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Genetics and Human Survival: A Christian Perspective

Kenneth D. Eberhard

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the world and ourselves, and we have supposed that there is no mystery which with time and human resource can defy an adequate and human resolution. Or, as Kenneth Boulding once remarked, our desire to conquer nature often means simply that we diminish the probability of small inconvenience at the cost of increasing the probability of very large disaster. In the human capacity for experiencing and affirming the tragic vision, or meaninglessness, or essential conflictedness of our life together.

So I think, especially in view of the excruciating and agonizing choices presented us by genetics and bio-engineering, that the struggle for mastery—which will surely continue—must be accompanied by a awareness of tragedy, an acknowledgment of the mystery of life together.

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Genetics and Human Survival: A Christian Perspective

Kenneth D. Eberhard

In this article, Kenneth Eberhard investigates scientific options confronting modern genetics and examines their ethical implications within the context of a Christian theology. The author is an assistant professor of Christian theology at the University of Santa Clara.

Scarcely one hundred years have passed since Mendel's experiments on the growth of peas. The science of genetics is in its barest infancy yet it has already raised the specter of enormous ethical and religious problems for the future. Once its possibilities are grasped, it is easy to agree with Francoise Houtart that the control of genetics is the problem of tomorrow. Moreover, the science is advancing so rapidly that we must work out its further implications at once before it simply creeps upon us rearing itself suddenly in our midst.

When Aldous Huxley wrote his Brave New World in the 1930's, he spoke of the fertilizing and de-
technicians.

But is there not a third possibility? Why must we decide about the future at all? Why cannot we just give our scientists something else to do and let the human race evolve on its own terms as it has always done?

Abstracting from the fact that scientists will ever feel impelled to investigate an area of knowledge simply “because it’s there,” a more powerful and more urgent reason for genetic research emerges: the debilitation and eventual extinction of man. Ironically, the culprit here is modern medicine. According to Hermann Muller, about 20% of the human population is born with a genetic impairment that came from a mutation in the preceding generation. Until modern times, those people who were most heavily burdened with genetic defects would die before reaching maturity. Since their number amounted to about 20% of the population, there was a genetic balance in nature. Modern medicine, however, has disturbed the natural selection process and through special drugs, surgical techniques and mechanical inventions, it has progressively allowed more and more genetically defective men to live to maturity and reproduce. The human gene pool, therefore, appeared to be rapidly weakening.1

To illustrate, before the discovery of insulin, a diabetic could not expect to live beyond his teens. Now diabetics can live a long and otherwise healthy life and this means the transference of their diabetic genes to their children. The incidence of diabetes, therefore, is rapidly increasing. One must think that, unless the gene pool is protected, the 21st century will witness a serious defect in one out of every ten births.2 At the present time, each of us carries three to eight physically harmful genes. If we happen to marry someone with a harmful genetic similarity to ours, there is a 25% chance of a defective birth and a 75% chance that the genetic defect will be passed on.

An additional factor of modern times is our increase in the exposure to radiation. Since radiation causes genetic mutations, even our peaceful uses of nuclear power and X-rays have served to accelerate the physical deterioration of the human gene pool.3 Of course one could argue that advances in medicine will compensate for whatever is lost genetically. Plotted over a long period of time, however, the law of diminishing returns would finally tell its tale. Owen Harrigan’s man of the future already sounds rather contemporary. Before setting out for work in the morning, in addition to altering his eyeglasses, hearing aids, and false teeth, the typical citizen will achieve “normalcy” for the day by injecting into his veins or swallowing his daily portion of insulin, aspirin, antiperiodic-anemia factor (vitamin B12), his immunizers, tranquilizers, and psychic energizers, his cholesterol depressant and his adrenal regulator, and the essential factors required to overcome his assorted metabolic deficiencies.4

Although recent studies show that Muller probably overstated the gene pool’s rate of deterioration,5 nevertheless, most observers are convinced that the problem cannot be left alone. Something must be done and the remainder of this article will reflect upon various proposed alternatives. My intent is to indicate the scientific possibilities (section I), show the ethical problems inherent to the proposals (section II), and present a Christian theological context in which these proposals can be either accepted or rejected (section III).

I: THE SCIENTIFIC OPTIONS

There appear to be three alternatives in coping with the progressive deterioration of the genetic pool. They are genetic manipulation, eugenics, and cloning. Each of these procedures, moreover, can be subdivided into negative and positive genetics. If their purpose is restricted to removing deleterious genes, then it is negative genetics. If the purpose is to add desirable characteristics to the human race with a view to improving man, then the genetics is called positive.

A. Genetic Manipulation

We use the term genetic manipulation to refer to those processes whereby an attempt is made to alter directly the composition of the genes themselves. Often this manipulation is indiscriminately described either as genetic surgery or genetic engineering. Paul Ramsey, however, has argued rather forcefully that these two terms are specifically distinct and raise different ethical issues. According to Ramsey, the term “genetic surgery” should be restricted to actual living patients.6 An example of this would be the use of viruses as carriers of chemical ingredients which would rearrange the composition and hence alter the character of the gene.7 In this way a fetus or an infant could be treated for PKU, cystic fibrosis, sickle cell anemia, or Tay-Sachs disease.

In genetic engineering, however, the object of the treatment is not the person himself but his yet-to-be-conceived progeny. It appears to be theoretically possible to change the genetic structure of the approximately 500 eggs which a woman will ovulate during her lifetime and thereby alter her whole procreative potential. Or one could use a laboratory to grow a human ovum up to the point of readiness for fertilization, and then alter its gene structure before uniting it with a sperm. The “patient” then is the human person who will result.

Abstracting for now from their ethical implications, genetic surgery and engineering still appear to be a long way from practical realization. First of all, only a small portion of the genes are known in terms of their function and position in the genetic thread. Secondly, there has been no success beyond the level of simple bacteria in achieving genetic transduction by means of a virus. In cells with a complex genetic structure, the overwhelming problem is how to send a carrier which will affect the composition of one gene
without affecting the others. Finally, there is evidence that other genes can substitute for a defective pair. Apparently, some people have the defective genes for PKU and yet do not have the disease. If this substitution factor is true, then our chances for control are drastically reduced. Lappe thinks that this has not been well publicized simply because no one wants seriously to consider this possibility.16

B. Eugenics

A more feasible and presently practicable solution to the problem of the gene pool is that of Hermann Muller's "Eugenics." Quite simply the term means "good breeding." Muller proposes first of all that the state keep on record the genetic "pedigree" of all citizens. When a couple wished to be married, their records would be consulted and they would be informed of the chances that any child they conceived might be defective. With regard to negative eugenics, if those people who were presently carriers of a dominant deleterious gene would refrain from having their own offspring, then some disease could possibly be extinguished from the human gene pool in the time span of only one generation.

Should the couple not wish to be childless, however, Muller has an alternative whereby they could "half adopt" a child. If the husband is the carrier of the harmful gene, then the sperm of another man could be given to his wife by means of artificial insemination (This is abbreviated as AID: Artificial Insemination—Donor). If the wife is the carrier, then the husband's sperm could be used to fertilize the ovum of another woman and this sperm could then be transplanted to the uterine wall of the wife. Another term Muller uses for these conceptions is "love children" and he insists that the man of the future will take more pride in what he can create with his brain than with his loins, when it involves the health and welfare of his offspring.14

According to Muller, eugenics is the only practical way of dealing with the problem of genetic deterioration. The others are either mere scientific possibilities, ineffective, or positively vicious. For eugenics to be accepted, however, he acknowledges that we must rid ourselves of preconceptions based on our traditional behavior in matters of parentage and open our minds to the new possibilities afforded by our scientific knowledge and techniques.15

This new concept of parenthood therefore involves a new concept of sexuality and the family. Muller insists that sexual love, the size of the family, and the genetic quality of the children are three functions of marriage which have traditionally been united but which must be recognized as separable and independent. "By thus freeing these three major functions from each other, all of them can be far better fulfilled."16

As might be suspected, Muller does not restrain his program to negative genetics only. Good breeding can and should be used for a positive improvement of the human race. Muller suggests that this can be achieved by the establishment of sperm banks where the semen of highly gifted men is preserved in a deep frozen state. Moreover, he attaches a number of modifications to his proposal to insure that it would be used wisely. Thus he thinks that the sperm should not be used for one or two decades since society often modifies its appraisal of what constitutes a great man.17 Muller rejects governmental control of AID since "at this stage of world affairs (it) would present too great a risk of partisan influence, and also subjection to standards of excellence which are too bureaucratic."16 Finally, he insists that AID be entirely voluntary even for cases of negative genetics. Muller thinks that a massive education program which presents the advantages of AID together with the actual established existence of sperm banks will be enough to inspire the public: "The mere existence of sperm banks will finally result in an irresistible incentive to use them."18 In addition, once the results of healthy and creatively intelligent offspring are evident, then the example will carry the day. Muller envisages a small nation taking up the practice and beginning to produce such a disproportionate share of artists and world leaders that other nations will be drawn inevitably into the acceptance of AID. "Sounding quite utopian, Muller shares his vision:

Previous taboos against the prac-

tice will dwindle. In their place a new atmosphere of hope will emerge: hope both for rewarding results likely to accrue to the couples themselves, and hope among them and others for mankind in general. Thus a genetic leaven will tend to diffuse through the population, and also a cultural, spiritual leaven. At last human resources, even on the genetic side, will begin to be enhanced, at an accelerating pace.19

The scientific objection brought against Muller is that he is really advocating a form of in-breeding. After several generations, more and more of the same qualities will replicate upon themselves with narrowing effects. Moreover, the experience of stock-breeding seems to show that the best specimens are not the purebreds but the hybrids, even though these cannot reproduce themselves. In addition, scientists charge that it is not individuals who evolve but populations and this demands a whole spectrum of genotypes.20 As a concluding argument, some point to polygamous cultures where the healthiest and wisest men father a much larger percentage of the children. On Muller's principles, these cultures should have emerged as superior to monogamous societies, but this has not been the case.

By way of a partial reply Muller admits that uniformity will eventually become a problem under his system. However, he asserts that by the time this could occur, society would have developed other means of genetic control and improvement.21

C. Cloning

A third way of meeting the prob-
lem of man's deteriorating genetic pool is that of cloning. Literally best illustrated by the common practice of snipping a shoot from a plant and using it to start another plant. In animals, the same effect is achieved when a worm is cut in half. The severed halves grow into whole units. Since the cut portion has the same genetic composition as its "parent," it will grow as its identical twin.

Professor F. C. Steward of Cornell has been able to grow whole carrots from just a single carrot cell which was stimulated by coconut milk. In 1952, Drs. Robert Briggs and Thomas J. King, of the Institute for Cancer Research in Philadelphia, transplanted the nuclei from frog blastula cells into newly fertilized eggs and produced tadpoles which were genetically identical to the blastula cell donor. In a recent essay on genetics, Leon Kass wrote that he expects to see the first cloned mammal in a few years and thinks that within our lifetime, perhaps by 1980, "it may be technically feasible to clone a human being."

The foremost proponent of human cloning is Joshua Lederberg of Stanford. According to Lederberg, it is a much more efficient method than eugenics since the results are immediate and there is less doubt about the outcome. Secondly, human cloning allows for a biological parenthood where this is strongly desired. Hence a man who is sterile could be more than just the "love father" of AID. He could instead have the nucleus of one of his cells transplanted to an ovum of his wife and then the ovum stimulated to begin human reproduction. Moreover, future speculators insist that it is possible that the single cell itself could be the base for the new person without any transplant, thus making the process even less complicated.

Lederberg, moreover, sees a number of social advantages accruing from widespread cloning. On the basis that identical twins have an inborn sympathy and understanding of one another, he proposes that society could take a highly successful astronaut or surgeon and clone them into a crew of astronauts or surgeons. In any profession where close cooperation and understanding are necessary (he gives the example of a deep sea diver and his mate), cloned twins would be highly efficient and advantageous.

There is no reason, however, to stop here. Cloning could also allow scientists to mingle human chromosomes with those of animals — such as the gorilla — in order to produce a "karotypy hybrid," a chimera, which would be useful for man in whatever ways he saw fit. Hence he could breed a slave class which could sledge much of the world's drudgery and leave man free for more creative effort.

Abstracting for now from the ethical and religious implications of Lederberg's proposals, there are certain scientific objections to human cloning. First of all, Lederberg himself admits that it is an evolutionary blind alley. Since man is merely replicated, his genetic condition remains constant and while this means no further deterioration, it also means no removal of harmful genes or development of advantageous ones. Lederberg brings evolution to a screeching halt. Moreover, cloned frogs have had a high incidence of sterility. If this proves to be a byproduct of cloning, then not only is it a blind alley but it is one which admits of no return. Lederberg acknowledges these objections and therefore is willing to see cloning as one method alongside others in human reproduction.

II. ETHICAL ISSUES

A. Man as a Scientific Object

It appears to me that one of the chief ethical problems which arises in scientific work is the laboratory "objectification" of man. Man is seen as a biological experiment and the impersonal language of gene composition and chromosomes seems to create its own world. It is of course necessary to use scientific language and formulae in dealing with these problems. The difficulty arises when, by way of a reductionism, man is understood to be only an interesting biological and chemical object.

Occasionally this presupposition surfaces into the conscious thought and phrasings of the scientist. Daniele Petrucci of Bologna, Italy, cultured a human embryo for one and two months respectively and then "terminated the experiment." Joshua Lederberg argues that "Humanistic culture rests on a definition of man which we already know to be biologically vulnerable." This in turn becomes the basis for Lederberg's proposal that we produce "cyborgs," which would just be another variation of the animal we call "man." Thus Lederberg has little difficulty with the numerous "mishaps" which he foresees will occur in his cloning experiments. They can simply be "terminated." Finally, when Lederberg argues for human cloning, one of his basic points is the advancement of scientific knowledge which will accrue therefrom.

This presupposition, if it is to be legitimated, must come to terms with man's own experience of himself as a subject: i.e., as a being who experiences freedom, responsibility, universal concepts, language, imagination, creativity, love and boundless desires. To overlook or summarily dismiss human subjectivity seems to me as "bad faith" on the part of the scientist since man's interiority is too pervasive to be dismissed as irrelevant.

Moreover, since man as subject is man who perceives himself in relationship to other men and has qualitative control over these relationships (justice, fidelity), the scientist takes an extraordinary risk in generating an artificial human life in his laboratory. The subjective side of man constitutes him as ever beyond the status of a laboratory experiment. Regarding human life, the admission of mistakes does not help. The scientist who treats a man simply as an object threatens us all. He places the hu-
mancy of everyone under attack.

A human experiment, therefore, appears to me as qualitatively different from other experiments for it can never remain a mere experiment. It is also something else: the dealing with a human subjectivity which at one and the same time involves the humanity of the scientist and that of the whole human race. As D. Huisingsh puts it, "We must be careful to retain the individuality of the individual and the personality of the person, or else the humanity of the human may be lost."28

B. Multi-dimensional Man

There are, moreover, certain paradoxes and consequences which support the fact that man cannot simply be reduced to a complex of genes. The most important of these factors is the role of environment in human development. In studies made of identical twins, it has been shown that when one of the twins is schizophrenic there is a 40% chance that the other will be as well. Hence, a genetic base for schizophrenia is indicated. Yet when the twins are raised in different families, then the correlation is only 10%.29 Environment, therefore, is a powerful factor. Again, if our gene pool really is deteriorating, one would expect that native intelligence would be on the decline as well. Yet the only prolonged test of this assertion—an experiment conducted by the Scottish government between 1932 and 1947—has shown just the contrary.30 Moreover, it has long been known that class distinction seems to have a high effect on native intelligence. Another paradox is that of homosexual. Since homosexuals generally do not have offspring, one would expect this trait to recede; yet there appears to be no decline whatsoever.

If one enlarges his view of man beyond genetic constitution includes man's social dimension as well, then the situation is both more complex and less urgent than the eugenicists would have us believe. Good breeding will not necessarily raise the quality of man's race, and other factors must be considered. What of the psycho-emotional impact of being a "love father" or of a woman who voluntarily remains barren in her marriage? At least some authors consider this of extreme importance.31

The Russian-born geneticist Dobzhansky objects to Muller's eugenics on the grounds that it is too reminiscent of Huxley's Brave New World and treats human beings only as biological objects without regard for theirseep human emotions. In addition, positive eugenics presumed to know what qualities man will need in the future since it is by definition a conscious planning of the future. This seems to me to be an important point. Could we not be disturbing the whole "ecological balance of man's social, emotional, and physical well-being? Will not the cure's side effects be worse than the disease itself? When Muller proposes that sexuality, family size, and the raising of children be considered as totally separate functions, does he really know what human problems to expect from this? As Leon Kass has written, "When we lack sufficient wisdom to do, wisdom consists in not doing."32

C. Man and His Values

It is important to understand that when eugenics, euphenics, or euthenics are proposed, there is a basic question which needs to be settled, viz., what is the meaning of "eu" (Gr. "good")? Ramsey points out that when geneticists begin to describe those human qualities to be selected and bred into the race of men, they write remarkably as if they were describing the attributes of mind and of character that make a good geneticist, or at least a good community of scientists.33

Everyone has his own limited vision of what would be good for the future of man. In some cases this vision seems highly questionable. Thus Eckland asserts that "equality of opportunity and a full utilization of all human resources" is the basic good for man. As a consequence he thinks that "the obligation of parents to rear the child on account of the accident of birth is an obviously obsolete (or at least contradictory) feature of modern society."34

Moreover, not only do different men have diverse concepts on what constitutes man's good, but even during the course of one's life a man will experience a transformation in his values. Thus Hermann Muller originally had Marx and Lenin on his list of sperm donors whose genes would improve the human race. On his later lists these names are missing.35 Because of this diversity and cultural limitation, positive eugenics seems to be better in theory than it would be in practice. Man simply does not seem wise enough to be his own creator. Moreover, even the theory is in trouble if one rejects Muller's assumptions on the nature and meaning of human parenthood.

There is a wide variety of ethical presuppositions which underlie the various genetic proposals. It is important that the individual scientist bring these to consciousness in order that he properly understand his own position and its concomitant vulnerability. He should ask himself: what are the implicit moorings which hold our vision together? For example, what is the essence of human life and the most human element in man's constitution? Is there a soul, an afterlife, a transcendent ground for human responsibility? Are some values absolute and hence to be retained at all costs? What is the relative strength of man's diverse values? Does the individual good come before the community's good or vice-versa?36

It is not a matter of whether the geneticist wishes to give a reply to these ethical questions. Like it or not, by the very fact of his proposal, he has taken a position on them. The only choice he must make is whether to bring his assertions to consciousness (and hence expose them to criticism) or leave them buried in his scientific language and thought.

III. A CHRISTIAN THEOLOGICAL POSITION

Ethical presuppositions cannot be
proven but must, as presuppositions, be asserted. When one takes a basic ethical position, therefore, he is really embracing a faith. The faith I am accepting is that of Christianity and therefore I wish to assert my position on the fundamental questions which have just been raised. As a Christian, I accept the essence of human life to be love; I acknowledge a transcendent dimension in man (the soul addressed by God) which goes beyond the bonds of temporality (after-life). I insist, according to the Christian doctrine of the Resurrection of the Body, that this transcendent dimension must always express itself in matter. I posit as absolute whatever man needs to transcend himself in love and I understand this to include the freedom of the individual. I, moreover, place the individual's good before that of the community although they need not be in opposition. Finally, I assert to the reality and force of individual and collective selfishness in the Christian doctrine of Original Sin.

It is well to point out that while I consider these presuppositions to be of the essence of Christianity, there are other Christian theologians who would not be in agreement, or who would list different basic elements. For example, Gabri el Fackre argues on the basis of man's freedom and dominion over the earth that it is consonant with the Christian vision to separate completely the conception and gestation of children from the sex act. This, he claims, would allow human sexuality to come into its own.42 Joseph Fletcher adopts the same principle and therefore sees laboratory reproduction as "radically human and personal.43 Indeed by comparison, Fletcher thinks that making a test tube baby is a more human reproductive process "... than one resulting from sexual roulette..." 44 These positions strike me as contrary to the Christian insistence on the unity of man's body and spirit.

The arguments of H. B. Klein, however, seem persuasive when he rejects cloning on the grounds that it is first of all a threat to the "holy mystery" of life, endearing it clinical and impersonal; secondly, it manifests a scientific hubris; and thirdly, it is misanthropic and separates procreation from love.45 Perhaps the clearest and most forceful dialectic, however, has come from Paul Ramsey. Dr. Ramsey has two fundamental assertions. The first is that Christian eschatology and the eschatology of most geneticists stand in contrast to one another. The geneticist's norm is survival at all costs while the Christian's is survival if human dignity and freedom are respected. "Christians, therefore, are more sensitive to means: since the absolute is not nature but beyond nature." 46 Regarding this assertion, I would like to emphasize that it is in no way unchristian for man to take upon himself the task of his self-creation. By its teachings on freedom and responsibility, Christianity already maintains that man is that being who forms himself and does this so definitively that God respects man's self-choice for all eternity. That this inner self-creation is now able to manifest itself in the material world is no more startling and dangerous than man's original moral self-determination.47

Ramsey's second principle is that "Christian morality demands a union between sex and procreation." They ought not to be separated. Since Hermann Muller's AID is a proposal which separates them in principle, Ramsey considers it to be unchristian.48

Of the two principles, the first appears to me to be the more important for it does, in effect, give the basic answer to the basic question: the meaning and goal of man is not survival in the present but union with God in the transcendent future. Ramsey points out that there is a Weltanschauung implied in eugenics and cloning that affirms man as a materialistic machine. The very choice of words is taken from the vocabulary of the industrialist: genetic engineering, human reproduction (rather than procreation), cyborgs (cybernetics + biology). Nor is it only Ramsey who has perceived the danger in the genetic world view. V. Ruggiero warns us that when eugenics is carried to its logical conclusion, the result is a theory of the master race, with all of its consequences.49

Regardless of how loud and how often it is shouted that genetically poor parents will not be forced to remain childless, no society that dedicates itself to the methodical and scientific and efficient genetic betterment of its citizens will for long allow such a decision to be made by the poor, the uneducated, or the uncultured.50 Roland Hotchkiss echoes this fear and declares that we are in danger of a "piecemeal and unheralded" takeover by geneticists, men who are "insanely optimistic" and ready to "meddle with the gene pool of the entire race." 51 As a practical measure, he calls upon teachers and science fiction writers to inform and forewarn the public of the awesome possibilities which lie in our future. H. Schwarz sees no basis for "naive trust in technological progress as a pattern of conduct." 52 He insists that the meaning and goal of man which the geneticists have adopted is that of survival and is in conflict with the Judeo-Christian view of individual responsibility and freedom.53 An illustration of this can be found in Gerald Feinberg's Prometheus Project whereby he proposes that a man of the future can be designed who would no longer have to wrestle with the problem of his own finitude.54

This genetic eschatology becomes even more alarming when a Christian theologian such as Fackre suggests that one of the future roles of the Church will be to care for "laboratory mistakes"—"cast off cyborgs"—which he sees as the necessary price of human and scientific progress.55 With Fackre, I do admit that man is self-creative but if this principle is left to itself, then it would be quite right to conclude, as he does, that experimentation could proceed to the degree that "mishaps" would...
be common enough to warrant the designation of a new Christian apostolate. This strikes me as well beyond what a Christian ethic can tolerate. It seems important, therefore, that we keep in mind Ramsey's first assertion regarding human freedom and dignity. A Christian theology remains "sensitive to means: since the absolute is not nature but beyond nature."

Ramsey's second norm, the union between sex and procreation, is more difficult to establish and hence more controverted among Christian theologians. Moreover, the position one adopts deeply affects one's moral position regarding eugenics and cloning.

Those who argue for the union between sex and procreation say that it has somehow been revealed by God (Ramsey's position), or that the consequences of separating them would be dehumanizing (Charles Curran). I find both of these arguments persuasive. While rejecting a biblical fundamentalism, it nevertheless appears to me that the biblical understanding of man involves a unity of body and spirit. Furthermore, this unity seems to be articulated in the Christian doctrines of Jesus' Ascension and the Resurrection of the Body. Regarding the consequential argument, I readily admit that an adopted child can be loved as truly as one's natural child. Yet what would the world be like if every child (or most) were adopted? The sexually procreative act, the long period of gestation, the actual birth, the similarity of characteristics... all these appear to me to make an important contribution to human unity and the meaning of the human. Moreover, the actual effects of society opting for "non-child" could only be known after it had been tried. In effect, one would be using a part of society as a giant scientific experiment involving an unknown degree of risk for all involved. It would be extremely difficult to justify such an experiment.

CONCLUSIONS

What, now, can be said from our Christian viewpoint about the morality of the scientific genetic options? First of all, it seems to me that both the self-creative character of man and the seriousness of the genetic problem deserve affirmation. While we need not be alarmists about the potential threat to our survival, Christians should be aware of a biologism which sees man's conscious self-altering as automatically against the natural law.

In discussing genetic manipulation, we saw that there are two distinct aspects: genetic surgery and genetic engineering. Genetic surgery appears to me to be the most moral and potentially the most promising of the genetic alternatives. There are no specific Christian objections to it other than those which would pertain to any medical surgery, viz., have the risks been balanced against the benefits and has proper consent been obtained? The difficulty with genetic surgery as the solution is that it may be several decades, perhaps even centuries, before the known principles can be successfully applied. If the gene pool can remain relatively stable until that time, the problem will be morally resolvable.

Genetic engineering is a different matter. Since there is no actual "patient" but only a future one, we cannot find sufficient justification for risking the mental and/or physical health of the engineered person. Since the effects could not be known until the procedure was tried, and tried repeatedly, what we have in essence here is a deliberate creation of human guinea pigs. Man is reduced to a material and scientific object, which is unchristian and immoral.

Basiclly, this same objection holds true for cloning. The risks one takes with the cloned child cannot be justified unless man is considered as only a material object. Once the principle of cloning is admitted, then it follows quite logically that there should be cloned slaves, cloned armies, and cyborgs.

The moral problems involved in eugenics are more complex. Should the problem of the gene pool become so acute that the question is one of either total governmental control or extinction, then the Christian should reject the genetic eschatology and prefer freedom to biological survival. It could be objected here that this sounds very much like "better dead than red." Were "red" to mean a severe and prolonged negation of human freedom, then we think that Christians should accept the slogan. The problem, of course, is that there are degrees of freedom and degrees of threat to it. Therefore, just as a Christian can accept life under some totalitarian governments so could Christians accept life under some systems of eugenics. The traditionally accepted laws against consanguinity in marriage are nothing other than laws of negative genetics. In a crisis situation, it seems reasonable that these laws could be extended and that a system of genetic records could be enforced which would still fall short of a pure survival eschatology. The norm would have to be the amount of respect still accorded to human freedom and dignity.

In marriages, then, which are liable to bear defective children, Christianity can accept the option that parents be counseled against conceiving offspring and, within limits, be the subject of a state prohibition.

However, sperm banks and AID as a method of eugenics seem to be unacceptable. The principle objection here is that in principle AID separates sex and procreation. This appears to violate the body-spirit unity of man and would seem to risk severe social consequences.

As a final word, I would like to emphasize that my positions are offered not out of a distaste for modernity or the future. On the contrary, I hold that a retention of Christian personal values will
prove itself to be the safeguard of a truly human future, and in the last analysis, is the most modern position of all.

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2. Roland Hotchkiss issues this warning and compares it to the problem of "barely tested poisons" gradually being used for crop control until suddenly men become aware that there is a pesticide problem. See "Portents for a Genetic Engineering," Journal of Heredity 56, (1965), p. 202. A similar alarm is sounded by Kurt Hirschhorn. "Few scientists today doubt the feasibility of genetic engineering and there is a considerable danger that common use of this practice will be upon us before its ethical implications are defined." "The Revaluing of Man: The Ethics of Genetic Engineering," Commonweal 88, no. 9 (May 17, 1968), p. 257.
9. Marc Lappe reports, "The gene pool is in fact undergoing a period of stabilization, not change . . ." and he adds a six-year study by the American Eugenics Society. See also Michael Hamilton, ed., The New Genetics and the Future of Man (Grand Rapids: Eerdmans, 1972), p. 44, Dr. James Bonner of the California Institute of Technology also believes that human cloning will be feasible in the 1980's and suggests the possibility of "mass human production."
10. See Ramsey, pp. 67-70.
13. See Ramsey, p. 74.
15. See Lederberg, p. 11.
21. See "Euthenics: the science of the engineering of human development without directly affecting the genes themselves. Euthenics: the science that deals with developing human well-being through the improvement of environmental conditions."
22. See Ramsey, pp. 72.
25. See Ramsey, Fabricated Man, p. 40.
27. See Ramsey, pp. 67-70.
29. See Ramsey, p. 74.
30. See Fackre, p. 412.
31. See Lederberg, p. 11.
32. See "Should Man Control His Genetic Future," Zygon 4 (June, 1969), p. 198. For further considerations along this line, see Ramsey, pp. 122 and Jonas, p. 200.
37. See "Euthenics: the science of the engineering of human development without directly affecting the genes themselves. Euthenics: the science that deals with developing human well-being through the improvement of environmental conditions."
38. See Ramsey, pp. 72.
40. See Ramsey, Fabricated Man, p. 40.
41. See "New Beginnings in Life," in Michael Hamilton, ed., The New Genetics and the Future of Man (Grand Rapids: Eerdmans, 1972), p. 44, Dr. James Bonner of the California Institute of Technology also believes that human cloning will be feasible in the 1980's and suggests the possibility of "mass human production."
42. See Ramsey, pp. 67-70.
44. See Joseph Fletcher, "The Indicators of Humanhood: A Tentative Profile of Man," The Hastings Center Report 2, no. 5 (Nov., 1972), p. 3. Fletcher's argumentation for his position is remarkably weak. He has been well taken to task by Richard McCormick for his "dubious polarities . . . unexamined premises and flourishing rhetorical non sequiturs." See "Genetic Medicine: Notes on the Moral Literature," in Theological Studies33, no.3 (Sept., 1972), pp. 532-533.
46. See Ramsey, Fabricated Man, pp. 29-30.
47. See Karl Rahner, "Experiment: Man," Theology Digest, 1968 Susquehennan issue, pp. 57-69. Rahner criticizes Rahner for being too optimistic about man's self-manipulation. However, Charles Curran thinks that Ramsey does not acknowledge sufficient contingency between this world and the eschaton, with the result that Ramsey's apocalyptic eschatology leaves no room for teleological ethics and therefore remains essentially pessimistic about man's self-effortive efforts. Ramsey's basic point still stands, however, for neither Rahner nor Curran would accept human survival as an absolute. See Ramsey, pp. 139-143; Charles Curran, Contemporary Problems in Moral Theology (Notre Dame: Fides, 1970), pp. 189-224.
48. See Ramsey, pp. 32-48. For a critique of Ramsey's position, see Curran, pp. 189-224.
50. See Hotchkiss, p. 201.
52. See ibid., p. 262.
54. See Fackre, pp. 417-418.
55. Although Curran would maintain that this is too simple a reduction of his position, Richard McCormick argues convincingly that he indeed belongs there. See McCormick, pp. 549-550.