

112
E.P. 10/14/15

Major changes are contemplated for health care in the United States, motivated by economic forces and maldistribution of health services. Technology, a thing unique unto itself, however, will confound most any attempt to change the health care system or redirect its fundamental goals. Further, if there is one thing that can be singled out as the engine of the medical economic inflation now occurring everywhere in the world, it is the seemingly irresistible spread of technology into every level of medicine—irresistible to doctors, patients, and nations alike. Evidence that technology is a problem is everywhere in medicine. In intensive care units the world over, the technology of monitoring, organ support, and resuscitation is used where it is appropriate—related to the aims and purposes of the sick person. It is also used where it is inappropriate, defined by the capabilities of the technology and the consequent expertise of physicians rather than—or even contrary to—the good of the sick person.

Like the broom in "The Sorcerer's Apprentice," technologies come to have a life of their own, not only because of their own properties but also because of certain universal human traits. Technologies

Eric J. Cassell is professor of public health at Cornell University Medical College, New York, N.Y.

Eric J. Cassell, "The Sorcerer's Broom: Medicine's Rampant Technology," *Hastings Center Report* 23, no. 6 (1993): 33-39. Adapted from The John and Roma Rouse Lecture for Human Values, The Mayo Clinic, 12 December 1990.

The Sorcerer's Broom

Medicine's Rampant Technology

by Eric J. Cassell

Like the broom in "The Sorcerer's Apprentice," technologies take on a life of their own. To bring them under control, doctors must learn to tolerate ambiguity, resist the lure of the immediate, cease fearing uncertainty, and rechannel their response to wonder.

come into being to serve the purposes of their users, but ultimately their users redefine their own goals in terms of the technology. As a class, technologies are reductive, oversimplifying, impatient, intolerant of ambiguity, and democratic. They spread much more quickly than the ideas that inform them. Democracy has only gradually spread over the world: the transistor radio did it in a decade.

It is not necessary or useful to revisit the long history of the debate about the wonders or dangers of technology except to acknowledge its existence and the literature it has engendered, from Goethe's *Faust* to Huxley's *Brave New World*. On the other hand, systematic concern about technology is largely a child of the second half of the twentieth century. (The famous 1911 edition

of the *Encyclopedia Britannica* has no entry on technology, while the 1974 edition devotes thirty pages to it.) This is not an anti-technology essay. In medicine, one can no more be antitechnology than anti-science. There is no going back to a prescientific or nontechnological medicine—who would want to? The issue is how to solve the difficulty epitomized by Emerson's observation, "Things are in the saddle and ride mankind." Technology is not the problem; it is the relationship to it of those who employ it that is problematic. If this is not solvable, our entire project is a waste of time.

The definition of technology presents problems for which dictionaries are no help, because the term can be used in a manner so broad as to defeat understanding. Thus, any tool employed in a craft could be said to be that craft's

technology. In this discussion, I want to limit the term to the modalities and instrumentalities that greatly extend the power of human action, sensation, or thought in ways that are independent of the particular user. In addition to the instruments and devices usually considered as technology, we should include, for the sake of understanding, high-power medications—cardiac, antimicrobial, psychotropic, or whatever—that greatly extend our therapeutic power. It is our power that technology expands.

Technology is not science. They are frequently lumped together—as in "sci-tech"—but they are distinct. Science is not my topic. The topic is to see what there is about PET scanners, MRI, angioplasty, endoscopy, automated chemistry

