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Source: *Science, Technology, & Human Values*, Vol. 8, No. 1 (Winter, 1983), pp. 31-32

Published by: Sage Publications, Inc.

Stable URL: <http://www.jstor.org/stable/688906>

Accessed: 15-06-2018 15:20 UTC

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Jeff Douthwaite

Editor's Note—Science, Technology, & Human Values welcomes commentaries on its published material. And, although all commentaries must undergo refereeing, the journal wishes to provide an open forum for a wide range of perspectives on topics of *common* concern.

Having taught both in the physical and social sciences, I have concluded that the physical sciences are more satisfying than the social in that, in the former, things can be defined with more precision. Physical phenomena can be expressed in precise mathematical terms, can be analyzed using the exact logic of mathematics, and, from this basis of fact and reasoning, predictions can be made which can be verified and trusted. For example, the performance of an airplane in flight can be modelled mathematically, the airplane then can be "flown" on a computer and its response to many different stimuli accurately predicted and illustrated. Most important, the results are trustworthy.

In the social sciences, however, one knows very little for certain. Discussion takes place in an indistinct, grey world of speculation, opinion, hypothesis, and guesswork. It is as if one were forever in a fog, unsure of what one may be seeing or how to interpret what is seen. Because the fun-

damental element of the social sciences is the human being, and because no one can understand individual human behavior in real quantifiable, predictable ways, then, clearly, no one can understand it in the aggregate as is attempted in the social sciences.

This is not to say that the issues of the social sciences are unimportant. They are of the utmost importance. Questions of war and peace, and of why human beings prepare for war even when they know its horrible potential, are only two examples of critical issues examined by the social sciences. That importance may explain why we seek to fill the great gap in our understanding by using technology to solve social problems, i.e., to develop and employ "technological fixes."

A technological fix is an attempt to answer a social or human problem using technological devices or systems without any attempt to modify or alter the underlying social or human problem. Three examples are

- (1) Economic justice: To answer the problem of the equitable distribution of resources, our society uses the technology of mass production to make the resource so cheap that everyone can have one. American attitudes toward the automobile are a good example of this.
- (2) Driving while intoxicated: Some people have suggested that, to solve the problem of drunken driving, alcohol detectors and ignition interlocks be built into automobiles. If a driver is intoxicated, then the engine will not start.
- (3) War: Defer for now the seemingly impossible question of why we wish to kill foreigners and they us and instead solve the problem by assuring and demonstrating to all sides that

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our military technology is now sufficiently powerful to assure mutual and world-wide destruction even if we do not win the war. Thus, through technology, war becomes too horrible to practice.

Whatever the moral, ethical, or legal implications of a technological fix, if it works even temporarily to solve an important social problem, then it is an important contribution. And while the technological fix is working, subtler, stabler and less expensive but more fundamental fixes—usually built upon education and self-restraint—may be implemented. We note well that the technological fix can only be trusted in the short term for there are obvious ways each may be voided or frustrated. For example, price fixing or excessive profiteering will defeat the fix of mass production, bypassing or shorting out the driving-while-intoxicated mechanism will nullify it, and a war

for the national honor may still override the logic and the purpose of our massive horrible technological deterrent.

Despite its benefits to society, however, the technological fix is well named. It is not a real solution. It will work for a time (although no one can be sure for how long). The terrible temptation is to assume the fix will last.

Technology can thus be employed to buy us time during which we can attend to that fundamental, fascinating building block of the social sciences—ourselves. Our evolution proceeds very slowly. In the meantime, if technology sufficiently commands our attention and our energies, it may even save us from ourselves. A technological equivalent of war? We need both kinds of understanding, technological and social—the type that is advanced can help us live with, enjoy, and improve the other. Perhaps in recognizing this fact we can survive and better enjoy the best of both worlds.