

February 12, 1970

Professor M.H.F. Wilkins  
British Society for Social Responsibility in Science  
42 Great Russell Street  
London, W.C. 1, England

Dear Professor Wilkins,

I am happy to respond to your communication of February 9th.

I have, in fact, been given a great deal of thought in recent years to some of the questions that you raised and it would be difficult to summarize my responses in a brief compass. I will, of course, send you some of the material that I have already published on the subject with the caution that my views have indeed undergone a certain evolution in response to changing events and perhaps even more to my continued analysis and discussion of them.

I will make a few episodic remarks in this letter, and will surely keep in mind to send you the drafts of some papers and notices of a book of lectures that will deal with exactly these subjects (the Silliman Lectures that I gave at Yale last spring).

1) I find it very difficult to envisage a scenario in which human distress, injustice, or curtailment of individual freedom was appreciably aggravated by profound knowledge of cloning or of other methods of molecular genetic intervention. The major exception that I would take to this is the possibility of abuse in the area of biological warfare where one might argue that the existence of the potentiality of biological attack might introduce temptations for irresponsible aggression beyond those that already exist and can be very effectively implemented by existing technology. There is, of course, also the very grave hazard of unscheduled spread of infection. This could also be put down to an insufficiency of knowledge for surely we must continue to press our understanding of the viruses and virus infections to have any hope of defeating either natural or artificially introduced enemies of these kinds.

The most fearful imagery is usually associated with the exploitation of biological engineering by a totalitarian state. I have to remark that I find it very difficult to conjure up any fantasies more frightful than the facts of recent history.

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2) There are grave dangers from technological disharmonies that might lead to the premature introduction of the techniques even with explicit social sanctions in favor of them before the potential side-effects have been worked out. We have had many recent examples of such phenomena. I enjoyed receiving in this morning's mail a copy that I had ordered of the book "Technological Injury" edited by John Rose. It was my concern in this area that motivated my attempting to draw some wider public and professional attention to the potentialities for biological advance, and I hope you will readily distinguish my motive and I trust my productions from those of Beckwith and Company. (As far as I can tell, there is considerable distortion both in their presentation and in the press accounts of their points of view - I think they were trying to make a strong political point concerning the immorality of government intervention in the war in Vietnam and its incidental use of technology like defoliation and tear-gas. They seem to have been captured by the publicity they inadvertently generated in other directions).

3) Without revolutionary changes in social structure that in themselves would raise many new questions I do not see much likelihood of the exploitation of genetic engineering for utopian purposes by any planned large scale social action. Nor do I advocate it. We do, however, face some very serious dilemmas in respect to social control of family size that deserve much more urgent attention. I think in working out ways to deal with this problem we should by no means ignore the potential implications of the means used for shaping reproductive behavior by extension to areas like genetic prediction and control.

4) Human culture is, of course, absurdly resistant to change of any kind when this is directly perceived. I think that most of the prospects for any kind of rational foresight in further human evolution will necessarily and perhaps properly have to be primarily concerned with side-effects rather than head-on planning.

5) There are beyond question many examples of individual human suffering that can be further alleviated with the growing sophistication of molecular biology and I do not see how we can possibly deprive those whose care is in our trust of these potential advantages. Again I would stress that we must always be on the look out for unwanted and unexpected side-effects. One of the most interesting discussions I have seen of this kind of issue is in a recent science-fiction novel by John Brunner "Stand on Sansibar" the first two thirds of which I can recommend very heartily.

6) A great deal of negative public reaction to the kinds of threats that are attributed to molecular biology can obviously be attributed to fear and ignorance of the unknown. I think there is, therefore, some value to concrete factual discussion of future possibilities but I would also urge that the greatest attention be given to the most immediate issues, such as, the control of population size, the law of abortion and of artificial insemination, and the management of genetic screening in relation to antenatal diagnosis and preventive abortion. This last question in particular, in my opinion, already raises all of the fundamental issues that are likely to be invoked by the spread of other kinds of biological technology.

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7) Let me close by suggesting that there is a wide-spread public anxiety that genetic engineering will be imposed involuntarily through the spread of some virus that changes the genes throughout the environment by a hostile or totalitarian government. This is by no means an unattainable speculation from a purely technological point of view but I think that one must stress that this capacity will have been preceded for a long time by the possibility of large-scale lethal infection.

Sincerely yours,

Joshua Lederberg  
Professor of Genetics

JL/rr