

Book Review

Edward S. Golub,
The Limits of Medicine: How Science Shapes Our Hope for the Cure,
Chicago: University of Chicago Press, 1997.

Reviewed by Howard Doughty

"Medicine has been defined to be the art or science of amusing a sick man with frivolous speculations about his disorder, and of tampering ingeniously

Theory) or a TOE (Theory of Everything), but a periodic building up, tearing down and reconstruction of ideas in accordance with epistemologies that are often tied to distinctly unscientific premises (did not Darwin come to the notion of natural selection upon reading the political economy of Malthus?).

Kuhn inserted the notion of cultural relativism into the discourse of science in a singularly persuasive way. He insisted that such events as the overthrow of Ptolemy's geocentric universe by Copernicus and his followers, the introduction, till nature either kills or cures him." Daniel Drake, M.D. (1785-1852)

If recognition were given for the most sloppily used word in the past four decades, a top contender would be "paradigm." Once it meant either an archetypal example (e.g., "a paradigm of beauty") or a linguistic pattern such as a conjugation of verbs or a declension of nouns. Now, however, it is commonly used to describe almost any observable arrangement of ideas and practices that can be shoehorned into the category of applied human thought. It is especially popular when such arrangements are said to be in flux; so, "paradigm shifts" are allegedly occurring in business (bank mergers), communications (e-mail), education (learning objectives), law enforcement (community policing), automobile design (fuel-efficient engines), social service (workfare) and virtually all other human endeavors, especially when the pattern of change involves the word and the world of "virtuality". We have become paradigm fetishists as a result of our preoccupation with social and technological change and, simultaneously, our shallow reading of the work of philosopher-physicist Thomas S. Kuhn.

It has been almost forty years since Kuhn's remarkable book, *The Structure of Scientific Revolutions* astounded scientists and historians alike. Its principal thesis - admittedly oversimplified - was that science does not plod resolutely and remorselessly forward, applying its treasured method to more and deeper recesses of nature and making clear the facts, the theories, and the natural laws that comprise and govern the universe to all with the wit and the will to comprehend them. Instead, Kuhn said that science, rooted as it is in space, time and cultural context, lurches on in a manner that reminds me of nothing more than Stephen Jay Gould and Miles Eldridge's account of biological evolution: it is not an incremental accumulation of necessarily progressive mutations leading to evolution's crowning glory, humankind, but a pattern of "punctuated equilibrium" in which long periods of stasis are dramatically interrupted by cataclysmic events that are followed by brief

explosions of innovation until life settles into another long period of normalcy ... and then another shake-up, another mass extinction, another "paradigm" change. Similarly science is not a gradual building up of knowledge upon a firm and settled foundation leading ultimately to a GUT (Grand Unifying Theory) or a TOE (Theory of Everything), but a periodic building up, tearing down and reconstruction of ideas in accordance with epistemologies that are often tied to distinctly unscientific premises (did not Darwin come to the notion of natural selection upon reading the political economy of Malthus?).

Kuhn inserted the notion of cultural relativism into the discourse of science in a singularly persuasive way. He insisted that such events as the overthrow of Ptolemy's geocentric universe by Copernicus and his followers, the introduction of relativity by Einstein or of quantum mechanics by Planck were far more than refinements of existing knowledge; they were catastrophic destructions necessary in the process of establishing new theoretical orthodoxies. By recognizing science as a privileged but only partial aspect of human perception and comprehension, Kuhn began an argument that resonates undiminished still through the groves and the grants economy of academe.

By trivializing Kuhn's application of the term paradigm to the history of science (in much the same way that the term revolution has been trivialized by its application to toothpastes, skirt lengths and "common sense"), the importance of genuinely world-altering events and of the authentic ideological transformations that often accompany them have been obscured. One of the several virtues of Edward S. Golub's book, *The Limits of Medicine*, is that it reminds us of how rare truly paradigmatic change really is.

Golub, an immunologist by training, shows with commendable grace and economy how little our understanding of medicine has changed despite the seeming stream of innovations - both clinical and technological - that have poured forth in the mere century dividing Pasteur's process of immunization against rabies and the onset of AIDS. He also illustrates how much we have credited modern medicine with improvements to the quality of our lives that are properly attributed to other factors. Increasing life expectancy in the industrial world, for instance, has much more to do with improvements in public sanitation, personal hygiene and the rising standard of living than with any technologically-mediated medical miracles. True, many individuals have benefited from specific tricks in the doctor's conjuring kit (I, for one, would have died at age seventeen in the absence of surgical techniques for repairing a ruptured appendix); for Golub, however, the limits of medicine are less technical than conceptual and it is at this point that his book reveals its implications for those interested in innovation in general and not just in matters of biological well-being.

Golub's book challenges us to look beneath the surface, to recognize our fundamental assumptions about what health and illness are, and to begin anew by thinking through the question of what we want medicine to be. Such effort is surely a prerequisite for those desiring to think through their particular problems and design creative alternatives to what now manifestly is.

Golub first considers the limits of medicine in historical premodernity unfortunately, he leaves aside the anthropological question of how preliterate societies interpreted disease. A sensible account of the role of animism in explaining disease and death would only have enhanced his eventual consideration of the Christian church, especially in the history of medieval medicine. Nonetheless, he does a commendable job of assessing "la longue durée," the period of western civilization from Hippocrates through Galen and well into the nineteenth century. He pronounces that it cannot be understood as a heroic march of science from humble beginnings in an ancient Athenian apothecary

shop to its current state of high-tech triumph. What is wrong with such an account is not so much a misreading of great discoveries (Newton, after all, existed and so did Kepler and Harvey) but a failure to notice that despite all the intellectual achievements of classical, renaissance and enlightenment times, "for all practical purposes, Galen and the gentleman physician of eighteenth century London or Paris treated patients virtually the same way."

Only in the past 150 years or less has medicine experienced a real "paradigm shift." And, even the emergence of modern, scientific medicine isn't all it's cracked up to be. Says Golub: "Specificity became the paradigm of scientific medicine by the early years of the twentieth century" when the experimental bias taught physicians to seek particular cures for particular maladies. The problem with this approach, of course, is that it leaves medicine almost alone among the sciences as an a theoretical bag of tricks, a collection of magic bullets, but with no overall understanding of health. As biologist Gregory Bateson said in 1970: "Cannon wrote a book on the Wisdom of the Body, but nobody has written a book on the wisdom of medical science, because that is precisely the thing it lacks."

Golub takes us a long stride in the direction of wisdom. Lest anyone misunderstand, his is no inchoate plea for "new age" healing, His writing is rigorous and tough-minded. His concentrated attention on genetics and his focus on chronic disease is thoroughly empirical. Yet, he asks better questions than how to develop the next generation of antibiotics now that bacteria are learning how to cope with the current one.

He asks the question that begs deep innovation: What is medicine for? In a manner somewhat reminiscent of the approaches taken to drug policy and law enforcement in books reviewed recently in this Journal (see my comments on Harm Reduction and Policing the Risk Society), Golub urges the adoption of three basic principles: (1) "We can quickly begin to stop relying on the promise of high-tech solutions to problems for which low-tech solutions already exist"; (2) "We can begin to replace the 'penicillin mode' of expectations from therapies [the search for cures] with the 'insulin mode' [the maintenance of life]"; and (3) "We must begin the slow and difficult process of changing our views of aging and death."

Involved in this potentially paradigmatic rethinking are moral, political and economic choices as well as medical challenges. Golub gives us a hint of what is to come: "death," he says, "must not be seen as a defect of a healer or a weakness of the patient." In the two thousand years of Galenic medicine, death was a constant presence; in the one hundred and fifty years of scientific medicine, technology has encouraged us to contemplate the conquest of disease. It was a false hope which can be overcome only by reshaping the goals of medicine in accordance with "a new spiritual sense of how we value ourselves as well as others as we grow old, and we must learn to make a comfortable place for death at the end of our lives." If that does not open debate on a paradigmatic plane, I don't know what does!

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