ment of its own, as has been the case with Christianity and Marxism. This is not so in science, where each practitioner expects to be outmoded by his students, and where the accepted norm is permanent revolution. The real problem now, Bell believes, is that as science becomes involved in public policy, the charisma may become less.

"Ethos" is another of Bell's terms for describing the scientific community, defined in an eloquent celebration of science that bears quotation at length. The community of science, he says,

> is a unique institution in human civilization. It has no ideology, in that it has no postulated set of formal beliefs, but it has an ethos which implicitly prescribes rules of conduct. It is not a political movement that one joins by subscription, for membership is by election, yet one must make a commitment in order to belong. It is not a church where the element of faith rests on belief and is rooted in mystery, yet faith, passion and mystery are present, but they are directed by the search for certified knowledge whose function it is to test and discard old beliefs. Like almost every human institution, it has its hierarchies and prestige rankings, but this ordering is based uniquely on achievement and confirmation by peers rather than on inheritance, age grading, brute force, or contrived manipulation. In totality, it is a social contract but in a way never foretold by Hobbes or Rousseau, for while there is a voluntary submission to a community and a moral unity results, the sovereignty is not coercive and the conscience remains individual and protestant. As an imago, it comes closest to the ideal of the Greek *polis*, a republic of free men and women united by a common quest of truth. . . . The dedication to science has a hallowed quality, and because this partakes of the "sacred" we can say that the ethos of science describes a "charismatic community."

The ethos of science, Bell believes, is the emerging ethos of post-industrial society; the scientific estate "is the monad that contains within itself the imago of the future society." Yet the ethos may become ossified. Just as in capitalism the Protestant work ethic has been transmuted into hedonism and mundane acquisitive drives, so too the ethos of science could turn into a set of formal justifications masking a reality rather than imperatives for conduct. "Formulated in an age of innocence, it risks becoming the ideology of post-industrial society: a creed which establishes the norm of disinterested knowledge, but which is at variance with the reality of a new bureaucratic-technological order. . . ."

The decay of the Protestant ethic is a theme to which Bell returns in order to explain what he describes as the "widening disjunction" between social structure and culture. Unlike the single value system that prevailed in the bourgeois society of the 19th century, modern capitalism requires not only honest production but hedonistic consumption—in other words, that people should be square by day but swingers by night. Contemporary culture, defining itself in opposition to bourgeois values, has become anti-institutional and antinomian. Hence, says Bell, there has developed "a deep and growing split between the technical intelligentsia who are committed to functional rationality and technocratic modes of operation, and the literary intellectuals, who have become increasingly apocalyptic, hedonistic and nihilistic."

A notable symptom of this disjunction is the anti-science movement. It is a school of thought with which Bell has little sympathy. "Many of the criticisms of technology today," he says in a recent essay in *The American Scholar*, "remind one of Goethe, who rejected Newton's optics on the ground that the microscope and telescope distorted the human scale and confused the mind. . . . The difficulty today is that it is the critics of technology who absolutize the dilemmas and have no answers, short of the apocalyptic solutions that sound like the familiar comedy routine—stop the world, I want to get off."

Science Oversold

Bell describes himself as neither pro-science nor anti-science. In a populist sense, he believes, science has clearly been oversold—"People expected too much of it—the notion that if scientists can go to the moon, why can't you have better schools, hospitals. But science is a game against nature, which is not the same thing as a game against persons." Bell is not without uneasiness at the present drift of scientific inquiry. "I am old fashioned enough to believe that the genuine questions are philosophical questions," he said in an interview last month, "but to some extent science has moved away too much from philosophy." As an example he cites how physicists have put more effort into searching for the smallest unit of matter than in asking whether or not any such unit should exist. "The mode of science is analytic, philosophy is synthetic. The scientist's interest is always to duck away from looking at the big picture, to look instead for the tractable problem."

Bell believes that scientists have a social responsibility in the sense that, like everyone else, they are individually responsible for their actions. (He led the fight against the decision by the American Academy of Arts and Sciences to give an award to Ezra Pound.) But he notes that the radicals, who are the usual source of the call for social responsibility in science, take a different line when it comes to the consequences of art, which they believe should be autonomous. The radicals want science too to be autonomous, but they also want it to serve the people. "They assume the pure truth and the people are the same—which is not always the case." The real problem, says Bell, "is how do you have a form of science that is responsive to social needs but also allows some degree of autonomy and breathing space."

In conversation Bell dispenses abstract ideas with machine gun rapidity. His view of the world is comprehensive and tightly constructed; he is happy dealing with big questions, although those that imply other views of reality he tends to redefine in his own terms, sometimes to the vanishing point. Have the events of the last 2 years disrupted the schedule for the advent of the post-industrial society?—Bell dismisses the Arab oil embargo as a success that cannot be repeated and the rise in oil prices as a "momentary dash of cold water." There is no shortage of energy, and the notion of a shortage of raw materials "doesn't make any sense to me."

Nineteenth century historians such as Macaulay liked to portray science as the great engine of progress, impelling society forward to new levels of freedom and material wealth. Such ideas may no longer be fashionable, but a belief if not in progress, at least in the sustaining capabilities of science, is strongly reflected in Bell's writings. Central to the theme of his book is the assumption that the existing order of things will endure and evolve peacefully, unshaken by catastrophe or major discontinuity. Bell, however, refuses to be called an optimist. If his visions of the future appear roseate to some, "It is not an optimistic bias in me, it is an optimistic bias in science and technology."—NICHOLAS WADE

Erratum. The article on the International Conference on Recombinant DNA Molecules (14 March, p. 931) should have mentioned that Richard O. Roblin (Harvard Medical School) was one of the members of the organizing committee who was also a member of the ad hoc NAS committee that invoked the moratorium.