, what could go wrong?

Mark McTague
Cockeysville, Md.

In industry, particularly manufacturing, when something goes wrong, they turn to a formal process known as Corrective Action. Probably its most important component is Root Cause Analysis, because it leads to ultimate rather than proximal solutions to the problem. In the case of climate change, the root cause is population growth. If we halve auto emissions per car in the next five years, but by then there are three times as many drivers on the road, we have not gained much.

Unfortunately, I do not foresee any significant cuts ahead in population growth other than war, disease, and famine. No CEO wants fewer customers, no religious leader fewer adherents, and no politician fewer voters. Too bad.

Peter Haas, A.M. '79
Acworth, N.H.

The article offers a fascinating glimpse into modern geoengineering technology. But as a physicist whose research is into complex systems, the "illusion of control" that routinely plagues efforts to direct such systems comes immediately to mind. The climate is a prototypical such system: of massive complexity, with innumerable known and unknown feedback loops and a very large number of excruciatingly sensitive control parameters. We have not come close even to consistently modeling climate, as the next Intergovernmental Panel on Climate Change report will make painfully clear (hastily awarded Nobel Prize notwithstanding).

Caution: Let's make certain it's geoengineering we're having at, not egoengineering.

Jeffrey Satinover, Ed.M. '73, M.D., Ph.D.
Department of Management, Technology & Economics, ETH, Zurich
New York City

ENERGY DIVESTITURE

At commencement, President Faust addressed the immense climate change that is upon us, rightly embracing the University's commitment "to ask and address the larger questions" through teaching and research (see "They Said...," July-August, page 44).

This sounds only realistic. But realism requires a keen appraisal of the political and social forces in play, including a recognition that the nation's chief institutions of power, investment, and legitimacy have largely defaulted. Our political, economic, administrative, journalistic, and religious authorities have failed by purpose, misdirection, corruption, and inadvertence. They appear to succeed only when judged by conveniently narrow criteria.

Central investment decisions are made by corporate boards so committed to maximizing shareholder value as to be deceptive or indifferent to "negative externalities" that make life less sustainable. The political system is crippled by a political party that junks the overwhelming scientific consensus. Cynical denial, ruthless myopia, regulatory capture, political timidity, and stupidity prevail.

It is in this context of flat-out unrealism—or what C. Wright Mills memorably

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called "crackpot realism"—that the campaign to divest Harvard from fossil-fuel investment arises. Harvard is not only an illustrious center of research and education but a symbolic and moral center. Harvard's actions—and inactions—speak volumes. Whether or not the institution chose this calling all by itself is irrelevant. Harvard's decisions—and refusals to decide—carry substantial symbolic weight. To recognize this is realism. To refuse to recognize it is to be blinkered.

Actual realism requires recognition that the fossil-fuel industry not only endangers the earth, but fuels the destructive, fabulist cause of climate change denial. Therefore the Harvard Corporation, by investing in the industry, undercuts the University's research and teaching commitment.

A sharp-eyed appraisal of the political and social forces in play requires Harvard to respond to the climate emergency by putting its investments where its teaching and research are.

Todd Gitlin '63
New York City

President Faust believes Harvard is doing its part to fight climate change by educating future heads of the EPA. This is disingenuous at best and seriously deluded at worst. Having Harvard-educated alumni in positions of power is great, but for a real impact, Harvard needs to align itself with those arguing for divestment and an *Energiewende* (energy transformation) for the U.S. It is also in Harvard's narrow financial interests to get out of the fossil-fuel business as soon as possible. Let's keep working to achieve that goal.

Fighting fiercely and not relinquishing the ball,

Marc Strassman '69
Valley Village, Calif.

DRUG DISCOVERY

Vemurafenib, a promising new drug for melanoma that was described in "Systematic Drug Discovery" (July-August, page 54), is a useful case study for efforts to improve the drug-development process. It must be noted that this drug was developed at a near-record pace. The first clinical trials were initiated in 2006 and five years later an application was submitted to the Food and Drug Administration (FDA)—much faster than the seven to eight years the development process typically consumes. Similarly, the FDA quickly recognized the promise of vemurafenib and approved the drug in less than four months; the typical length of a review is 10 months. Although the emergence of resistance to this drug is disappointing, we should remember that vemurafenib represents an example of our drug-development process working well and delivering a promising new drug at a breakneck speed.

Additionally, the article laments the decline in the number of drugs approved by the FDA in recent years, asserting that the number of approvals "has declined from approximately 100 to about 30 per year in recent decades." This is inaccurate. In 2011, the FDA approved over 100 so-called new drug applications. Of these, 28 were totally new medicines, which represent the greatest promise to patients. The number of these new medicines approved by the FDA has risen sharply in recent years, and 2011's tally falls in the 90th percentile of drug approvals in the postwar era. At present, we are not doing badly, but there is no doubt that much more can be done to accelerate the transition of new science from bench to bedside. The new Therapeutic Science program at Harvard Medical School will certainly contribute!

Nicholas S. Downing '07
School of Medicine, Yale University
New Haven

Krayer professor of systems pharmacology Peter Sorger replies: We thank Mr. Downing for emphasizing that the approval of vemurafenib should be regarded as a triumph of genomic medicine and expeditious regulatory review. The question is whether the rapid emergence of resistance to the drug (which can easily be detected in preclinical settings) might have been recognized earlier and mitigated through development of alternative agents or combination therapy. In pointing out our systematic failure to study new drugs thoroughly, understand their precise mechanisms of action, and anticipate the emergence of

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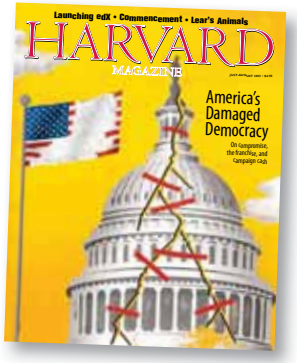

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resistance, we are faulting neither the companies who developed drugs such as vemurafenib nor physicians who prescribe them. We are simply pointing out the opportunity for development of a new (or revitalized) branch of biomedicine with potentially significant societal impact.

Mr. Downing is also correct in pointing out that 2011 was a banner year for FDA approvals. We certainly hope this trend continues, although our multiyear average seems a safer metric.

WORKER IN WOOD

Kudos for Craig Lambert's lovely article about David Esterly, "The Art of Subtraction," July-August, page 30). As one who practices a craft, is a devotee of Yeats, and delights in prose that is both excellent and idiosyncratic, he really speaks to my condition.

Judith S. Stix
St. Louis

SOCIAL IMPACT BONDS

Ashley Pettus's article on "Social Impact Bonds" (July-August, page 11) maintains the convenient fiction that tweaking the nonprofit system—adding one more level of bureaucracy, another way for private investors to profit from the provision of public services—is the best we can do for this country's "toughest problems," i.e. the underclass.

There is no way that the nonprofit sector can make up for the deep cuts to government programs under sequestration, after decades of cuts to services for the poor and middle classes. Only the federal government can summon the resources to subsidize housing, food, childcare, and education, as well as services for the elderly, sick, and disabled, at the necessary levels.

Nonprofits burn out countless good people trying to meet ever-increasing needs locally instead of organizing to demand adequate federal resources. They can offer rich donors ego-gratification and tax benefits. But they can't solve the problems created by laissez-faire capitalism, which continues to make the rich richer at the expense of all the rest of us. To pretend otherwise is to accept the federal government's abdication of responsibility to the American people, and to follow Grover Norquist's ['78, M.B.A. '81] prescription: shrink the government until it's small enough to drown in a bathtub.

Jane Collins '71
Medford, Mass.

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URBAN JOBLESSNESS

I QUESTION the basic premises of the article "The Urban Job Crisis" (May-June, page 42): that the crisis would in part be alleviated by finding "paths toward employment for low-income blacks and Latinos" and that that path is to be found in educational opportunities "that will enable them to find stable jobs in the modern labor force and work their way into the middle class."

In my view, I question the implication that the modern workforce could exclude jobs that are now categorized as "low paying," jobs such as those in the service industries. If it can be given that such jobs will always be with us, then our focus could and should be on how to reward those people holding those jobs sufficiently so that they can support themselves and their immediate families in livable conditions. The low pay from today's minimum wage is totally inadequate to meet these conditions. Raising the minimum wage to an appropriate level would accomplish more than meeting basic human needs. It would result in multiplying the numbers of consumers. This, in turn, would redound to the bottom lines of producers and, as a consequence, to their stockholders.

But raising the minimum wage would not alone solve today's job crisis. We should look to our government and our major corporations to contribute to the solution. Our government can create millions of jobs and now, belatedly, is the time to do it. No mystery as to how it can be done. The WPA and CCC did it in the 1930s and '40s, as does the Job Corps. Furthermore there are billions, if not trillions, of revenue dollars to be obtained by enforcing the tax code as it is and, additionally by reforming the code to mandate offshore income to return back home to be taxed.

What could be done with those corporations, who are now sitting on huge surpluses waiting to renew their faith in our country before investing? My fantasy is that they could be encouraged to spend their lobbying funds on promoting the common good and that the very act of bipartisan collaboration would stimulate renewal of faith and release of funds for investment.

In summary: resolving the urban job crisis can be accomplished if a) government raises the minimum wage to a living wage, enforces and reforms its tax code, and launches programs to create jobs while b) corporations are encouraged to invest their excess surpluses.

ROBERT E. SIMON JR. '35
Reston, Va.

SUPREME COURT "DIVERSITY"

THE REPORTAGE on Commencement 2013 ("Lows and Highs," July-August, page 40) included a curious "high-minded and serious" observation by Jeffrey Toobin '82, J.D. '86, during his Law School class day speech. The "distinguished Supreme Court reporter" noted that the current court "now has five Republicans and four Democrats—and that tells you most of what you need to know."

Really?

I believe that a more interesting and insightful observation would have been that the current court "now has six Harvard Law School matriculants, and three Yale Law School matriculants—and that tells you most of what you need to know." (Jus-

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tice Ginsburg later transferred from HLS, and graduated Columbia Law School.)

Tom Reardon '68
Plymouth, Mass.

SCIENCE LEARNING

In "Science at Harvard: Collaborations and Transformations" (The View from Mass Hall, July-August, page 6), President Drew Faust asserts that "getting students involved in research early on is key to their engagement and sustained interest in scientific careers." This view is influencing science education at Harvard and across the U.S. In my experience it often leads to "research opportunities" that either have little value, or are more traditional learning opportunities rebranded as "research." If President Faust's assertion is true this may be worth it. I am curious what the evidence for her assertion is?

Richard Taylor
Princeton, N.J.

VAULTING WITH VERVE

Being a lifelong, certifiable Track and Field Nut, I read with pleasure the article ("Up, Up, and *Over!*" May-June, page 55) about champion pole-vaulter Nico Weiler '12 ('13). It reminded me of watching a track meet during undergrad days in the early '60s at Briggs Cage, where indoor track meets were held at Harvard. West Point was one of the teams competing, and their stellar vaulter, Dick Plymale, was jumping. The Cage was a bare-bones structure with a thin warm-up running track as a kind of balcony. Plymale was far "above" any Ivy vaulters of the day, so he didn't need to do his best. The landing pit in those days was made of a bag of soft neoprene extrusions, which did not provide very good cushioning. When Plymale took his turn, the bar was set much lower than his normal height. As he sailed way above the bar, he just missed smashing into the upper running track. Then his momentum carried him to the back edge of the meager pit. He hit hard and rolled onto the floor, but was not injured. That single vault was enough to win, but it could have ended his career. It was a vivid indication of the lowly prowess of Ivy vaulters of the day and was a good reason to build a better facility.

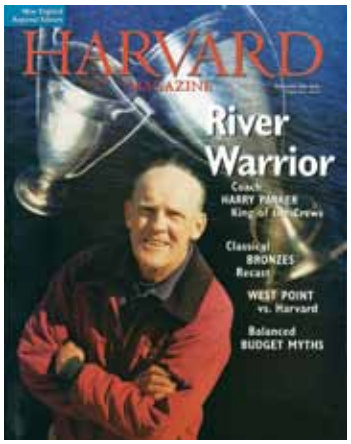
David Wilson '65
Placitas, N.M.

COACH PARKER

When I was teaching Harvard undergrads I had a member of the varsity crew team in my course. He asked for an extension on a paper on the grounds that he needed to practice for the Harvard-Yale Regatta. Of course I said to myself that we undergrads at U. Chicago would have never asked for an extension from a professor unless we were near death, in a hospital, and had a letter from a doctor to prove it. But this was Harvard, not Chicago. Crew was a Big Deal at Harvard. And the Harvard-Yale Regatta was the pièce de résistance. So I gave him the extension. The only extension I ever gave to a Harvard undergrad without a doctor's letter. A tribute to Coach Parker.

RIP.

Francis A. Boyle, J.D. '76, Ph.D. '83
Champaign, Ill.



For coverage of Harry Parker, the legendary crew coach who died on June 25, see page 63 and http://harvardmag.com/parker-13; to read our 1996 cover article about him, visit http://harvardmagazine.com/1996/05/upstream-warrior.

MORE ON MONRO

Here's another story about the late John U. Monro (Vita, May-June, page 30, and letters, July-August, page 74).

In the fall of my junior year, I was invited to compete for an executive job on the *Crimson*, and I was chosen to become editorial page editor. But neglect of my course work that fall caught up with me during the winter exam period. I experienced an acute emotional breakdown and was hospitalized for six weeks at the Massachusetts Mental Health Center in Boston.

My return to the college involved an interview with Dean Monro. During our lengthy conversation, perhaps recalling his own turbulent college career, he remarked, "All of us are skating on thin ice." I've never forgotten that comforting comment.

I did return to Harvard, reclaimed my job on the *Crimson*, and graduated magna cum laude. Not a bad outcome, all things considered.

Stephen Clapp '60
Jeffersonton, Va.

As the first Harvard Regional Scholar in 1952, I was blessed with the opportunity to attend the College. Late summer of 1954, a renewal notice for my junior year at the same stipend was received from the financial-aid office, John Monro, director.

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A good summer job and a new bride (an employable teacher) reminded me of my Depression-era father's advice: "Never ask for more than you need."

After advising the financial-aid office I could manage with less, a curt reply from Monro instructed me to report to his office as soon as I hit the Yard that fall. With great trepidation, fearing complete loss of stipend, I did as instructed. After I entered the director's office and identified myself, John Monro jumped from his desk, grasped my hand with a firmness that matched his crew cut, and said he wanted to shake the hand of the first person to turn down money from Harvard. Honor my financial judgment he did, but he assured me of future aid should the need arise. It did not, but I will never forget that handshake and the value validation it implied, an integral part of Monro's character, the "Monro Doctrine," and his life after Harvard.

Ralph W. Stephens '56
Reno

AMPLIFICATIONS AND CORRECTIONS

Our article "Time Flying" (July-August, page 64) incorrectly identified fiftieth-reunioner John Fryer '63, Ph.D. '74, as a member of the class of 1964. We regret the error.

Robert C. Davenport '44 wishes to correct the military rank mistakenly assigned him in a caption for last issue's College Pump ("Philosophic Fun," page 68). The retired major general in the Massachusetts Army National Guard, not in the U.S. Army, writes, "It may seem a minor matter to most people, but to soldiers it matters significantly. The qualification for promotion in the senior ranks is demanding in the federal system and tends to be more relaxed in some State Guard systems. While I will defend my qualifications mightily, only those who would have to work with me can make the final judgment." We regret the error.

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