

THE LAST WORD

by Gunther S. Stent

TEN YEARS AFTER ASILOMAR: THE LESSONS OF EXPERTISE AND SELF-INTEREST

To oldtimers it might seem only yesterday that the Asilomar Conference met to consider the potential dangers of the then recently discovered techniques of recombinant DNA. But the past ten years have seen such enormous scientific, technological, and economic consequences of these techniques, that the times of the Asilomar Conference already appear remote—as distant from the current biotechnological era reflected in the pages of this journal as, say, Gottfried Daimler's invention of the internal combustion engine 100 years ago is from our present motor transport era. Accordingly, the demands that followed Asilomar—for a ban on all recombinant DNA research—now seem as bizarre as the late 19th century attempts to ban automobiles. On this tenth anniversary of the Conference—in its character unique in the annals of science—I want to point to an important lesson to be learned from the controversy that attended the birth of recombinant DNA techniques.

Clearly, the molecular-biologist organizers of the Asilomar Conference were motivated by their own apprehensions about possible catastrophic results of the indiscriminate application of recombinant DNA techniques and their perceived need to work out specific guidelines to insure the safety of future applications. But they were to pay dearly for what they thought was exemplary ethical and responsible behavior. Alerted by press reports issuing from Asilomar, environmental-protection and social-responsibility-in-science organizations protested that the public interest had not been adequately represented. And when, in the following year, the National Institutes of Health promulgated the first guidelines governing recombinant DNA research—considered excessively restrictive by many molecular biologists—the protesters claimed that these guidelines were far too lax and would be ineffective in preventing the dire consequences of creating novel forms of life. Having closed ranks in a "Coalition for Responsible Genetic Research," the protesters lobbied for legislation at the federal, state, and local levels to place on recombinant DNA research restrictions severe enough to virtually end it.

On of the main arguments advanced by the Coalition was that the molecular biologists actually engaged in recombinant DNA research could not be trusted to make an honest assessment of the hazards associated with their work, because their self-interest would cause them to make dishonest risk appraisals. But in fact, since an expert cannot be so without self-interest in his field of expertise, this *a priori* argument of the Coalition implied a radical lack of faith in the honesty and wisdom of any expert advice provided to governing bodies responsible for the management of our society.

Taken by surprise by the virulence of the attacks leveled at them, many Asilomar veterans realized that they had been sorcerer's apprentices, not so much scientifically—by creating unstoppable monster plasmids—but politically—by rousing unstoppable defenders of the public interest. Some leading molecular biologists then set about master-

ing political sorcery; before long they had managed not only to abort all laws the Coalition had lobbied for, but also to persuade the NIH to eliminate almost all of its recombinant DNA guidelines. The total defeat of the Coalition was greatly helped by several revolutionary biological discoveries that would have been virtually impossible without recombinant DNA procedures. These discoveries did not, of course, prove the safety of recombinant DNA research, but, rather, they demonstrated its enormous potential and the considerable social costs that would be incurred by legal restrictions on its pursuit.

Admittedly, it is still not possible to forecast the long-range social consequences of recombinant DNA technologies any more than it would have been possible to forecast that the introduction of the stirrup—a Chinese invention—into seventh century Europe would make possible the invulnerable mounted knight in armor and, consequently, bring about the rise of feudalism. Likewise, it would have been impossible to predict that the introduction into the 13th century Europe of another Chinese invention, gunpowder, which deprived the mounted knight of his invulnerability, would bring about the fall of feudalism. But the mere possibility of unwanted long-range consequences cannot be admitted as a valid argument against technological innovation, especially inasmuch as refusing to partake in it may have even less desirable long-range consequences.

It is noteworthy that accusations of selfish intent rather than substantive technical criticisms of the recommendations promulgated at Asilomar formed the centerpiece of the arguments for banning recombinant DNA research. For instance, in their first Open Letter to the Asilomar conferees the "Science for the People" organization impugned their motives by claiming that "there is little evidence that the technologies being discussed at this meeting arise from social or medical needs of the population. Rather, they represent specialized interests including those of the scientific community itself."

Molecular biologists, in turn, responded by identifying their adversaries as professionally frustrated busybodies who lack what it takes to make a mark in the real world. The lesson of Asilomar's aftermath is that motivational arguments, and especially the imputation of self-interest, must be used very sparingly in adversary discussions regarding science and public policy. It would be better to stipulate in advance that nobody's actions can be wholly altruistic. Adversaries may consider each other misguided, ignorant, or stupid, but unless there is a tacit (even if counterfactual) presumption of good will, all discussions are doomed to futility.

Gunther S. Stent is Professor and Chairman of Molecular Biology and Director of the Virus Laboratory at the University of California, Berkeley. These opinions are the author's own and are not necessarily those of *Bio/Technology*.