Letters

Reproduction, Technology, and the Behavioral Sciences

The review by Jean Marx (Research News, 23 Nov. 1973, p. 811) of recent developments in the biology and technology of in vitro fertilization and the associated bioethical and legal considerations neglects an important component of this scientific and social frontier—the behavioral science component. The development of individual mastery over (*1*) and social control of (*2*) the behavioral and biological processes fundamental to reproduction are important aspects that should be considered in the continuing dialogue on this subject.

Let me support this claim with some recent, unpublished data from a survey of 88 unmarried women, ages 18 to 23, randomly selected from two counties adjacent to Stanford Medical Center. Of this group, 90 percent indicated they would utilize artificial insemination with their husband's sperm if it were the only way they could conceive once they were married; 66 percent indicated they would utilize in vitro fertilization with their own egg and their husband's sperm. However, when they were asked to consider artificial insemination that involved another man's sperm or in vivo fertilization that involved another woman's egg, these percentages dropped to 14 percent and 11 percent, respectively. The psychological basis for these differences is not clear. The respondents' attitudes toward these technological manipulations did not correlate with measures of their modernity, femininity, socialization, self-esteem, female role orientation, or somatic anxiety. Were the respondents in this survey influenced in their answers by feelings about marital and sexual fidelity? Were they reacting to the possibility of unequal biological relatedness of spouses to their children? What exactly are the psychological antecedents to and consequences of decision-making by individuals and couples when they consider the use of technological manipulation for reproductive purposes? Answers to these questions are fundamental to any complete consideration of the moral and legal issues and are necessary ingredients to any meaningful understanding of the needs of individuals and couples and to any reasonable process of public policy formation.

A parallel problem area is the preselection of genetically determined properties in progeny by parents. A simple and specific example involves the preselection of gender. Technologically, this can already be accomplished by amniocentesis and abortion. Some social scientists have commented on the social implications of gender preselection (*3*), and others have investigated its acceptance in natural populations (*4*). In the survey discussed above, 36 percent of the respondents said they would select the sex of their children, given the opportunity, and 31 percent said they might but were not sure. This is certainly preliminary evidence that further technological development of techniques for sex preselection might lead to their widespread use. Here again we are largely ignorant of the behavioral components of a development in the technology of reproduction. Such components would help us clarify the ethical problems and provide important guides to social action.

We should not proceed with these matters as we did with the development of oral contraception. Behavioral scientists should be an integral part of all further research and development on this important scientific frontier.

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Safety of Medical Devices

In the report on medical devices by Barbara Culliton (News and Comment, 9 Nov. 1973, p. 565) it is stated that there were some 512 deaths and 30 injuries associated with artificial heart valves and 89 deaths and 186 injuries from cardiac pacemakers reported in the medical literature over a 7-year period. I developed a heart valve, first used it clinically in 1961, and have been active in cardiac valve surgery for 15 years. It is most disheartening that only the negative aspects of the remarkable achievements that have occurred in the field of heart valves and pacemakers are presented in Culliton's report. During this 7-year period, there were at least 250,000 heart valves, and probably an equal number of pacemakers, inserted in the United States alone. The patients who receive heart valve replacements are all totally restricted, and their life expectancy is a matter of months. I personally have patients who are living 11 years after heart valve replacements; several woman patients of mine have successfully delivered children and are maintaining normal home lives.

The senators and the public should realize that people don't walk in off the streets asking for a new heart valve as if they were shopping for a suit of clothes. All of us in this area are working under extremely difficult and hazardous conditions, since no one likes to admit the possibility of death or injury from an operative procedure. The mortality rate in most institutions for heart valve replacement operations is now 5 percent. With improvements in procedure and materials, the percentage of postoperative emboli is steadily being reduced and is now also in the neighborhood of 3 to 5 percent.

As for the question of implanting pacemakers, what else can one do for a patient whose heart rate is 30 beats per minutes and who is having intermittent episodes of complete cardiac arrest?

In the field of medical devices, there are many small companies for whom premarket clearances may be particularly difficult. On the other hand, in the early days of the development of medical devices, particularly invasive devices, the giants of industry who could have helped us out had no desire to manufacture products which had such limited sales and carried such high risks.

Furthermore, heart valves and pace-