



Book Reviews

DeGregori, Thomas. *Agriculture and Modern Technology: A Defense*. Ames: Iowa State University Press, 2001. 268 pp. \$54. ISBN 0-8138-0342-X.

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In an old skit from the British comedy troupe Monty Python, a publicist promotes his client as a doer of impossible feats. First the man attempts to jump the English Channel, then tunnel to Java, and finally (media interest dwindling by this point) to eat an entire cathedral, chipping a tooth on the first bite. Economist Thomas DeGregori, in his book *Agriculture and Modern Technology: A Defense*, motivated more by professional and personal passion than publicity, embarks on his own quixotic quest, as the title suggests. Better living through petrochemistry, molecular biology, nuclear physics, laboratory research on animals, and other weddings of science and technology, says the author, has produced high standards of living and benefits far beyond the risks or adverse impacts alleged by their critics.

The author cites neuroscience research suggesting that humans and technology have coevolved, and that our identity as a species is a result of technological mediation and of the ability to render the environment less hostile and uncertain. Critics who decry modern technology as alienating never experienced the historical antecedents and their accoutrements—high infant mortality, early adulthood death, chronic malnutrition, labor-intensive drudgery, and a cable TV lineup that includes only the most rudimentary networks (such as the Bear Sightings Channel, or the Fire Channel).

The book is heavily cited, unapologetic in its defense of the use of petrochemicals and genetic engineering in agriculture. Indeed, it would seem the author has yet to encounter a disagreeable modern technology. He bolsters his arguments with 55 pages of citations, with more on his web site (www.uh.edu/~trdegref/). I will try to summarize the threads of thought that emerge.

1. *Modern technology is as natural as eating meat.* Mastery of tools permitted humankind to attain its privileged status among species. To deny this, and to suggest that technology alienates humans from nature, is the true technoperversion. Instrumentation has in fact given us better understanding of nature, from the atom to the universe, than had ancient cultures with quaint but falsified accounts of natural phenomena.
2. *My citations are better than theirs.* The author cites prolifically, far beyond the field of economics, until the reader may either wonder or marvel at the ability to evaluate such a vast range of literature. At times the discourse is convincing—who alive (and outside of academia) can authoritatively criticize the smallpox vaccine? As the author points out, the U.S. food safety system is neither perfect nor risk free, but considering the enormity of the task

- (metaphors about sausage factories notwithstanding), most avoid death or the emergency room.
3. *Modern technology is utilitarian.* Technologies may have their problems, but the alternatives imply greater suffering and death. Spraying DDT to control malaria has no doubt saved lives, as has irradiation of food, the clinical use of animals to inform lab research and drug development, and chemical control of aflatoxins in foodstuffs. The Green Revolution is feeding the world, the author contends, and biotechnology is the logical next step. Technology does not come without risk, but DeGregori treats the precautionary principle (i.e., that technologies with potentially catastrophic impacts should be held to higher standards of evidence) as intellectual and scientific mushiness of the worst kind.
 4. *What the world needs now is technology.* The author firmly believes in the technological fix. "One can write quite accurately of all the failures of modern science and technology, but the fact remains that in aggregate we are much better off, and there is little if any evidence that the very few who are worse off would be in a better situation in the absence of technological change" (p. 199).
 5. *If only people knew the truth . . .* Modern technology's reputation has suffered from bad press and junk science, a frontal assault by antitechnology elitists. The author fashions an antitechnology "other" that he admonishes with the literary equivalent of a public flogging. He considers himself a *technological populist*.

Documentation is the vehicle of persuasion. However, DeGregori's goal—to defend modern technology and expose its detractors' motives as biased and their rationale as unscientific—is quixotic and naive. Debates over modern technology won't hinge on who can produce the most or the best citations. Scientific inquiry is one of many tools that can be used or ignored in decision-making processes. Politicians often seem hapless next to transnational corporations and their ability to manipulate geopolitics to pursue their objectives, among which feeding the world rates at best a by-product. The world isn't run by scientists and engineers, who in any case aren't the most consensual lot, and to promote average incomes or life expectancies as sufficient measures of technologies' impacts is to grossly oversimplify and overstate.

There are logical curiosities and glaring omissions in the arguments themselves, which often rest on dubious bifurcations. Must we in the end choose between either DDT or malarial pandemics? A handful of high-yield cultivars or mass starvation? Lumping polio and smallpox vaccines together with round-up ready crops or *Bt* corn and calling it all modern, utilitarian technology neglects the developers' motives and distributions of benefits. There was competition to produce a polio vaccine, but the outcome wasn't bundled with other patented products Salk or Sabin were attempting to market. The author would seemingly rest easy lumping chlorination of drinking water in with tomatoes genetically modified to accommodate a just-in-time global agrofood system.

As for the technobashers, they are interchangeably referred to as mossback reactionaries, technophobes, romantics, zealots, elites, and—pardon the harsh rhetoric—poets, united against all modern technologies. How many returned Peace Corps volunteers renounce indoor plumbing? Yes, there is a fair amount of polarizing debate that takes place publicly, but it comes from suppliers *and* critics, and the slick public relations campaigns aren't being bankrolled by the Greenpeaces of the world.

Little in the book suggests the author recognizes natural limits concerning conservation and degradation of matter and energy. Curiously, global climate change is mentioned only in passing, and biodiversity loss accepted as a market imperative. The utilitarian argument is somewhat selective to begin with. Women in developing countries have lost considerable ground to commercial agriculture and bundled technologies. But the logic dissolves when considering the technology-generated resource problems future generations will inherit.

Among DeGregori's hundreds of cites are a few from Clifford Geertz that seemed particularly incongruous (p. 15), suggesting Geertz would endorse a cultural view of technological change consistent with the author's. In fact, Geertz's book *Agricultural Involution* offers a more insightful perspective. The Dutch, in centuries past, methodically exploited Indonesian paddy rice culture when, left to themselves, the cultivators would have likely explored alternative means of intensifying food production. Ironically, despite a world full of plant species, the agrofood industry transnationals are still tinkering, now at the cellular level, with essentially the same handful of annual cultivars that emerged from the Neolithic Revolution. And far from curbing global appetites for fossil fuels and retooling massive technological systems desperately dependent on them, we should apparently look forward to the unbridled ingenuity to be unleashed when China and India—one third of the world's population—fully connect to the electric power grid.

The author's argument suffers from an ethnocentric view of technological change. Technological "progress" and industrialization, it could be argued, were fueled by colonialism. Only by denying history can one suggest that the developing world should embrace a certain brand of technology as its savior. Science has hopefully expanded our knowledge of natural processes, which *should* give pause to reflect on "technologically backward" cultures that have persevered, sometimes thrived, within the limits of their ecosystems. DeGregori's confidence that genetically modified seed will benefit the poorest suggests Development Amnesia. Why do people still contract polio? Starve? Dehydrate and die from drinking well water? A technological supply-sider, the author suggests such are *institutional* problems, separable from technology, presumably produced in an institutional vacuum. Benefits can be attributed to technology—the problems, it appears, to institutions.

DeGregori's latest book is a sermon whose praises will be sung by the high-technology choir. The transnationals in the back of the room will nod approvingly. But it doesn't settle anything—in fact, it sidesteps issues of choice and control, among both industrialized and agrarian societies, that provide ample terrain for confrontations like those that occurred in Genova. Boasting that evolution brought humankind to the present juncture, but only science-supported technology can maintain us at current consumption rates, is a broad spectrum prescription for a superficial diagnosis.

Dobbs, David. *The Great Gulf: Fishermen, Scientists, and the Struggle to Revive the World's Greatest Fishery*. Washington, DC: Island Press/Shearwater Books, 2000. 256 pp. \$24.95 (cloth). ISBN 1-5596-3-663-7.

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The central question in *The Great Gulf* is how two groups, New England commercial fishermen and National Marine Fisheries Service (NMFS) scientists, can differ so profoundly in their beliefs about the relative abundance of the ocean's major marine species, when both groups spend significant time professionally committed to the same waters. The author offers a case study of the summer of 1999 in which fishermen and scientists were in disagreement over the relative abundance of cod in New England waters. Fishermen were distressed at low cod catch limits and dense cod aggregations, which forced them to throw back often dead cod when attempting to target other species. They called for scientists to go to sea and witness for themselves the apparent inaccuracy of data which indicated low cod numbers. The fishermen, especially those community leaders with a conservation ethic, grew more frustrated when scientists did not heed their requests. Why would scientists interested in maintaining healthy fish stocks ignore the fishermen's pleas?

The author suggests that fishermen in smaller boats have detailed knowledge of relatively small pieces of water based on daily experience, whereas the scientists have a broader view of a much larger area of sea based on sampling studies. The scientists were aware that there were pockets of abundance, but were confident in data from their twice-annual trawl survey that indicated the overall levels of cod were low. Dobbs blames the management process for failing to adequately facilitate meetings between the two groups that have different forms of valuable knowledge of the seas. He believes that if brought together, fishermen and scientists could make for a more informed fisheries management system.

Dobbs believes that the regulatory system in place since 1976 when Congress passed the Magnuson Fishery Conservation and Management Act has not overcome the haphazard management and conservation efforts, inadequate enforcement, and divided authority that typified U.S. fisheries management prior to the act. He suggests that fishermen and scientists have largely failed to reconcile their differing perspectives because one of the only places the two come together are regional council meetings, which are structured in such a way as to leave fishermen with virtually no way to contribute the qualitative knowledge they possess.

The system of regional fisheries management councils that some regulators optimistically refer to as cooperative management is fraught with institutional inadequacies. For example, councils are typically composed of approximately equal numbers of public administrators and fishing industry representatives who merely make recommendations to the Secretary of Commerce via NMFS. The secretary can approve or reject them, but not modify them, which has led to approval of weak regulatory measures which did not impose reasonable restraints on fishing. Some fishing boat operators and conservationists have turned to the courts, suing NMFS and the Secretary of Commerce for abdicating their legal responsibilities to conserve stocks. The system is currently bogged down in several dozen such suits.

The author suggests that the failure to reconcile fisher-scientist differences has sped the fishery's collapse and crippled the effort to revive it. Dobbs calls for individuals on both sides to learn the methods of the others. He holds up Henry Bryant Bigelow, sailor, zoologist, and oceanographer of the early 20th century, as a model for others. Bigelow blended the more quantitative approach of scientists and the more qualitative observations of fishermen and, among other things wrote a comprehensive, respected book, the *Fishes of the Gulf of Maine*. Dobbs similarly brings attention to the work of lobsterman-scientist Ted Ames. Ames used the oral testimonials of elder, expert fishermen to map cod-spawning grounds. His work has