

Scientific Research—The Ethical Debate

The past few decades have witnessed unyielding support of scientific research from the government and the general public. With the many gifts that science has given society to make people's lives easier, it would seem blasphemous to criticize or even to question these modern messiahs. Because of science, people live longer and have more leisure time; they have machines that make their lives easier and their tasks less time consuming.

It would seem blasphemous to criticize—until recently. The past few years have seen science's gifts turn deadly. Safe, clean nuclear power has produced mountains of deadly waste and the nightmare of Chernobyl. Healthier and longer lives that science made possible are now threatened by deadly pollution of the air, land, and water. In the face of such hazards, it is no wonder that people today are demanding more rigid checks and balances upon science.

When scientific research can create both life-enhancing benefits and life-threatening risks, it appears that limits must be placed upon the scientists. The question of what values should be used in establishing those limits has generated much heated debate. What moral values or ethics should society use when assessing this dilemma between science's benefits and risks?

One of the primary concerns of those who are asking for stricter regulations of scientific research is the lack of a social consciousness among those conducting possibly dangerous research. According to Liebe F. Cavalieri of Cornell University Medical College, scientists' "values seems to be related to the bettering of the human condition. Yet in their own realm many of the same scientists fail to make note of the possible ill effects that could follow from their work; they make the implicit, vague assumption that all science is good, as though its beneficent application were foolproof. This leads to the illogical conclusion that any and all goals are equally desirable in the search for knowledge, and this is somehow connected with freedom of inquiry" (*The Double-Edged Helix: Genetic Engineering in the Real World*, 1985). Cavalieri notes this not as a criticism of scientists but merely as an observation of their desire for unchecked scientific freedom. He fears the consequences of research in medicine, agriculture, and industry conducted by scientists who do not use ethical values as a guide.

Gerald Feinberg, a physics professor at Columbia University, directly opposes Cavalieri's assertion that moral values should be allowed to dictate scientific inquiry. He agrees that society's concern about possible adverse technologies is legitimate but is not a good reason for disallowing research. "We cannot know," he writes, "...what new technology can emerge from scientific research until after the research has been done, often not until long after, so that trying to control technology by controlling science is likely to be ineffective, unless we restrict all research." He then adds "it is more effective to control the technology itself, after its possibility has been demonstrated, but before it has been developed or implemented on a large scale" (*Solid Clues*, 1985)

Gerald D. Laubach agrees and writes, "To cut off research because of fear of the possibilities inherent in knowledge is to condemn our society to a life without creativity, without new capabilities." Laubach adds that we need only look back in history to find instances where "science...was right and human instincts were wrong. Passionate fears

were aroused with the advent of steam power and electricity, surgery and immunology, and the automobile and air travel” (*USA Today*, July 1980).

Yet to compare the relatively contained and controllable technologies that Laubach names with genetic engineering and nuclear research is “irrelevant and even dangerous in modern times,” counters Cavalieri. “[Recombinant DNA] will permit manipulation of the gene pool of the earth, and thus... of the nature of all life.” He adds, “its possible influence on ecological systems and future generations of humans is incalculable” (*The Double-Edged Helix*, 1985).

Because science today is entering areas long considered the purview of religious belief, science and ethics are inextricably linked. Feinberg comments, “Many scientists believe that science has no way to answer ethical questions, such as whether abortion is morally justifiable. All science can hope to do is help clarify some of the factual matters related to these questions, such as whether a fetus can feel pain...[Yet] ethical questions do not have answers in the sense that scientific questions do; scientists show good sense in not using science to try to answer them.... It has been demonstrated over a long history of conflict that religion has nothing to teach science about the matter that most concerns science, that is, the way the universe works. Accordingly, it would be best if religious believers abandoned their efforts to influence the content of science” (*Science clues*, 1985).

Yet Cavalieri believes that scientific research unchecked by moral concerns is irresponsible and that science and ethics are compatible. “Science practiced in a newly responsible way could play a vital role in extricating society from the impending crisis” of “finite energy supplies, the limited ability of the environment to absorb pollution, population growth, and the finite potential for food production, and, ultimately, the projected thermal instability of the planet.” He also believes that scientists “have the knowledge and the qualifications necessary to recognize the dangers of our present technological course, and they cannot escape from the moral responsibility of acting to change it” (*The Double-Edged Helix*, 1985).

Now that advances in science have made possible the transplanting of a baboon’s heart into a human infant in order to prolong life, one can no longer argue that science and ethics are separable. That ethical concerns must be exercised in the application of scientific research is undeniable. The only question is whether the scientific community will take responsibility for exercising this control or whether ethical guidelines will have to be imposed from without.