Are there values implicit in science?

Editor's note: This is the second of a series examining the nature of science, its motivations, and the implications of values-oriented science.

A National Assessment of Educational Progress Study, reported in the Winter, 1979, edition of The Chronicle of Higher Education, confirmed that "the older children get and the more they are exposed to science, the more likely they are to regard science as a favorable attitude toward it, either in terms of their own career choices or their expectations of how it might change the world around them." Many of the respondents to the survey blamed science for some or most of society's ills.

The findings were based on a study conducted in 1977 of approximately 80,000 students aged 5, 13, and 17 and of 3,000 adults between ages 26 and 35.

Those rather negative judgments toward the scientist may be related to the abuse and misuse of technology, one of the products of science, in the past. It is easy to think of examples of such abuse: the threatened meltdown at Three-Mile Island in Pennsylvania, Skylab's violent burning and being rebuilt.

Can science be directed so that it might change the world for the better? Some have criticized "basic" research can often be applied to earning money for its own sake. A great many students envision careers in science. But do scientists lend a humane interest to their laboratory work? Some have criticized science by claiming that scientists have no humane interests and little conscience because the only criteria of being true to the facts. Science can only be practiced by those who value the truth. When the practitioners of the discipline pursue science, they seek not the facts for their own sake, but for the order among the facts by grouping them under concepts, and judge those concepts by testing whether their implications and predictions turn out to be true in the light of new facts.

When critics assert that science is neutral, they say that the findings of science are neither good nor bad in and of themselves. They may go on to say that the use to which those findings are put — the availability of technological applications — must be determined by values brought in from outside scientific activity. But this is where their argument may begin to break down. The critics may believe that these values must come from outside science, which is certainly not implied by the argument that the findings of science are neutral.

It could be conjectured that men believed science as a value long before they began to practice science. But it appears that truth has often been defined very strangely so that truth, in fact, has not been valued as different as science. The acceptance by any society of the material fact as an arbiter of truth makes it a scientific society. A dogmatic society, one that believes that it has discovered some absolute immutable truth, may attempt to regulate the behavior of others in accordance with that truth. To the contrary, the scientific truth appears to be a changing, evolving concept. The activity of science presupposes that truth is an end in itself.

From this fundamental premise, it is possible to examine the nature of scientific truth as well as what is implied by saying that a scientific description corresponds with the facts. Since such a description cannot be perfect, the description can match the facts only to a certain degree of approximation — what some engineers may call a degree of tolerance. A scientist must therefore decide what imperfections have concepts, if he is ever to come to any conclusions. Certainly this is an art of judgement.

Ken Hamilton

If you missed

B-Y-F-Y-T-F-Y

If you missed 1957 you missed the Russians launching Sputnik I into earth orbit. You missed seeing a young singer continue his rise to the top of the record industry with a song called Jailhouse Rock. You missed the ballyhooed introduction of a car called Edsel. And you missed the birth of an industry when a group of talented young engineers and scientists formed the nucleus of Fairchild's semiconductor operations.

Though you missed the beginning, you haven't missed the future. Talent, enthusiasm and hard work can take you as far today as it did in 1957. Maybe even further. Today, with the vast resources of our parent company, Schlumberger Limited, Fairchild is committed to technological leadership and innovation. And while we're pioneering new technologies, we are also creating new career enrichment and employee benefit programs.

Fairchild has exciting career openings on both the West and East Coasts. We'll be on campus in the next week or so and would like to talk to you about the future. Yours and ours. Visit your placement center for the time and place. It's an opportunity you won't want to miss.

EVE JOBBI$S

A Schlumberger Company