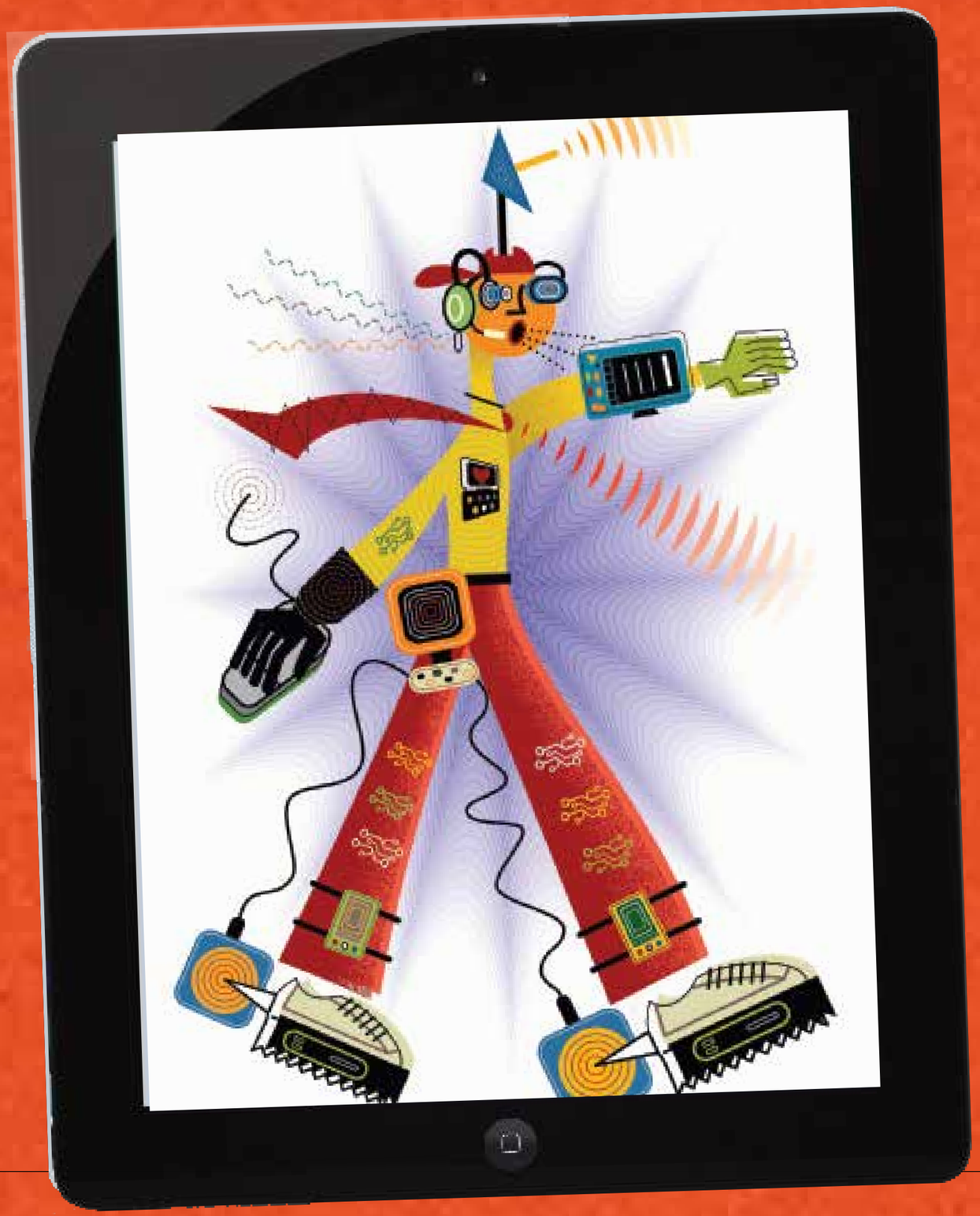

We love our gadgets. Try disconnecting from your smartphone (the meaning of "phone" no longer has any resemblance to its meaning just a blink in time ago) and see how that goes. Just the thought shows how integral technology is to daily life. Smartphones are how we consume news and entertainment, navigate cities, record and share moments, and buy stuff. ■ But does technology have answers to really big questions? We are bedeviled by problems: Climate change. Caring for an elder boom. Income inquality. Where to find jobs in a digital economy. And politics feels exhausted, too slow, too ideological to come up with solutions. Maybe technology can rescue us with a fancy device to get us out of this fix. ■ In the following pages, we ask whether technology is a force for good or bad. Can geoengineering avoid catastrophic global warming, or is it just a cover to avoid changing our capitalist ways? We look at how technology is upending the economy by weakening big institutions and empowering individuals. And we show which current jobs are under the shadow of computerization, while calling for a revolution in education policy to ensure we have enough skilled workers for a digital economy. ■ It may not save the world. But it's a start.

CAN TECHNOLOGY SAVE THE WORLD? LA TECHNOLOGIE : NOTRE SAUVEUR ?

Nous adorons nos gadgets. Imaginez la vie sans votre téléphone intelligent (le mot « téléphone » évoquant aujourd'hui tout autre chose qu'il y a quelque temps à peine). Cette seule idée montre à quel point les technologies sont indissociables de notre quotidien. Elles nous servent à tout : information, divertissement, déplacements, achats, partage de petits et grands moments. ■ Mais peuvent-elles résoudre les problèmes majeurs qui nous assaillent ? Pensons aux changements climatiques, à l'imminent « papy boom », à l'inégalité des revenus, aux emplois à trouver dans une économie numérique. L'action politique nous paraît stérile, à la fois trop lente et trop idéologique pour proposer des solutions. Et si alors une géniale application informatique nous sortait de l'impasse ? ■ Dans les pages qui suivent, nous cherchons à déterminer si les technologies sont au service du bien ou du mal. La géoingénierie, par exemple, nous évitera-t-elle le fléau du réchauffement planétaire ou masque-t-elle notre refus de transformer nos modes de gestion capitalistes ? Nous décrivons comment les technologies bouleversent nos économies, affaiblissant les institutions et dotant les citoyens de nouveaux moyens d'action. Et nous brossons un tableau des emplois menacés par l'informatisation, tout en préconisant une révolution des politiques d'éducation pour former les travailleurs qualifiés indispensables à une économie numérique. ■ C'est sans doute insuffisant pour sauver le monde. Mais c'est un début.

The case for geoengineering climate

DAVID KEITH

Geoengineering offers the realistic prospect of a technological fix for climate change. So why do so many critics on the political left fail to see how it can be a force for global good?

La géoingénierie pourrait offrir des solutions technologiques aux problèmes des changements climatiques. Alors pourquoi tant de voix de gauche refusent-elles d'y voir un atout pour le bien de la planète ?

If geoengineering can protect the vulnerable and the natural environment, why then is there such strong opposition to geoengineering from the political left? Since the 1960s, the environmental left has evolved a set of widely held assumptions about the characteristics that mark good solutions to environmental problems. They include a preference for local over global, from community-supported agriculture to the empowerment of indigenous peoples in the management of tropical forests; a preference for changing industrial processes to eliminate the pollutant over the use of end-of-pipe waste treatments; and finally, a preference for social over technological solutions.

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Geoengineering violates each of these assumptions and in that sense its rejection is unsurprising.

Activist Naomi Klein, for example, argues in *Capitalism vs. the Climate* that "real climate solutions are ones that steer these interventions to systematically disperse and devolve power and control to the community level, whether through community-controlled renewable energy, local organic agriculture or transit systems genuinely accountable to their users." Maybe, but the link between these solutions and emissions reductions is tenuous, and Klein provides no evidence to make link other than asserting that big oil "got us into this mess."

To pick just one example of fuzzy thinking, local organic agriculture does little or nothing to cut emissions, indeed it may have higher emissions than modern industrial farming. It's hard not to suspect that the means and ends have been reversed, that Klein knows the political outcome she favors and has simply latched onto the climate threat as a way to advance it.

Must we fix capitalism in order to fix the climate? Any serious argument in favor of this proposition must confront

ISTOCK

It's time for environmental advocates to reexamine some old assumptions. Should we prefer local over global? It's an odd argument for the left to make. After all, the essence of solving global commons problems like climate is to compel local communities to cut their emissions to achieve a shared global good even though it's in the self-interest of each community to use that atmosphere as a carbon dump. The imperative that the global public good trump local autonomy is the reason environmental groups have expended such effort on global climate eaty. Arguments for local autonomy argu- y come more naturally from the libertar- train of the political right, a perspective akes a paradox of the environmental left's e for small-is-beautiful.

efer social to technical fixes? One can side, but whichever you prefer it's hard to avoid the conclusion that most of the big environmental wins of the last half century have been techno-fixes. Air pollution was cut using catalytic converters not carpooling; the ozone layer was saved by changing refrigerants not turning back to root cellars; and peregrine falcons were saved from DDT by developing insecticides less prone to bioaccumulation.

the fact that Western democracies have made enormous progress in managing environmental problems over the last half century. To cite just two examples, the abatement of air pollution by the regulatory system anchored by the U.S. *Clean Air Act* has improved air quality even as population and wealth increased.

This was no minor victory. These regulations imposed costs that peaked at almost 1% of the U.S. economy, they were opposed by powerful corporate interests and the political battle to enact them was long and fierce. The benefits in the form of improved health greatly exceed the cost and in many cities these regulations have improved life expectancies by almost a year. The fight is not over, but the victories are real and should be celebrated. A global restriction on ozone-destroying chlorofluorocarbons provides a second and perhaps more impressive example because it demanded coordinated global action and it has succeeded in driving global emissions towards zero.

The rise of inequality and the loss of social mobility in the United States are pressing examples of the need for political and economic reform, but to sustain claims that an effective response to climate change requires a fundamental reengineering of market capitalism is to deny the fact that liberal market economies have done a far better job of environmental regulation than their competitors.

I am not advocating laissez-faire capitalism. On the contrary, I would like to see much more stringent environmental laws and a carbon price large enough to quickly drive high-carbon business out of existence. Getting to such an environmental victory will require a powerful new social movement. Indeed, looking backwards, one might turn my claim about historical environmental wins being technological on its head by arguing that the technology would never emerged without the rise of environmentalism and growing distrust of corporate power in the 1960s that drove the passage of the laws, laws that in turn drove industry to adopt the technical fixes that ultimately protected the environment. Klein rightly explains how corporate money spreads climate denial to block action.

The link between restraining aggressive capitalism and minimizing harm to the environment arises, in my view, not because political and economic liberalism are inherently anti-environmental, but because an accumulation of cooperate power and private political money has frustrated the ability of government to act in the public interest. ■