

Book Review

Talking Truth to Technology

Kentaro Toyama, *Geek Heresy: Rescuing Social Change from the Cult of Technology*, New York, NY: Public Affairs, 2015, 352 pp., \$20.51 (hardcover).

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The rapid pace of technological development in the past few decades has spawned a range of views about how technology stands in relation to poverty reduction and broad-based economic development. Two opposing views bookend this discussion.

There is, on the one hand, a view that indicates that by reducing the need for unskilled and less-skilled labor, technological innovations will wipe out jobs, especially at the lower end of the economic spectrum, hurting poorer people. A clear exposition of this view comes from Erik Brynjolfsson and Andrew McAfee (2014), who proclaim that

technologies like big data and analytics, high-speed communications, and rapid prototyping have augmented the contributions made by more abstract and data-driven reasoning, and in turn have increased the value of people with the right engineering, creative, or design skills. The net effect has been to decrease demand for less skilled labor. (p. 135)

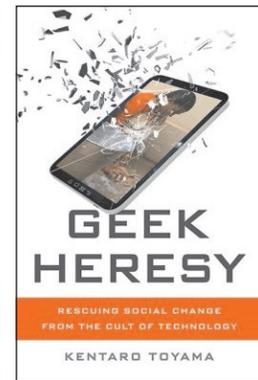
In a similar vein, Nicholas Carr (2014) observes how a single computer can take over the jobs of dozens of people. "Technology has created a growing reservoir of less-skilled labor," an October 4, 2014 report in *The Economist* notes, "while simultaneously expanding the range of tasks that can be automated." The Boston Consulting Group (2014) predicts that "countries with a greater number of robotic programmers and robotic infrastructure could become more attractive to manufacturers than countries with [large reserves of] cheap labor" (para. 3).

These developments have obvious consequences for inequality, employment, and poverty reduction. The prospect that globalization-led economic growth and the accompanying diffusion of technology will benefit poorer people becomes hazy and starts to recede. The future looks bleak for developing countries.

Not so, argues another set of people, whom Toyama collectively labels "techno-optimists" or "tech-zealots," representing the other bookend view. Far from being a source of danger for poorer people, they contend, the new technologies contain the best answers for their most severe problems. The difficulties that beset students in underserved schools—no teachers or poorly qualified and unmotivated ones—can be dealt with by installing interactive computers with preloaded lessons. Lack of medical professionals can be resolved through the use of tele-medicine; gaps in cold chains for vaccine delivery can be addressed through the use of drones; shortage of engineering talent can be handled by using specially programmed robots; the dearth of colleges and professors can be dealt with through the spread of MOOCs; and so on.

Instead of being a job killer and a bringer of woes, thus, technology is seen in this alternative universe as the cure-all for a variety of long-standing ills in the developing world. But not just there. Even in richer countries, technology is seen by its advocates as something that can quickly and effectively fill gaps in education and health care provision—a point of view that many in the United States have been quick to promote.

Between these two worlds—of a tech-doomed scorched earth and a tech-infused leveling of service



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provision inequalities—there is need for a more balanced and more realistic view. *Geek Heresy* admirably steps into the breach, providing a refreshing new take on the promise of technology, and—justifying the choice of the title and subtitle—also expanding on the supportive conditions required for achieving this promise and on technology's limitations.

Toyama is not a Luddite or techno-pessimist; far from it. He began as a geek, working in India for Microsoft Research, developing techno-solutions to widespread education and health and sanitation problems. Together with a highly-qualified team that he inspired, he did, in fact, develop many such proto-solutions. (Full disclosure: I met Toyama on multiple occasions when he worked for Microsoft Research in Bangalore, and he assisted me with some of my own research enterprises. I've also read earlier drafts of parts of this book, and am one of the people named in his list of friendly critics.) None of the innovations developed by Toyama and his team worked as expected, however. Computers designed to be used simultaneously by multiple students in distant rural schools did not work as planned. Because erratic power supply fried their circuits, because students preferred to use them for playing games, because teachers were not trained to work with computers, because lesson plans integrating computer-based learning were not drawn up, because no tech support was available . . . because of any number of human and institutional reasons, there was always a glitch, larger or smaller, sooner or later, that derailed these projects.

"Throwing gadgets at social problems isn't effective" (p. 20), Toyama realized, which set him thinking about better solutions. The resulting process of thinking, exploration, and discovery led to this book, the remarkable and heartfelt denouement of what has clearly been a long internal struggle.

The book is divided in two parts, with the first part pointing out the problems that persist when technology is regarded as a standalone solution to complex social problems. In addition to looking at his own experiments and detailing the reasons for their limited success, Toyama analyzes a number of other well-known examples, showing how many supposedly tech-driven miracles were actually the result of a combination of factors, with the tech bits amplifying but not originally producing the end result.

As important, but more entertaining, is how he shows that many an intervention anointed emperor by one or another tech-zealot actually has no clothes. This part of the book is simultaneously compelling and educational, with pithy one-liners concluding hard-hitting analyses, among them my favorite: "To say that the Arab Spring was a Facebook revolution is like calling the events of 1775 in America a lantern revolution thanks to Paul Revere" (p. 35).

Both the language and the analysis, not to mention the choice of examples—highly regarded tech solutions seen up close and exposed to be highly touted claims more than real-world successes—make this part of the book highly readable. The cautionary tale is a must-read for do-gooders in the tech world, in aid agencies, and in government departments and NGOs.

Toyama doesn't only dethrone technology, though; the book isn't just a mea culpa. He also tells of what else is necessary, what makes technology deliver better on its promise. And that part, most often missing from plans of technology-led development—is the human element: "Technology results in positive outcomes only when positive, capable human forces are already in place" (p. 54).

So how does one bring in this human element? The second part of the book illuminates this question with the help of a second set of examples—more positive ones, this time—showing how the problems of poverty and inequity have been addressed to good effect. Technology plays only a small part in some of these illustrative examples, and close to no part in some others. But in each case, a positive result is obtained and sustained. In programs of education for children from poor and socially marginalized households, in smallholder agriculture, in aid to the blind and disabled, in a university for first-generation learners, and so on, a common set of principles is adumbrated. Each of these examples is worth studying for its own sake—by development practitioners as well as by activists and theorists of social change and by students interested in careers in international development. Taken together, these examples help illustrate a more fundamental lesson: Development occurs when people develop. How to develop people—using such technology as appropriate and fitting—is the larger goal. By itself, technology accomplishes little. That would certainly sound like heresy to Silicon Valley and Bangalore. But it's a basic truth.

Why do some development programs work better than others? Scholars of development have been

probing this question for decades. Together with our common mentor, the late Milton Esman, Norman Uphoff and I examined a set of illustrative programs from different parts of the world, finding that rather than being any one of these things, success in development depends on finding a fit between management, technology, and organization (including community organization with people's participation). The principle of development aid is, or should be, assisted self-reliance. No technological fix can substitute for the hard work of building people by developing rules, norms and practices, and accountable organizations (Krishna, Uphoff, & Esman, 1997; Uphoff, Esman, & Krishna, 1998).

Toyama's support for mentorship as a means for nurturing positive changes is a step in the right direction, and the uplifting examples that he presents are richly expressive. It would have helped additionally if he had extended his gaze to consider the managerial precepts and organizational practices that have played a role in shaping these laudable outcomes, not just emphasizing a set of inspirational human qualities. He does touch on these aspects, but only in passing. However, to ask that an author deal centrally with all of these aspects, bringing in the same depth of personal experience, is asking too much. Talking truth to technology and persuading tech-zealots that people matter—and why *that* matters—is in itself a salutary achievement, rich with lessons that people in the worlds of technology and development would do well to incorporate in future programming. ■

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