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The Spirit of Science

Most scientists would probably agree that the popular concept of the methods and aims of science is wide of the mark. Science fiction, the movies and television, and even some works of literature often present a view of science that the scientist finds too absurd to consider seriously, much less rebut. Some extremists among the humanists seem to fear that scientific analysis has driven beauty from the world and, by picturing man as a machine, has destroyed any possibility of human dignity and self-respect. Science, if properly understood, is no enemy of the highest aspirations of man and has no inherent incompatibility with the arts.

It is unfortunate that the audience that would profit most in understanding is not likely to read Warren Weaver's presidential address to the AAAS at Atlanta [*Science* **122**, 1255 (1955)], for his discussion would go far toward dispelling these misconceptions. Weaver considered science broadly and concluded that his "comments do not support the concept of science as some kind of super creed, magical and mysterious as it is all-powerful, arrogant from its successes, and avid to invade and conquer, one after another, all the fields of human activity and thought. This viewpoint does not justify the notion that science is so special as to be unique, as well as so curious as to be incomprehensible. . . . On the contrary, these descriptive comments picture science as the servant of man, not his master; and as a friendly companion of art and moral philosophy. . . . It is a natural expression of both his curiosity and his faith."

Surely few scientists would disagree. It is clear that Weaver does not expect science to answer ultimate questions or, in Aldous Huxley's phrase, to put "salt on the tail of the Absolute." The modern attitudes of science are in the tradition of the Greek philosophers; Plato would doubtless have felt at home with our approach to the modern picture of the material world: science deals with appearances, with events. The events are linked to one another by a series of concepts, and these in turn furnish a base for further inferences, which may or may not be supported by the observed relationships between the events that they predict. The structure of scientific knowledge is a mental structure—a conceptual tapestry woven from the gossamer threads of thought. Who is bold enough to say what relationship the tapestry has to the reality behind it? That there is some regular relationship may be inferred from the success of prediction: the most highly developed branches of science can predict what images will appear in the unfinished parts of the tapestry; here and there new threads are added, and order and beauty emerge when apparently unrelated fragments unite to a harmonious whole.

But this is only a metaphor and one that each scientist would prefer to formulate for himself. To return to a safer position and one less likely to arouse philosophic argument, it seems both regrettable and indefensible to think of science as dull fact-grubbing, and the arts alone as creative, for the conceptual universe depicted by science is a product of the creative imagination. Science and the arts in different ways pursue a common end; they are expressions of man's effort to bring order and beauty and understanding into his life.—G. DUS.