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# **"GENETIC SCIENCE AND MAN": NINE VARIATIONS ON A BIOETHICAL THEME**

**LeRoy Walters, Ph.D.**

(Ed. Note: Copies of the full September issue of *Theological Studies* "Genetic Science and Man" may be obtained by writing: Business Office, Theological Studies, 428 E. Preston St., Baltimore, Md. 21202. Remittance should accompany order: \$2.50 each copy before Dec. 1, 1972; \$3.00 each copy after Dec. 1, 1972.)

The September, 1972 number of *Theological Studies* is a special issue devoted to the theme "Genetic Science and Man."<sup>1</sup> According to the journal editor, Walter J. Burghardt, S.J., a full year was required for the planning and preparation of the nine thematic essays.

Like the previous *TS* issue on abortion,<sup>2</sup> the current special issue brings together scholars from a variety of disciplines, in this case from the fields of biology, embryology, genetics, systematic theology, and ethics. It thus provides empirical data concerning the state of the scientific art as well as philosophical and theological reflection on the significance of present and future scientific and technological developments. Generally speaking, one can detect a progression from the empirical to the theoretical in the structure of the special issue. The nine

essays, in the order in which they appear in *TS*, are:

1. "Some Recent Developments in Genetics," Richard Roblin, Ph.D.;
2. "Moral Obligations and the Fallacies of Genetic Control," Marc Lappé, Ph.D.;
3. "We Can — We Must: Reflections on the Technological Imperative," Robert T. Francoeur, Ph.D.;
4. "The Technological Imperative: Reflection on Reflections," Nicholas Crotty, C.P.;
5. "Reflections of a Biologist," Andrew L. Szebenyi, S.J.;
6. "The Brink: The Parent — Child Bond in the Genetic Revolution," John Fletcher, Th.D.;
7. "Nature and Its Transformations," Patrick A. Heelan, S.J.;
8. "Freedom and the Future,"

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*Dr. Walters is Director of the Kennedy Center for Bioethics, a subdivision of Georgetown University's Joseph and Rose Kennedy Institute for the Study of Human Reproduction and Bioethics. In 1971 he received his Ph.D. in Christian Ethics from the Department of Religious Studies at Yale University. In the following, he reviews for Linacre readers the recent special "genetics" issue of Theological Studies.*

John J. McNeill, S.J.; and

9. "Genetic Medicine: Notes on the Moral Literature," Richard A. McCormick, S.J.

### Fletcher

Of the nine articles, the one which focuses most directly on current medical practice is John Fletcher's study of genetic counseling. Fletcher notes that a quiet revolution in human parenthood has begun to take place, almost without our realizing it: For the first time in history some parents "are already crossing a borderline of decision-making, venturing out to use the knowledge obtainable from prenatal diagnosis of genetic disease in their unborn children."<sup>3</sup> The author describes the ethical dilemmas faced by these first-generation parents, basing his analysis on interviews with 25 couples who visited a genetic counseling clinic in Washington, D.C.

In the first half of his essay, Fletcher distinguishes several phases in the genetic-counseling process and narrates the thoughts and emotions of the prospective parents at each stage. The second half of the essay, on the other hand, summarizes the ethical arguments advanced by the parents who chose to accept prenatal diagnosis or to abort a genetically-defective fetus and reflects on the long-term impact of such parental decisions.

Although his article is primarily descriptive, Fletcher develops a normative position of his own on the questions of prenatal diagnosis and selective abortion. In general terms, his position can be described

as restrictive but not absolutist. To be more specific, he justifies amniocentesis, but only at the initiative of the prospective parents and only in the case of at-risk pregnancies. He is willing to accept genetic abortion but only when three conditions are simultaneously present: (1) there is a positive diagnosis of a serious genetic abnormality; (2) no *in utero* cure for the genetic defect currently exists; and (3) the birth of a genetically-handicapped child would cause "undue hardship or misery" to a particular family. Thus, Fletcher is willing to justify abortion as a last resort in cases where grave and proportionate reasons for this drastic action exist. His position on abortion seems, at least in a formal way, to parallel the logic employed in traditional Christian discussions of "just war."

Fletcher's article is a valuable contribution to the literature on genetics and ethics; throughout the essay one finds evidence of both careful scholarship and deep compassion. Perhaps the most substantial criticism that can be leveled is that the very scope of the study tends to obscure alternative options. Since he limits his investigation to at-risk couples who are already expecting a child, the possibility of such couples voluntarily abstaining from having children is scarcely considered. Indeed, one father described in the study explicitly mentions, then immediately rejects, this option:

"The fact is that medicine has discovered this test and we needed it. The only other way would have been for us not to have any more children. Given the



choice between that and having one normal child . . . I wanted to do what we could."<sup>4</sup>

A nagging question remains: What is the ethical status of such perfectly-understandable parental desires?<sup>5</sup>

### Roblin

Like Fletcher's essay, Richard Roblin's review of "Recent Developments in Genetics" concentrates primarily on the present rather than on the future. In Roblin's words:

"This paper is an attempt to describe in simplified terms some recent developments in the areas of molecular and human genetics, with special emphasis on developments which are already finding medical application, or which seem to me to be likely to do so in the near future. . . . I have not described works in other important areas such as *in vitro* fertilization or cloning."<sup>6</sup>

After sketching the central findings of Watson, Crick, and subsequent molecular biologists, he turns to a discussion of three major topics: (1) "large-scale screening programs for variant human genes"; (2) amniocentesis and genetic abortion; and (3) genetic engineering, or DNA therapy. While the bulk of his essay is devoted to describing the state of the art scientifically, Roblin briefly notes some of the ethical questions raised by each of the three genetic techniques.

The essay is a model of compactness and precision. It provides an up-to-date summary of a complex field in terms that are readily understandable to the careful reader. By implication, at least, Roblin seems to believe that currently available genetic techniques pose more difficult ethical problems than the still-to-be-perfected methods of

DNA therapy. His article thus provides corroboration for Paul Ramsey's view that:

"The most unquestionably moral means of genetic control (direct medical action for the sake of the genotype by some "surgical" or chemical mutagen before the genotype is produced) is technically the most difficult and distant in the future, while a number of the means presently available . . . are of quite questionable morality."<sup>7</sup>

### Lappé

Four essays in this special issue — those written by Lappé, Francoeur, Crotty, and Szebenyi — are predominantly futuristic in orientation. Lappé's article constitutes a frontal assault on a central tenet of much recent writing in the field of genetics. He staunchly denies that the human race is endangered by "genetic deterioration" or an imminent "genetic twilight." At some points in his essay the author seems to argue that, on balance, no overall genetic deterioration is presently occurring. At other points he makes a somewhat more limited claim, namely, that the voluntary adoption of a series of prophylactic measures will serve to halt any current trend toward genetic deterioration.

To support this central thesis — in either its strong or its weaker form — Lappé attacks several prevalent assumptions. First, he questions whether "genetic load" is a meaningful term. Indeed, according to Lappé, "genetic load" is practically synonymous with "genetic diversity," which is generally acknowledged to be of immense benefit to mankind. Second, he challenges the popular view that

modern medicine has generally served to increase the percentage of genetically-defective persons within the human population pool. On the contrary, he argues, medicine has had a double effect: Its primary impact has been to make everyone healthier and to reduce the incidence of genetic defects; a secondary effect has been to allow certain genetically-defective infants to survive and, in some cases, to reproduce.

Turning to the related policy question, Lappé advocates the adoption of a series of voluntary measures which will help to prevent genetic deterioration. Among these means are: (1) preventing the introduction of new mutation by reducing radiation hazards; (2) lowering the age of childbearing; (3) reducing the number of consanguineous marriages; and (4) encouraging public use of genetic counseling and prenatal diagnosis.

It will be up to experts in the field of genetics to judge whether or not Lappé's empirical assertions about genetic deterioration are correct. One objection which will no doubt be raised is that certain genes — for example, the gene for Tay-Sachs disease — are so obviously deleterious that they cannot be subsumed under the concept of beneficial "genetic diversity." On the whole, however, Lappé's essay presents a well-argued challenge to a series of received opinions. At the very least, he seems to me to have demonstrated that there is no "clear and present genetic danger" which could currently jus-

tify resort to coercive eugenic measures.<sup>8</sup>

### Francoeur

Robert Francoeur, Andrew Szepenyi, and Nicholas Crotty contribute companion essays on the so-called "technological imperative," the view that whatever *can* be done *must* be done. Of the three, it is Francoeur who conveys the greatest enthusiasm for human self-creation through genetic techniques. In a brief but fascinating historical survey, he illustrates how several past achievements in the fields of embryology and genetics have contributed substantially to the quality of human life.<sup>9</sup>

It is not only the creative ability of man-the-maker which inclines Francoeur toward accepting the technological imperative, however. Taking a position diametrically opposed to that of Lappé, he claims, "Today's medicine has opened the door to a pollution of the human gene pool which may well be a death warrant for mankind."<sup>10</sup> Thus, both an imminent crisis and man's God-given role as co-creator urge man in the direction of controlling his genetic destiny.

Francoeur argues that scientists and engineers should enjoy maximum freedom in their quest to produce a better future. Explicitly rejecting legal or public intervention in the domain of scientific research, he advocates instead global post-facto feedback on the consequences of new technologies. The author also criticizes the efforts of Kass, Vaux, Ramsey, and McCormick to



impose ethical controls on biomedical research and technology. In a concluding passage which draws together numerous strands of his essay, he writes:

"If human nature is not an unchangeable datum and if we are by divine decree destined to the prime role of directing and choosing the path of our ongoing creation, then the varied and complex possibilities of our reproductive technology will have to be examined, evaluated, and decided on in terms of the ever-changing consequences rather than on some *a priori* judgment that this or that technique violates some assumed God-given nature."<sup>11</sup>

### Szebenyi

Another biologist, Andrew Szebenyi, shares Francoeur's skepticism concerning efforts to restrict or control science. According to Szebenyi, the public has been misled by journalistic scare-tactics; the results of such shock-literature are irrational anxiety and a fundamental misunderstanding of the role of the scientist.

To counteract such popular reaction, Szebenyi advances two basic arguments. First, he asserts that science is ethically neutral; it is technology which raises value questions. In his words:

"I do not know of any scientific discovery which could be regarded as useless, although at the same time I do not know of any which could not be misused. Obviously, it is not the discovery but its application that has moral implications."<sup>12</sup>

Szebenyi's other pivotal thesis is that the central aim of genetic engineering is medical and therapeutic, not promethean and sinister:

"Designed genetic change, or genetic engineering, means the intentional manipulation of human genes, primarily for therapeutic reasons. It certainly does not mean the genetic reconstruction and mass production of custom-made people. The former is in an experimental stage, the latter is fiction and is not about to happen."<sup>13</sup>

The general tenor of this essay stands in marked contrast to that of Francoeur. Whereas Francoeur celebrates the past and potential achievements of biology, Szebenyi writes as an aggrieved spokesman for a profession which is both maligned and misunderstood. In opposition to such prejudice, he expresses implicit confidence in the work of his colleagues:

"I do not know where our future is going to lead us, but I am more than hopeful because I know so many who fight ignorance and live for knowledge."<sup>14</sup>

### Crotty

Nicholas Crotty's essay, "Reflection on Reflections," explicitly takes issue with several emphases of Francoeur. In a more general sense Crotty's article constitutes a reflective critique of a science (biology) by a scholar deeply immersed in one of the humanities (theology).

Crotty warns that scientists are not more responsible by nature than any other group of mortals. He also notes that the powerful do not necessarily welcome feedback and wonders aloud whether scientists would be willing, for the sake of the common good, to accept restrictions on their research. Unwilling to foreclose any policy-options in advance, he argues that there

may be a need for greater control of science either through the development of professional codes of ethics or through the enactment of enforceable laws.

If one seeks the warrant for Crotty's critical approach to science, one finds it, I think, in his broad conception of "the human." In his view, "technical reason" and "controlling knowledge" are but two aspects of man's cognitive life. With Hegel and Tillich, he asserts that reason is also a structure of the human mind which allows it to transform reality. In addition, he accuses Francoeur of espousing an aprioristic ethic, of basing his judgments on the assumption that "what is technologically controlled is *eo ipso* more human."<sup>15</sup> As an alternative, Crotty proposes that techniques and actions be evaluated in terms of their consequences for "human personhood and human community."<sup>16</sup>

In a brief postscript to his essay, Crotty raises two intriguing questions. First, he queries, when one evaluates reproductive technologies, how does one distinguish what is therapeutic from that which goes beyond the therapeutic? Second, he argues that human adaptability must be taken into account in any comprehensive attempt to assess the consequences of a technology. Applying this general principle to the field of genetics, he writes:

"... If reproductive technology is given free rein, it will surely mean an end to marriage and parenthood as these have been known and understood throughout human history. A new image of marriage and parenthood must follow. Do human beings have

the capacity to embrace this new image, to involve themselves in the forms of "marriage" and parenthood that emerge, and in and through all this to develop and find fulfillment as human persons."<sup>17</sup>

In my view, Crotty has provided an incisive critique of Francoeur and, by implication at least, of Szebenyi. One hopes that in future publications the two biologists will have occasion to offer their rebuttals. A general question which remains unclarified in my own mind after reading Crotty's essay is the following: Is it possible to devise sensitive and reliable instruments for measuring the "human" consequences of an action or a technology?

### Heelan

Distinctly more theoretical in approach are the essays of Heelan and McNeill. In his study entitled "Nature and Its Transformations," Patrick Heelan criticizes the prevalent view of nature as something external, objective, and given. He focuses attention instead on *man*, the subject, who observes and measures nature. According to Heelan, it is preeminently man-the-scientist who initially encounters nature. Through mass-production technology, however, everyman receives the power to observe or control nature in new ways. Each extension of such human ability in turn effects "a permanent change in human nature."<sup>18</sup>

Heelan does not object in principle to the notion of technology altering human nature. Rather, he criticizes the way in which deci-



sions about technology, including genetic technology, are currently made. According to Heelan, in contemporary America the two most prevalent reasons for introducing new technologies are the profit-motive and the quest for military superiority. In his view, the continuation of such a policy portends cosmological and moral disaster. Indeed, he argues that:

"... there can be no solution that does not involve the recognition by the scientific community of the dangers of irresponsible exploitation of scientific information, and the exercise of increased supervision by properly-educated, publicly-responsible bodies over the forms of applied science that are intended for general use."<sup>19</sup>

### McNeill

John McNeill's essay on "Freedom and the Future" seeks to develop a theoretical methodology which will provide general guidelines for specific decisions about the use of genetic knowledge. In this quest he draws heavily on Maurice Blondel's philosophy of freedom and moral life. A few sentences near the end of McNeill's article provide an excellent summary of his "teleological study of the human will":

"Man must be understood as evolving toward an ideal goal which is necessary for him and which he must freely affirm. ... The central goal of man's will, which has been discerned in this study, and which in turn determines all other conditions of possibility, is man's drive toward the unity of a community of love. The necessary conditions for such a community were discovered in man's self-consciousness, his freedom, his positive individuality, his value as end-in-itself, his ability to transcend what is given in terms of the future, and his

ability to transcend time in terms of an absolute future. This goal and these conditions provide the a priori moral direction for all human self-creation."<sup>20</sup>

Although Heelan and McNeill address different problems and employ somewhat divergent theoretical frameworks, they both remind us that science and technology exist for man rather than the reverse. Their efforts to develop a philosophy of biology thus provide a useful complement to the more empirically-oriented essays in the special *Theological Studies* issue. On the other hand, the technical philosophical vocabularies employed by Heelan and McNeill remind us that interdisciplinary discussion between the humanities and the sciences is always a difficult task.

### McCormick

In his bibliographical essay entitled, "Genetic Medicine: Notes on the Moral Literature," Richard McCormick distinguishes three primary approaches to the question of genetics and ethics: (1) a consequentialist calculus (e.g., in the writings of Joseph Fletcher); (2) a viewpoint which emphasizes moral rules (Paul Ramsey, Leon Kass); and (3) a mediating approach (James Gustafson, Charles Curran). To his survey of these authors, he appends a "concluding personal reflection," in which he expresses profound concern about the long-term human consequences of allowing innovations in genetic technology — for example, *in vitro* fertilization and cloning — to



undermine the institutions of marriage and the family.

"The family, I would argue, embodies the ordinary conditions wherein we (parents, children, and others) learn to become persons. . . . Through monogamous marriage we experience the basic (not the only) form of human loving and caring, and learn thereby to take possession of our own capacity to relate in love. That is why marriage is a sacrament: It is the human stuff eminently capable of mirroring God's own covenant-fidelity, His love. It is the ordinary societal condition of our coming to learn about responsibility, tenderness, fidelity, patience, the meaning of our own sexuality, etc. Without its nourishing presence in our midst, we gamble with our best hope for growth and dignity, our chances of learning what it means to love and be loved."<sup>21</sup>

Three qualities of McCormick's bibliographical review make it an extremely valuable contribution to the genetics-and-ethics discussion. First, he has structured the debate, indicating how the views of most ethicists fall under one of three categories. Second, he has illustrated that the ethical methodologies employed by writers on this subject play a decisive role in determining what conclusions they ultimately reach. Finally, in addition to describing the ethical views of other scholars, he offers a critical appraisal of their work and briefly outlines a position of his own.

### Summary

In summary, the nine essays in this special *Theological Studies* issue constitute a significant addition to the literature on ethical problems

in the field of genetics. Several of the articles contain original data or novel positions which will have to be taken seriously by all future writers on this topic. There is, to be sure, disagreement among the various authors. Such divergence of viewpoint suggests only that much work remains to be done. Indeed, on the basis of these nine variations on a theme, one can readily formulate an agenda of questions requiring further investigation:

1. How can one distinguish between therapeutic and nontherapeutic applications of genetic knowledge?
2. Is genetic deterioration presently occurring within the human gene pool?
3. What will be the long-term social impact of such practices as amniocentesis and genetic abortion or *in vitro* fertilization?
4. Should genetic decisions be left in the hands of families or should society or government play a larger role?
5. Should genetic science and technology be more carefully monitored and controlled than they are at present? If so, by whom?

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2. *Theological Studies* 31:1 (March, 1970).
3. Fletcher, "Brink," p. 457.
4. *Ibid.*, p. 476.
5. For a medical doctor's criticism of the idea of "doctoring desires," see the recent essay of Leon R. Kass entitled, "Babies by Means of In Vitro Fertilization: Unethical Experiments on the Unborn?" *New*

- England Journal of Medicine* 285 (Nov. 18, 1971), p. 1177.
6. Roblin, "Some Recent Developments," p. 401.
  7. Paul Ramsey, *Fabricated Man: The Ethics of Genetic Control* (New Haven: Yale University Press, 1970), p. 45.
  8. See Lappé, "Moral Obligation," pp. 425-427.
  9. Francoeur, "We Can — We Must," pp. 431-433.
  10. *Ibid.*, p. 437.
  11. *Ibid.*, pp. 438-439.
  12. Szebenyi, "Reflections of a Biologist," p. 453.
  13. *Ibid.*, p. 451.
  14. *Ibid.*, p. 456.
  15. Crotty, "Reflection on Reflections," p. 444.
  16. *Ibid.*, p. 442.
  17. *Ibid.*, p. 448.
  18. Heelan, "Nature and Its Transformation," p. 497.
  19. *Ibid.*, p. 502.
  20. McNeill, "Freedom and the Future," pp. 529-530.
  21. McCormick, "Genetic Medicine," pp. 551-552.
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