

Ted Peters, "Playing God with Our Evolutionary Future," in *Evolutionary and Molecular Biology: Scientific Perspectives on Divine Action*, edited by Francisco Ayala, Nancey Murphy, and Robert John Russell. Vatican City State: Vatican Observatory Publications, and Berkeley: CTNS. 1998, pp. 491-510.

## **Evolutionary and Molecular Biology** *Scientific Perspectives on Divine Action*

**Robert John Russell**  
**William R. Stoeger, S.J.**  
**Francisco J. Ayala**

**Editors**



Vatican Observatory  
Publications,  
Vatican City State



Center for Theology and  
the Natural Sciences,  
Berkeley, California

1998

---

## PLAYING GOD WITH OUR EVOLUTIONARY FUTURE<sup>1</sup>

Ted Peters

"The theory of evolution," writes Wolfhart Pannenberg, "has given theology an opportunity to see God's ongoing creative activity not merely in the preservation of a fixed order but in the constant bringing forth of things that are new."<sup>2</sup> Two things stand out as important here. First, the order of God's creation is not fixed. It changes. Second, God's creative work brings forth newness. Does newness also apply to human nature? To human creativity? To the creative self-alteration of human nature?

Karl Rahner would answer affirmatively to such questions. He describes the evolutionary history of the human race in terms of "becoming." Human becoming consists in the self-transcendence of living matter. Nature is historical in character, and its history has a direction. It is directed toward the development of freedom in the spirit. And it will not stop there. Nature will progress through and beyond the human stage toward the consummation of the cosmos as a whole. This consummation is a fulfillment inclusive of the free human spirit. Such freedom means that the human contribution to nature's history includes "an active alteration of this material world itself."<sup>3</sup> We human beings will apply our "technical, planning power of transformation" even to ourselves. As subject we are becoming our own object, becoming our own creator.<sup>4</sup>

The concept of evolution here does not apply only to the past. It applies to the future as well. Rather than a fixed reality, nature is in the process of becoming; and this becoming is subject to human influence. The ethical question we raise is this: should we influence the future course of evolutionary history, especially our own human development? Some would shout "No." When shouting, they might add a commandment: "Thou shalt not play God!" "Playing God" is the phrase invoked by many to stop the attempt by the human race to influence the future of its own evolution.

Although the phrase, "playing God," sounds theological, it is not. Or, at least it is not terminology theologians typically employ. The phrase belongs more to common parlance and is aimed at inhibiting if not shutting down certain forms of scientific research and medical therapy. In the current public debate over the impact of science on society, the proscription against "playing God" is heard particularly in the field of human genetics. More particularly, it is aimed at the prospect of germ-line intervention for purposes of human enhancement. Germ-line intervention is understood as the insertion of new gene segments of DNA into sperm or eggs before fertilization or into undifferentiated cells of an early embryo that will be passed on to future generations and may become part of the permanent gene pool.<sup>5</sup> Some

---

<sup>1</sup> This paper expands upon material in previous publications: *Playing God? Genetic Determinism and Human Freedom* (New York: Routledge, 1996) and "Playing God and Germ-line Intervention," *Journal of Medicine and Philosophy*, 19 (October, 1995): 365-86.

<sup>2</sup> Wolfhart Pannenberg, *Systematic Theology*, 3 vols. (Grand Rapids, Mich.: Eerdmans, 1991-96), II:119.

<sup>3</sup> Karl Rahner, "Christology within an Evolutionary View," *Theological Investigations*, 22 vols. (London: Darton, Longman, & Todd, and New York: Crossroad, 1961-88), 5:168; see also 21:54.

<sup>4</sup> Rahner, *Theological Investigations*, 5:137-38.

<sup>5</sup> Burke K. Zimmerman identifies "three strategies" for germ-line intervention:

scientists and religious spokespersons are trying to lock the gate to germ-line enhancement and post a no-trespassing sign reading, "Thou shalt not play God."

Our task here will be to examine the concept of playing God in conjunction with arguments favoring and opposing germ-line enhancement, especially the arguments raised by the Council for Responsible Genetics in its "Position Paper on Human Germ-Line Manipulation." We will look at both the concept of "playing God" plus these arguments in light of the Christian theology of creation. The concept of creation includes anthropology and the notion that the human race is created in the divine image.<sup>6</sup> I will argue that if we understand God's creative activity as giving the world a future, and if we understand the human being as a created co-creator, then ethics begins with envisioning a better future. This form of ethical thinking I dub 'proleptic' or 'anticipatory'. A proleptic ethic suggests we should at minimum keep the door open to improving the human genetic lot and, in an extremely modest way, to influencing our evolutionary future. The derisive use of the phrase, "playing God," should not deter us from shouldering our responsibility for influencing the future. To seek a better future is to "play human" as God intends us to.<sup>7</sup>

This work belongs within the larger field of theology and natural science. It shares the assumption made by Langdon Gilkey, when he writes: "Evolutionary science has taught us how we humans have appeared in all facets of our being *in and through* the processes of nature; hence, a theological understanding of human being must also be informed by a biological understanding."<sup>8</sup>

---

1) screening and selection of early stage embryos; 2) direct modification of the DNA of early stage embryos coupled with *in vitro* fertilization; and 3) genetic modification of gametes prior to conception. Although screening is not usually included in germ-line discussion, it along with the other two strategies would affect the future human gene pool. "Human Germ-Line Therapy: The Case for its Development and Use." *Journal of Medicine and Philosophy*, 16.6 (December, 1991): 593-612, esp. 594-95. See also Gregory Fowler, Eric Juengst, and Burke K. Zimmerman, "Germ-Line Therapy and the Clinical Ethos of Medical Genetics," *Theoretical Medicine*, 10 (1989): 151-65.

<sup>6</sup> Pope John Paul II places anthropology within creation when speaking of the humans among us as "products, knowers and stewards of creation." *Physics, Philosophy and Theology: A Common Quest for Understanding*, Robert J. Russell, William R. Stoeger, and George V. Coyne, eds. (Vatican City State: Vatican Observatory, 1988), p. M5.

<sup>7</sup> Paul Ramsey writes, "Men ought not to play God before they learn to be men, and after they have learned to be men they will not play God." Paul Ramsey, *Fabricated Man: The Ethics of Genetic Control* (New Haven, Conn.: Yale University Press, 1970), 138. The question of playing God in genetic intervention is only one of many reasons for inviting theological attention into this field. M. Therese Lysaught formerly at the Park Ridge Center for the Study of Health, Faith, and Ethics writes, "a Christian theological analysis of the Human Genome Project and genetics needs to examine a host of questions in addition to the question of human intervention into nature—for example, questions of theodicy, of divine agency, of theological anthropology, of social justice, of the meaning of suffering within a Christian theological framework, of the meaning of Christian community, as well as methodological questions surrounding the science/religion dialogue." M. Therese Lysaught, "Map, Myth, or Medium of Redemption: How Do We Interpret the Human Genome Project," *Second Opinion*, 19.4 (April, 1994): 83.

<sup>8</sup> Langdon Gilkey, "Biology and Theology on Human Nature: Ethics and Genetics," in *Biology, Ethics, and the Origins of Life*, ed. by Holmes Rolston III (Boston and London: Jones and Bartlett Publishers, 1995), 172, italics in original.

### 1 *Playing God?*

Should we ask our scientists to play God? Answering this questions requires answering some related ones. Does our genetic make-up represent a divine creation in such a way that it is complete and final as it is? Is our DNA sacred? Are we desecrating a sacred realm when we try to discern the mysteries of DNA, and are we exhibiting excessive human pride when we try to engineer our genetic future?

This curious phrase, "playing God," has at least three overlapping meanings. The first and somewhat benign meaning has to do with *learning God's awesome secrets*. Science and its accompanying technology are shining light where previously there was darkness. Mysteries are becoming revealed; and we sense that the scientists as the revealers are acquiring "God-like" powers. The Godlike role of the scientist has taken a familiar cultural form since the era of Isaac Newton. When the Temple of Worthies was erected in 1735 by the British government, the inscription over Newton's bust included these words:

Sir Isaac Newton, Whom the God of Nature made to comprehend his works:  
and from simple Principles, to discover the laws never known before.

Alexander Pope says it better.

Nature, and Nature's Laws lay hid in Night.  
God said, *Let Newton be!* and All was Light.<sup>9</sup>

The tie here between God and the scientist honors respectfully and humorously human genius for revealing the secrets of God's second book, the Book of Nature. At this level we do not yet have any ethical reason to object to research. Rather, what we have here is an expression of respect for science along with awe about nature.<sup>10</sup>

The second meaning of "playing God" applies to medical doctors working in the clinical setting with an emergency surgery. It has to do with wielding *power over life and death*.<sup>11</sup> A patient in critical condition feels helpless. Only the attention and skill of the surgeon stands between the patient and death. The doctor is the only door to life. The patient is utterly dependent upon the physician for his or her very existence. Regardless of whether or not doctors feel they have omnipotence in this situation, the patients impute it to them. We tell doctor jokes because some doctors confuse themselves with the true God. Cartoons depict God carrying a stethoscope—that is, God playing doctor.

The third meaning of "playing God" is the one that concerns us here, namely, the use of science to *alter life and influence human evolution*. "Playing God" here means that we—at least the scientists among us—are substituting ourselves for God in determining what human nature will be. Even though scientifically and philosophically it is difficult to conceive of what it would mean to actually alter human nature, it is a popular idea in our culture. And it is associated with placing ourselves where God and only God belongs.

<sup>9</sup> See the discussion by Margaret Wertheim, *Pythagoras' Trousers: God, Physics, and the Gender Wars* (New York: Random House, Times Books, 1995), 145.

<sup>10</sup> President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research, Morris B. Abram, Chairman, 2000 K Street NW, Suite 555, Washington, D.C. 20006, *Splicing Life* (November, 1982): 54.

<sup>11</sup> When a surgeon picks up a scalpel and tries to save a life or when a surgeon decides to withdraw a life support system, it is a form of playing God. Leroy Augenstein, *Come, Let Us Play God* (New York: Harper and Row, 1969), 12. Whether positively or negatively construed, the simple power of life and death seems to put us on God's doorstep.

The power to alter human nature as a life form similarly evokes the question: should only God be doing this? Fifty-eight percent answered a *Time/CNN* poll saying they think altering human genes is against the will of God.<sup>12</sup> In a 1980 letter of warning to then President Jimmy Carter, Roman Catholic, Protestant, and Jewish spokespersons used the phrase "playing God" to refer to individuals or groups who would seek to control life forms. Any attempt to "correct" our mental and social structures by genetic means to fit one group's vision of humanity is dangerous.<sup>13</sup>

Why do such critics of genetic research prescribe a new commandment, "Thou shalt not play God"? The answer here is this: because human pride or *hubris* is dangerous.<sup>14</sup> We have learned from experience that what the Bible says is true: "pride goes before destruction" (Proverbs 16:18). And in our modern era pride among the natural scientists has taken the form of overestimating our knowledge, of arrogating for science a kind of omniscience that we do not in fact have. Or, to refine it a bit: "playing God" means we confuse the knowledge we do have with the wisdom to decide how to use it. Frequently lacking this wisdom we falsely assume we possess, scientific knowledge leads to unforeseen consequences such as the destruction of the ecosphere.<sup>15</sup> Applied to genetic therapy, the commandment against "playing God" implies that the unpredictability of destructive effects on the human gene pool should lead to a proscription against germ-line intervention. In light of this, "there is general agreement that human germ-line intervention for any purpose should always be governed by stringent criteria for safety and predictability."<sup>16</sup> This "general agreement" seeks to draw upon wisdom to mitigate pride.

A correlate to this third meaning of the phrase, "playing God," is that DNA has come to function in effect as an inviolable sacred, a special province of the divine, that should be off limits to mere mortals. New York Medical College cell biologist Stuart Newman refers to this as the "apotheosis of the gene." He calls our attention to Max Delbrück's identification of Aristotle's unmoved mover god with DNA. The "unmoved mover perfectly describes DNA. DNA acts, creates form in development, and it does not change in the process."<sup>17</sup>

Robert Sinsheimer, among others, suggests that when we see ourselves as the creators of life then we lose reverence for life.<sup>18</sup> It is just this lack of reverence for life as nature has bequeathed it to us that drives Jeremy Rifkin to attack the kind of genetic research that will lead to algeny—that is, to "the upgrading of existing organisms and the design of wholly new ones with the intent of 'perfecting' their

<sup>12</sup> Philip Elmer-DeWitt, "The Genetic Revolution," *Time*, 143.3 (January 17, 1994): 46–53.

<sup>13</sup> President's Commission, 95–96.

<sup>14</sup> Jane Goodfield, *Playing God: Genetic Engineering and the Manipulation of Life* (New York: Random House, 1977), 6.

<sup>15</sup> Jeremy Rifkin, "Playing God with the Genetic Code," *Threshold*, 6.3 (January, 1994): 17–18. Obtain from Student Environmental Action Coalition, P.O. Box 1168, Chapel Hill, NC 27514-1168.

<sup>16</sup> Zimmerman, "Human Germ-Line Therapy," 606.

<sup>17</sup> Max Delbrück, "How Aristotle Discovered DNA," in *Physics and Our World: A Symposium in Honor of Victor F. Weisskopf*, ed. by K. Huang (New York: American Institute of Physics, 1976), 123–30; cited in Stuart A. Newman, "Carnal Boundaries: The Commingling of Flesh in Theory and Practice," in *Reinventing Biology: Respect for Life and the Creation of Knowledge*, ed. by Lynda Birke and Ruth Hubbard (Bloomington and Indianapolis, Ind.: Indiana University Press, 1995), 217.

<sup>18</sup> Robert L. Sinsheimer, "Genetic Engineering: Life as a Plaything," *Technology Review*, 86.14 (1983): 14–70.

performance." The problem with algeny is that it represents excessive human pride. "It is humanity's attempt to give metaphysical meaning to its emerging technological relationship with nature."<sup>19</sup> Rifkin's message is: let nature be! Don't try to make it better! In advocating this hands off policy, Rifkin does not appeal to Christian or Jewish or other theological principles. Rather, he appeals to a vague naturalism or vitalism, according to which nature herself claims sacred status. He issues his own missionary's call: "The resacralization of nature stands before us as the great mission of the coming age."<sup>20</sup>

Rifkin has garnered his share of critics. Walter Truett Anderson dubs Rifkin's hysterical attack against genetic engineering "biological McCarthyism." Anderson's own position is that the human race should become deliberate about the future of its own evolution. "This is the project of the coming era: to create a social and political order—a global one—commensurate to human power in nature. The project requires a shift from evolutionary meddling to evolutionary governance, informed by an ethic of responsibility—an evolutionary ethic, not merely an environmental ethic—and it requires appropriate ways of thinking about new issues and making decisions."<sup>21</sup>

What is the warrant for treating nature in general, or DNA specifically, as sacred and therefore morally immune from technological intervention? Neither molecular biologists nor Christian theologians are likely to sympathize with the implied vitalism here. Molecular biologists tend to reject vitalism when protecting reductionism—that is, they deny that DNA or even life itself is directed by a spiritual force that is more than the physics and chemistry that constitute it. This is the position of double helix discoverer Francis Crick.<sup>22</sup>

Theologian Ronald Cole-Turner criticizes the likes of Sinsheimer and Rifkin for making an unwarranted philosophical and theological leap from the association of DNA with life to the metaphysical proscription against technical manipulation.

Is DNA the essence of life? Is it any more arrogant or sacrilegious to cut DNA than to cut living tissue, as in surgery? It is hard to imagine a scientific or philosophical argument that would successfully support the metaphysical or moral uniqueness of DNA. Even DNA's capacity to replicate does not elevate this molecule to a higher metaphysical or moral level. Replication and sexual reproduction are important capacities, crucial in biology. But they are hardly the stuff of sanctity.<sup>23</sup>

To nominate DNA for election into the halls of functional sacrality, says Cole-Turner, is arbitrary. Theologians in particular should avoid this pitfall. "To think of genetic material as the exclusive realm of divine grace and creativity is to reduce God to the level of restriction enzymes, viruses, and sexual reproduction. Treating

<sup>19</sup> Jeremy Rifkin, *Algeny* (New York: Viking, 1983), 17.

<sup>20</sup> *Ibid.*, 252. Although the phrase, "play God," has been with us for some decades as a reference to the prospect of scientific creation or manipulation of life, Jeremy Rifkin thrust it before the public with his 1977 book title, *Who Should Play God?* (New York: Dell, 1977).

<sup>21</sup> Walter Truett Anderson, *To Govern Evolution* (New York: Harcourt, Brace and Jovanovich, 1987), 9, 135.

<sup>22</sup> Francis Crick, *Of Molecules and Men* (Seattle, Wash.: University of Washington Press, 1966), 16, 26. Crick defends reductionism: "The ultimate aim of the modern movement in biology is in fact to explain *all* biology in terms of physics and chemistry," 10; italics in original. Crick would reject the purposeful picture of evolution drawn by Rahner on the grounds that Crick accounts for evolutionary change by appeal to natural selection and especially to chance; *ibid.*, 27. See also by Francis Crick, *The Astonishing Hypothesis: The Scientific Search for the Soul* (New York: Charles Scribner's Sons, 1994), 7–8.

<sup>23</sup> Ronald Cole-Turner, *The New Genesis: Theology and the Genetic Revolution* (Louisville, Ky.: Westminster/John Knox, 1993), 45.

DNA as matter—complicated, awe-inspiring, and elaborately coded, but matter nonetheless—is not in itself sacrilegious.”<sup>24</sup>

What the three meanings of “playing God” raise up for us is the question of the relationship between the divine creator and the natural creation. Theists in the Jewish and Christian traditions are clear: natural life, important as it is, is not ultimate. God is ultimate.

One can argue to this position on the basis of *creatio ex nihilo*, creation out of nothing. All that exists has been called from nothing by the voice of God and brought into existence, and at any moment could in principle return to the nonexistence from which it came. Life, as everything else in existence, is finite, temporal, and mortal. The natural world depends upon a divine creator who transcends it. Nature is not its own author. Nor can it claim ultimacy, sanctity, or any other status rivaling God. This leads biologist Hessel Bouma III and his colleagues at the Calvin Center for Christian Scholarship to a pithy proposition: “God is the creator. Therefore, nothing that God made is god, and all that God made is good.” This implies, among other things, that we should be careful when accusing physicians and scientists of “playing God.” We must avoid idolatrous expectations of technology, to be sure; “but to presume that human technological intervention violates God’s rule is to worship Mother Nature, not the creator. Natural processes are not sacrosanct.”<sup>25</sup>

One can also argue to this position on the basis of *creatio continua*, continuous creation—that is, on the basis of the idea that creation is ongoing, one can argue for human intervention and contribution to the process. God did not just extricate the world from the divine assembly line like a car, fill its tank with gas, and then let it drive itself down the highways of history. Divine steering, braking, and accelerating still go on. The creative act whereby God brought the world into existence *ab initio*, at the beginning, is complemented with God’s continued exercise of creative power through the course of natural and human history. The God of the Bible is by no means absent. This God enters the course of events, makes promises, and then fulfills them. God is the source of the new. Just as the world appeared new at the beginning, God continues to impart the new to the world and promises a yet outstanding new creation still to come.

My own way of conceiving of *creatio ex nihilo* together with *creatio continua* is this: the first thing God did was to give the world a future.<sup>26</sup> The act of drawing the world into existence from nothing is the act of giving the world a future. As long we have a future, we exist. When we lose our future, we cease to exist. God continues moment to moment to bestow futurity, and this establishes continuity while opening reality up to newness. Future-giving is the way in which God is creative. It is also the way God redeems. God’s grace comes to the creation through creative and redemptive future-giving.

<sup>24</sup> Ibid.

<sup>25</sup> Hessel Bouma et al., *Christian Faith, Health, and Medical Practice* (Grand Rapids, Mich.: Eerdmans, 1989), 4–5. James M. Gustafson makes “the theological point that whatever we value and ought to value about life is at least relative to the respect owed to the creator, sustainer, and orderer of life.” James M. Gustafson, “Genetic Therapy: Ethical and Religious Reflections,” *Journal of Contemporary Health Law and Policy*, 8 (1992): 196. For Gustafson, the central question around which the issue of germ-line intervention is oriented is this: How do we define what is naturally normal for human life? For the theologian to answer this question, more than knowledge of biology is required. Required also is awareness of the divine ordering of human life.

<sup>26</sup> Ted Peters, *GOD—The World’s Future* (Minneapolis, Minn.: Fortress, 1992).

God creates new things. The biblical description of divine activity in the world includes promises and fulfillments of promises. This implies two divine qualities. First, that God is not restricted to the old, not confined by the *status quo*. God promises new realities and then brings them to pass. The most important of the still outstanding divine promises is that of the "new creation" yet to come. Second, this God is faithful, trustworthy. On the basis of the past record, the God of Israel can be trusted to keep a promise. For us this means that we can trust God's creative and redemptive activity to continue in the future.

The next step in the argument is to conceive of the human being as the created co-creator. The term, "created co-creator," comes from the work of Philip Hefner.<sup>27</sup> The term does a couple of important things. First, the term "created" reminds us that one way God creates differs from the way we human beings create. God creates *ex nihilo*. We have been created by God. We are creatures. So, whatever creativity we manifest cannot rank on the same level as creation out of nothing, on the same level with our creator. Yet, secondly, the term "co-creator" signifies what we all know, namely, the creation does not stand still. It moves. It changes. So do we. And, furthermore, we have partial influence on the direction it moves and the kind of changes that take place. We are creative in the transformatory sense. Might we then think of the *imago dei*—the image of God embedded in the human race—in terms of creativity? Might we think of ourselves as co-creators, sharing in the transforming work of God's ongoing creation?

Human creativity is ambiguous. We are condemned to be creative. We cannot avoid it. The human being is a tool maker and a tool user. We are *homo faber*. We cannot be human without being technological, and technology changes things for good or ill. Technology is normally designed for good reasons such as service to human health and welfare, but we know all too well how shortsightedness in technological advance does damage. This is indirect evil. Direct evil is also possible. Technology can be pressed into the service of violence and war, as in the making of weapons. It is by no means an unmitigated good. Yet, despite its occasional deleterious consequences, we humans have no choice but to continue to express ourselves technologically and, hence, creatively.

We cannot not be creative. The ethical mandate, then, has to do with the purposes toward which our creativity is directed and the degree of zeal with which we approach our creative tasks.

## 2 The Human Genome Project and Germ-line Intervention

These issues come to the forefront of discussion in our time due in large part to the enormous impact of the Human Genome Project on the biological and even the social sciences. Descriptively, we know the stated purposes directing the Human Genome Project as presently conceived. First, its aim is knowledge. The simple goal that drives all pure science is present here, namely, the desire to know. In this case it is the desire to know the sequence of the base pairs and the location of the genes in the human genome. Second, its aim is better human health. The avowed ethical

<sup>27</sup> Philip Hefner, "The Evolution of the Created Co-Creator" in *Cosmos as Creation: Science and Theology in Consonance*, ed. by Ted Peters (Nashville, Tenn.: Abingdon, 1989), 212; and idem, *The Human Factor: Evolution, Culture, and Religion* (Minneapolis, Minn.: Fortress, 1993), 35–42. See also James M. Gustafson, "Where Theologians and Geneticists Meet," *Dialog*, 33.1 (Winter, 1994): 10.



goal is to employ the newly acquired knowledge in further research to provide therapy for the many genetically caused diseases that plague the human family. John C. Fletcher and W. French Anderson put it eloquently: "Human gene therapy is a symbol of hope in a vast sea of human suffering due to heredity."<sup>28</sup> As this second health oriented purpose is pursued, the technology for manipulating genes will be developed and questions regarding human creativity will arise. How should this creativity be directed?

Virtually no one contests the principle that new genetic knowledge should be used to improve human health and relieve suffering. Yet a serious debate has arisen that distinguishes sharply between therapy for suffering persons who already exist and the health of future persons who do not yet exist. It is the debate between somatic therapy and germ-line therapy. By 'somatic therapy' we refer to the treatment of a disease in the cells of a living individual by trying to repair an existing defect. It consists of inserting new segments of DNA into already differentiated cells such as are found in the liver, muscle, or blood. Clinical trials are underway to use somatic modification as therapy for people suffering from diabetes, hypertension, and Adenosine Deaminase Deficiency. By 'germ-line therapy', however, we refer to intervention into the germ cells that would influence heredity and hopefully improve the quality of life for future generations. Negatively, germ-line intervention might help to eliminate deleterious genes that dispose us to disease. Positively, though presently well beyond our technical capacity, such intervention might actually enhance human health, intelligence, or strength.

Two issues overlap here and should be sorted out for clarity. One is the issue of somatic intervention versus germ-line intervention. The other is the issue of therapy versus enhancement. Although somatic treatment is usually identified with therapy and germ-line treatment with enhancement, there are occasions where somatic treatment enhances, such as injecting growth hormones to enhance height for playing basketball. And germ-line intervention, at least in its initial stages of development, will aim at preventive medicine. The science of enhancement, if it comes at all, will only come later.

Every ethical interpreter I have reviewed agrees that somatic therapy is morally desirable and looks forward to the advances gene research will bring for expanding this important medical work. Yet many who reflect on the ethical implications of the new genetic research stop short of endorsing genetic selection and manipulation for the purposes of improving the human species.<sup>29</sup> The World Council of Churches

---

<sup>28</sup> John C. Fletcher and W. French Anderson, "Germ-Line Gene Therapy: A New Stage of Debate," *Law, Medicine, and Health Care*, 20.1/2 (Spring/Summer, 1992): 31.

<sup>29</sup> W. French Anderson, for example, writes, "Somatic cell gene therapy for the treatment of severe disease is considered ethical because it can be supported by the fundamental moral principle of beneficence: It would relieve human suffering.... [But] enhancement engineering would threaten important human values in two ways: It could be medically hazardous in that the risks could exceed the potential benefits and the procedure therefore cause harm. And it would be morally precarious in that... it could lead to an increase in inequality and discriminatory practices." "Genetics and Human Malleability," *Hastings Center Report*, 20.1 (January/February, 1990): 23. David Suzuki and Peter Knudtson draw a sharp ethical distinction between somatic gene therapy—which can be seen as the equivalent of an organ-transplant operation that modifies a patient's phenotype without changing the genotype—and germ-line gene therapy—which modifies "cells belonging to lineages that are potentially immortal." David Suzuki and Peter Knudtson, *Genethics: The Clash Between the New Genetics and Human Values* (Cambridge: Harvard University Press, rev. ed. 1990),

(WCC) is representative. In a 1982 document, we find

... somatic cell therapy may provide a good; however, other issues are raised if it also brings about a change in germ-line cells. The introduction of genes into the germ-line is a permanent alteration.... Nonetheless, changes in genes that avoid the occurrence of disease are not necessarily made illicit merely because those changes also alter the genetic inheritance of future generations.... There is no absolute distinction between eliminating "defects" and "improving" heredity.<sup>30</sup>

The text elsewhere indicates that the WCC is primarily concerned with our lack of knowledge regarding the possible consequences of altering the human germ-line. The problem is this: the present generation lacks sufficient information regarding the long term consequences of a decision today that might turn out to be irreversible tomorrow. Thus, the WCC does not forbid forever germ-line therapy or even enhancement. Rather, it cautions us to wait and see. In similar fashion, the Methodists "support human gene therapies that produce changes that cannot be passed on to offspring (somatic), but believe that they should be limited to the alleviation of suffering caused by disease."<sup>31</sup> The United Church of Christ also approves "altering cells in the human body, if the alteration is not passed to offspring."<sup>32</sup> On June 8, 1983 fifty-eight religious leaders issued a "Theological Letter Concerning the Moral Arguments" against germ-line engineering addressed to the U.S. Congress. The group action was orchestrated by Jeremy Rifkin of the

183-84. However, because the technical distinction between these two is becoming more difficult to discern, some can say "the bright ethical line separating somatic and germ-line therapy has begun to erode." Kathleen Nolan, "How Do We Think About the Ethics of Human Germ-Line Genetic Therapy," *Journal of Medicine and Philosophy*, 16.6 (December, 1991): 613. French Anderson, in a more recent work with John Fletcher, argues that the situation is changing. Whereas in the 1970s and 1980s there was a strong taboo against germ-line modification, in the 1990s that taboo is lifting. "Searches for cure and prevention of genetic disorders by germ-line therapy arise from principles of beneficence and non-maleficence, which create imperatives to relieve and prevent basic causes of human suffering. It follows from this ethical imperative that society ought not to draw a moral line between intentional germ-line therapy and somatic cell therapy." Fletcher and Anderson, "Germ-Line Gene Therapy," 31.

<sup>30</sup> WCC, *Manipulating Life: Ethical Issues in Genetic Engineering* (Geneva: World Council of Churches, 1982). A 1989 document reiterates this position more strongly by proposing "a ban on experiments involving genetic engineering of the human germ-line at the present time." WCC, "Biotechnology: Its Challenges to the Churches and the World" (Unpublished, Geneva: World Council of Churches, 1989), 2. Eric T. Juengst argues that the arguments for a present ban on germ-line intervention are convincing, but he argues that the risks of genetic accidents—even multi-generational ones—can be overcome with new knowledge. Germ-line alteration ought not be proscribed simply on the grounds that enhancement engineering might magnify current social inequalities. He writes, "the social risks of enhancement engineering, like its clinical risks, still only provides contingent barriers to the technique. In a society structured to allow the realization of our moral commitment to social equality in the face of biological diversity—that is, for a society in which there was both open access to this technology and not particular social advantage to its use—these problems would show themselves to be the side issues they really are." Eric T. Juengst, "The NIH 'Points to Consider' and the Limits of Human Gene Therapy," *Human Gene Therapy*, 1 (1990): 431.

<sup>31</sup> United Methodist Church Genetic Task Force Report to the 1992 General Conference, p.121.

<sup>32</sup> United Church of Christ, "The Church and Genetic Engineering," Pronouncement of the Seventeenth General Synod (Fort Worth, Tx.: 1989), 3. See Cole-Turner, "Genetics and the Church," *Prism*, 6 (Spring, 1991): 53-61; and idem, *The New Genesis*, 70-79.

Foundation on Economic Trends; and one member, James R. Crumley, presiding bishop of the then Lutheran Church in America spoke to the press saying, "There are some aspects of genetic therapy [for human diseases] that I would not want to rule out. . . . My concern is that someone would decide what is the most correct human being and begin to engineer the germ-line with that goal in mind."<sup>33</sup>

A more positive approach is taken by The Catholic Health Association. If we can improve human health through germ-line intervention, then it is morally desirable.

... germ-line intervention is potentially the only means of treating genetic diseases that do their damage early in embryonic development, for which somatic cell therapy would be ineffective. Although still a long way off, developments in molecular genetics suggest that this is a goal toward which biomedicine could reasonably devote its efforts.<sup>34</sup>

Part of the reluctance to embrace germ-line intervention has to do with its implicit association with the history of eugenics. The term 'eugenics' brings to mind the repugnant racial policies of Nazism, and this accounts for much of today's mistrust of genetic science in Germany and elsewhere.<sup>35</sup> No one expects a repeat of Nazi terror to emerge from genetic engineering; yet some critics fear a subtle form of eugenics may be slipping in the cultural back door.<sup>36</sup> John Harris may be a bit of a maverick, but he welcomes eugenics if it contributes to better human health. He makes the point forcefully: "... where gene therapy will effect improvements to human beings or to human nature that provide protections from harm or the protection of life itself in the form of increases in life expectancy... then call it what you will, eugenics or not, we ought to be in favor of it."<sup>37</sup>

Philosophical and ethical objections to eugenics seem to presuppose not therapy but rather enhancement. The growing power to control the human genetic make-up could foster the emergence of the image of the "perfect child" or a "super

<sup>33</sup> See: Paul Nelson, "Bioethics in the Lutheran Tradition," *Bioethics Yearbook*, Vol. 1: *Theological Developments in Bioethics: 1988-1990* (Boston, Mass.: Kluwer, 1991), 119-44. Reporting on recent developments in Scandinavian theology, Paul Nelson writes, "Biblically oriented theologians reject positive eugenics because human nature as created and willed by God rests upon a genetic foundation. Modifications aimed at making better humans would usurp the authority of the divine creation and efface the distinction between the creature and creator. . . . At the same time, these theologians are not opposed to negative eugenics in the form of somatic cell gene therapy. . . . Germ cell therapy, on the other hand, is subject to the same indictment the churches make of positive eugenics." Vol. 3: *Theological Developments in Bioethics: 1990-1992* (Boston, Mass.: Kluwer, 1993), 161.

<sup>34</sup> Catholic Health Association of the United States, *Human Genetics: Ethical Issues in Genetic Testing, Counseling, and Therapy* (St. Louis, Mo.: The Catholic Health Association of the United States, 1990), 19. Paulus Gregorius, Metropolitan Orthodox Bishop of Delhi, might agree. "... one cannot see anything intrinsically forbidden or evil in gene therapy, whether somatic or germ-line." Paulus Gregorius, "Ethical Reflections on Human Gene Therapy," in Zbigniew Bankowski, Alexander M. Capron, eds., *Genetics, Ethics, and Human Values*. Proceedings of the 24th CIOMS Round Table Conference (Geneva: CIOMS, 1991), 143-53.

<sup>35</sup> See: Peter Meyer, "Biotechnology: History Shapes German Question," *Forum for Applied Research and Public Policy*, 6 (Winter 1991): 92-97.

<sup>36</sup> See: Troy Duster, *Backdoor to Eugenics* (New York: Routledge, 1999); Ruth Hubbard and Elijah Wald, *Exploding the Gene Myth* (Boston, Mass.: Beacon, 1993), esp. 24-25; and Rifkin, *Algeny*, 230-34.

<sup>37</sup> John Harris, "Is Gene Therapy a Form of Eugenics?" *Bioethics*, 7.2/3 (April, 1993): 184.

strain" of humanity. Some religious leaders worry that the impact of the social value of perfection will begin to oppress all those who fall short. Ethicists at the March 1992 conference on "Genetics, Religion and Ethics" held at the Texas Medical Center in Houston said this:

Because the Jewish and Christian religious world-view is grounded in the equality and dignity of individual persons, genetic diversity is respected. Any move to eliminate or reduce human diversity in the interest of eugenics or creating a "super strain" of human being will meet with resistance.<sup>38</sup>

In sum, with the possible exception of the Catholic Health Association, religious ethical thinking tends to be conservative in the sense that it seeks to conserve the present pool of genes on the human genome for the indefinite future.

Now the question of "playing God" begins to take on concrete form. The risk of exerting human creativity through germ-line intervention is that, though we begin with the best of intentions, the result may include negative repercussions that escape our control. Physically, our genetic engineering may disturb the strength-giving qualities of biodiversity that supposedly contribute to human health. Due to our inability to see the whole range of interconnected factors, we may inadvertently disturb some sort of existing balance in nature and this disturbance could redound deleteriously. Socially, we could contribute to stigma and discrimination. The very proffering of criteria to determine just what counts as a "defective" gene may lead to stigmatizing all those persons who carry that gene. The very proffering of the image of the ideal child or a super strain of humanity may cultivate a sense of inferiority to those who do not measure up. To embark on a large scale program of germ-line enhancement may create physical and social problems, and then we would blame the human race for its pride, its *hubris*, its stepping beyond its alleged God-defined limits that brings disaster upon itself.

Yet, there may be another way to look at the challenge that confronts us here. The correlate concepts of God as the creator and the human as the created co-creator orient us toward the future, a future that should be better than the past or present. One of the problems with the naturalist argument and the more conservative religious arguments mentioned above is that they implicitly assume the present state of affairs is adequate. These arguments tacitly bless the *status quo*. The problem with the *status quo* is that it is filled with human misery, some of which is genetically caused. It is possible for us to envision a better future, a future in which individuals would not have to suffer the consequences of genes such as those for Cystic Fibrosis, Alzheimer's or Huntington's Disease. That we should be cautious and prudent and recognize the threat of human *hubris*, I fully grant. Yet, our ethical vision cannot acquiesce with present reality; it must press on to a still better future and employ human creativity with its accompanying genetic technology to move us in that direction.

"In the not-to-distant future," says Pope John Paul II, "we can reasonably foresee that the whole genome sequencing will open new paths for therapeutic purposes. Thus the sick, to whom it was impossible to give proper treatment due to frequently fatal hereditary pathologies, will be able to benefit from the treatment

<sup>38</sup> J. Robert Nelson, "Summary Reflection Statement" of the "Genetics, Religion and Ethics Project" (1992), The Institute of Religion and Baylor College of Medicine, The Texas Medical Center, P.O. Box 20569, Houston, Texas 77225. For an analysis of the conference, see J. Robert Nelson, *On the New Frontiers of Genetics and Religion* (Grand Rapids, Mich.: Eerdmans, 1994).

needed to improve their condition and possibly to cure them. By acting on the subject's unhealthy genes, it will also be possible to prevent the recurrence of genetic diseases and their transmission."<sup>39</sup> To prevent the genetic transmission of disease will take human creativity operating out of a vision of better health for future generations.

### 3 *Germ-line Therapy and Enhancement: a Closer Look*

Having enunciated my own conviction that the Christian doctrine of creation with its accompanying understanding of the human being as the created co-creator leads to an ethic oriented toward striving for a better future, let me turn to a closer look at the arguments for and against germ-line intervention and manipulation. Eric T. Juengst helpfully summarizes five arguments in favor of germ-line modification for the purposes of therapy.

1. *Medical utility*: germ-line gene therapy offers a true cure for many genetic diseases.
2. *Medical necessity*: such therapy is the only effective way to address some diseases.
3. *Prophylactic efficiency*: prevention is less costly and less risky than cure.
4. *Respect for parental autonomy* when parents request germ-line intervention.
5. *Scientific freedom* to engage in germ-line inquiry.

Juengst also summarizes five arguments opposing germ-line intervention.

1. *Scientific uncertainty and risks* to future generations.
2. *Slippery slope to enhancement* that could exacerbate social discrimination.
3. *Consent of future generations* is impossible to get.
4. *Allocation of Resources*: germ-line therapy may never be cost effective.
5. *Integrity of genetic patrimony*: future generations have the right to inherit a genetic endowment that has not been intentionally modified.<sup>40</sup>

<sup>39</sup> Pope John Paul II, "The Human Person Must Be the Beginning, Subject and Goal of All Scientific Research," Address to the Pontifical Academy of Sciences, *L'Osservatore Romano*, N-45 (9 November, 1994): 3.

<sup>40</sup> Eric T. Juengst, "Germ-Line Gene Therapy: Back to Basics," *Journal of Medicine and Philosophy*, 16.6 (December, 1991): 589-90. See also Maurice A.M. De Wachter, "Ethical Aspects of Human Germ-Line Therapy," *Bioethics*, 7.2/3 (April, 1993): 166-77. Nelson A. Wivel and LeRoy Walters list four arguments against germ-line modification: 1) it is an expensive intervention that would affect relatively few patients; 2) alternative strategies for avoiding genetic disease exist, namely, somatic cell therapy; 3) the risks of multi-generational genetic mistakes will never be eliminated, and these mistakes would be irreversible; and 4) germ-line modification for therapy puts us on a slippery slope leading inevitably to enhancement. They also list four arguments favoring germ-line modification: 1) health professionals have a moral obligation to use the best available methods in preventing or treating genetic disorders, and this may include germ-line alterations; 2) the principle of respect for parental autonomy should permit parents to use this technology to increase the likelihood of having a healthy child; 3) it is more efficient than the repeated use of somatic cell therapy over successive generations; and 4) the prevailing ethic of science and medicine operates on the assumption that knowledge has intrinsic value, and this means that promising areas of research should be pursued. "Germ-Line Gene Modification and Disease Prevention: Some Medical and Ethical Perspectives," *Science*, 262.5133 (22 October, 1993): 533-38. Arthur L. Caplan believes HGI scientists may have sold their research souls too soon by

Given Juengst's classification of arguments as a general framework, I would now like to engage the issue in some detail and to test a theological commitment to the notion of the created co-creator by turning our attention to a representative case in point, namely, the position paper drafted by the Council for Responsible Genetics (CRG) in the fall of 1992.<sup>41</sup> The CRG proffers three types of argument in opposition to germ-line modification in humans: a technical argument, a slanderous argument, and an ethical argument.

The first argument against germ-line manipulation is technical. Although the motive for modifying germ genes may be the improvement of human well being for future generations, unexpected deleterious consequences may result. Removal of an unwanted disease gene may not eliminate the possibility that other gene combinations will be created that will be harmful. Inadvertent damage could result from biologists' inability to predict just how genes or their products interact with one another and with the environment. "Inserting new segments of DNA into the germ-line could have major, unpredictable consequences for both the individual and the future of the species that include the introduction of susceptibilities to cancer and other disease into the human gene pool."

It would seem to the prudent observer that we take a wait and see attitude, that we move cautiously as the technology develops. This is one way to interpret the WCC position.<sup>42</sup> The problem of unexpected consequences is one that confronts all long term planning, and in itself should not deter research and experimentation guided by a vision of a healthier humanity.<sup>43</sup>

The second argument appeals to guilt by association and is thereby slanderous. The CRG Human Genetics Committee says, "... the doctrine of social advancement through biological perfectibility underlying the new eugenics is almost indistinguishable from the older version so avidly embraced by the Nazis." The structure of this argument is that because germ-line modification can be associated with eugenics, and because eugenics can be associated with Nazism, therefore, we can associate proponents of germ-line enhancement with the Nazis and, on this ground, should reject it. The argument borders on the *ad hominem* (circumstantial) fallacy.

---

promising to refrain from germ-line intervention just to appease the hysteria over potential eugenic uses. There is no moral reason to refrain from eliminating a lethal gene from the human population; and there is no slippery slope from germ-line therapy to eugenics. "It is simply a confusion to equate eugenics with any discussion of germ-line therapy." "If Gene Therapy Can Cure, What is the Disease?" in *Gene Mapping*, ed. by George J. Annas and Sherman Elias (Oxford and New York: Oxford University Press, 1992), 139.

<sup>41</sup> CRG, "Position Paper on Human Germ Line Manipulation," Council for Responsible Genetics, 19 Garden Street, Cambridge MA 02138. Quotations here come from this paper.

<sup>42</sup> See page 498 above.

<sup>43</sup> C. Thomas Caskey, like the CRG, believes that germ-line correction has little practical appeal while generating considerable ethical apprehension. Yet, he leaves the door open. "I would reserve one area for consideration of germ-line manipulation... It is conceivable that at some point in the future genetic manipulation of an individual's germ-line may be undertaken to introduce or reintroduce disease resistance." C. Thomas Caskey, "DNA-Based Medicine: Prevention and Therapy," in *The Code of Codes: Scientific and Social Issues in the Human Genome Project*, ed. by Daniel J. Kevles and Leroy Hood (Cambridge: Harvard University Press, 1992), 129. John A. Robertson takes a position that would oppose the CRG, saying that "these fears appear too speculative to justify denying use of a therapeutic technique that will protect more immediate generations of offspring." *Children of Choice: Freedom and the New Reproductive Technologies* (Princeton, N.J.: Princeton University Press, 1994), 162.

One problem is that the CRG argument is too glib, failing to discern the complexities here. The eugenics movement of the late nineteenth and early twentieth centuries was originally a socially progressive movement that embraced the ideals of a better society. In England and America it became tied to ethnocentrism and the blindness of class interests, leading to forced sterilization of feeble minded prisoners. It was eventually discarded because advances in genetics proved it unscientific.<sup>44</sup> In Germany the eugenics movement became tied to anti-Semitism, resulting in the racial hygiene (*Rassenhygiene*) program of the Nazi SS and the atrocities of the so-called "final solution."<sup>45</sup> With this history in mind, the present generation must assuredly be on guard against future programs of "ethnic hygiene" which seem to plague the human species in one form or another every century. Yet we must observe that ethnocentric bias in England and America and the rise of Nazism in Germany were social phenomena that employed eugenics for their respective ends. Eugenics was not the source of injustice, even if it was a weapon in the service of injustice. The CRG's use of the volatile word "Nazi" in this discussion of germ-line enhancement is an attempt to paint their opponents in such a repulsive color that no one will open-mindedly view the matter.

The third CRG argument, the ethical argument, is much more worthy of serious consideration. The central thesis here is that germ-line modification will reinforce existing social discrimination. The position paper declares,

The cultural impact of treating humans as biologically perfectible artifacts would be entirely negative. People who fall short of some technically achievable ideal would increasingly be seen as 'damaged goods.' And it is clear that the standards for what is genetically desirable will be those of the society's economically and politically dominant groups. This will only reinforce prejudices and discrimination in a society where they already exist.<sup>46</sup>

Let us look at this argument in terms of its component parts. The assumption in the first sentence is that germ-line intervention implies biological perfectibility and, on account of this, that human persons will be treated as artifacts. It is of course plausible that a social construction of the perfect child or the perfected human strain might appear in Saturday morning cartoons and other cultural forms. Yet, this does not seem to apply to the actual situation in which genetic scientists currently find themselves. They are occupied with much more modest aspirations such as protection from monogenetic diseases such as cystic fibrosis. The medical technology here is not much beyond infancy. At this point in technological history we do not find ourselves on the brink of designer children or the advent of a super strain. What is "genetically desirable" is by no means scientifically attainable. Thus, Hessel Bouma and his colleagues are less worried than the CRG because they recognize that the technological possibility of creating a genetically perfect human race is still very remote. "Things like intelligence and strength are not inherited through single genes but through multi-factoral conditions, combinations of inherited genes and numerous environmental factors. Our ability to control and to design is

<sup>44</sup> See: Daniel J. Kevles, *In the Name of Eugenics* (Berkeley and Los Angeles: University of California Press, 1985).

<sup>45</sup> See: Robert N. Proctor, *Racial Hygiene: Medicine Under the Nazis* (Cambridge: Harvard University Press, 1988).

<sup>46</sup> This statement comes directly from the position paper. It fits appropriately with what one of the drafters, R. C. Lewontin, elsewhere says critically about science and class interests: "'Science' is the ultimate legitimator of bourgeois ideology." Robert Lewontin et al., *Not In Our Genes* (New York: Pantheon, 1984), 31.

limited by the complexity of many traits, so there are seemingly insurmountable technological and economic barriers that weaken the empirical slippery-slope argument that we are sliding into the genetic engineering of our children."<sup>47</sup>

Continuing our analysis of the ethical argument, the CRG rightly alerts us to the social-psychology of feeling, and being treated like, "damaged goods." If a "technically achievable ideal" should become a cultural norm, then those who fail to meet the norm would understandably feel inferior.<sup>48</sup> Furthermore, the economically and politically advantaged groups will help to steer the definition of the ideal norm to serve their own class interests.<sup>49</sup> Here the CRG should be applauded for alerting us to a possible loss of human dignity.

At this point a reaffirmation of human dignity is called for, I believe, wherein each individual person is treated as having the full complement of rights regardless of his or her genes. Ethical support here comes from the Christian doctrine of creation, wherein God made men and women in the divine image and pronounced them "good" (Genesis 1:26-31). It also comes from the ministry of Jesus, wherein the Son of God sought out the outcasts, the lame, the infirm, the possessed—surely those who were considered the "damaged goods" of first century Palestine—for divine favor and healing.<sup>50</sup> Each human being, regardless of health or social location or genetic endowment is loved by God, and this recognition should translate into social equality and mutual appreciation. There is no theological justification for thinking of some persons as inferior to others, and new technical possibilities in genetics ought not change this.

We also note the CRG's prognostication for the future: germ-line modification "will only reinforce prejudices and discrimination in a society where they already exist." Prejudices and discrimination exist in the present, says the CRG. This is an obvious fact we readily concede. Does it follow, however, that germ-line intervention "will only reinforce" them? Is germ-line modification the cause of present prejudice and discrimination? No. Prejudice and discrimination seem to flourish quite well without germ-line manipulation, yet somehow their existence is alleged to count as an argument against the latter.

If the argument rests on the premise that germ-line enhancement will create a technical ideal achievable by some but not others, then it fails on the grounds of triviality. This could apply to countless ideals in our society. We daily confront

<sup>47</sup> Bouma, *Christian Faith, Health, and Medical Practice*, 264.

<sup>48</sup> "Why does the notion that medical technology might give some children an advantage elicit such a strong negative reaction?" asks Zimmerman. "Perhaps it is because the notion of fairness is well embedded in Western culture." He goes on to note that we already accept randomized differences between people and the inevitability that some individuals will excel over others. Then in support of germ-line enhancement he adds: "What about the positive side, of increasing the number of talented people. Wouldn't society be better off in the long run?" "Human Germ-Line Therapy," 606-7.

<sup>49</sup> We must be clear that genetic prejudice would be a cultural or social phenomenon, not a scientific one. "It is society, not biology, that turns some genetic characteristics into liabilities," writes Roger L. Shinn, *Forced Options: Social Decisions for the 21st Century* (New York: Pilgrim Press, 2nd ed., 1985), 140. If our society is serious about the fairness or justice dimension here, we could institute a sort of "Affirmative Action" public policy in which the underprivileged classes would be given privileged access to germ-line enhancement technology.

<sup>50</sup> Cole-Turner makes much of Jesus' healing ministry as a directive toward inspiring contemporary science and technology to continue healing and to think of this as continuing the divine work of redemption. *New Genesis*, 80-86.



innumerable ideals that are met by some but not all, whether they be athletic achievements, beauty trophies, professional promotions, or lottery winnings. These may elicit temporary feelings of inferiority on the part of those who come in second or further behind, but they are widely ignored by those who did not compete. Given the realistic prospects for what germ-line enhancement is aimed at accomplishing, the new situation would not alter the present situation in this respect. If it is technically possible to relieve some individuals from suffering the consequences of diabetes through the regular use of insulin, then the achievement of this ideal by those afflicted by diabetes leads to only gratitude on their part and on the part of those who love them. Somatic cell therapy or even germ-line modification for diabetes will only extend this gratitude. To those who are not afflicted or likely to be afflicted by diabetes, this achievement may be applauded from a distance or perhaps ignored.

One could envision a next step, of course, where germ-line intervention could, if made universally available, eliminate diabetes from the human gene pool. We would then have a future wiped clean of genetically based diabetes. If this constituted an achieved ideal for the whole human race, and if the unexpected consequences were less harmful than the diabetes, then many persons will have been spared the suffering diabetes could have caused and no reinforcement of prejudice and discrimination will have occurred.

What if we were to falter somewhere along the way? Suppose we began a worldwide program to eliminate the disposition to diabetes from the human gene pool, achieved success in some family or ethnic or class groups, and then due to lack of funding support or other factors had to abandon the project. What would happen to those individuals who still carried the deleterious gene? Would they suffer stigma or discrimination? Perhaps yes. And the CRG rightly alerts us to such a possibility. Yet, we might ask, does this prospect provide sufficient warrant to shut down the research and prohibit embarking on such a plan?

#### *4 Inter-generational Genetics*

The CRG buttresses its central ethical argument with two subarguments. One is that the present generation, presumably the one engaging in germ-line modification, cannot be held accountable by future generations for the wrongful damage we inflict on them. We, our progeny's ancestors, will not be around any more to be accountable. There may be an equivocation at work here. On the one hand, the present generation will be absent in the future and, therefore, we cannot be held accountable in the sense that we can be punished by imprisonment. On the other hand, though absent, we can be held accountable in the sense that future fingers could be waved and fists thrown into the air as our progeny express anger at our failure to assume responsibility. Just because we cannot be punished does not mean we are not accountable in a moral sense.

Yet, for the CRG somehow the concept of accountability is supposed to count against germ-line enhancement. Again the argument fails on account of triviality, because our responsibility to our progeny applies across the board to all departments of life. There is nothing special about genes. One might even make a case that environmental responsibility is of graver ethical concern. The excessive depletion of nonrenewable natural resources and pollution of the biosphere is due to the hedonism of the present generation, due to present selfishness that is willing to sacrifice the welfare of future generations for the prosperity of our own. Germ-line

intervention, in contrast, could be motivated only by seeking benefit for future generations whom we may not live to see. With or without accountability, the latter at least has the virtue of altruism going for it.

The other subargument raises an interesting issue worth pondering. The CRG says: "Germ-line modification is not needed in order to save the lives or alleviate suffering of existing people. Its target population are 'future people' who have not yet even been conceived." On the face of it, this argument looks like another brand of defense for the ecological hedonists just mentioned whose interest is limited to only the present generation without any regard for future progeny. But this may be a misreading. The CRG is not eliminating our responsibility for future generations. Yet, for some unexplained reason, the CRG makes central the distinction between people who exist and people who do not yet exist. The assumption is that moral priority is given to those who exist over against those who have "not yet even been conceived." The interesting puzzle is the relative moral status of present and future, of existents and not yet.<sup>51</sup>

Suppose we draw up the previous concern for accountability and combine it with the concepts of rights and wrongful birth. Might future generations blame us today for their wrongful birth by damaging them through germ-line intervention? Or, in contrast, might they blame us for *not* intervening in the germ-line, thereby leaving them to suffer from diseases we could have prevented? We are on the verge of an ethical crisis—that is, on the verge of an ethical challenge where creative action is demanded—because whether we engage in germ-line intervention or not, if we are technically capable, we will be morally accountable.

Here the contrast with the environmental crisis is illuminating. We can imagine our great grandchildren living on a deforested earth, mines depleted of their minerals, lakes dead from acid rain, food supply contaminated by chemicals, skin cancerous due to excessive ozone exposure, raising their fists in anger at us. They will claim we violated their right to a life-giving environment and, despite what the CRG says, they will claim we are accountable as they burn us in effigy.

Does this apply by analogy to germ-line enhancement? We can certainly imagine a future person asserting, "My parents and great grandparents and the genetic scientists of their generation violated my rights by giving me a bad genetic endowment." It would be a variant on the wrongful birth accusation. Yet, not everyone sees the sense this makes. Hardy Jones, for example, would argue: had this

<sup>51</sup> Bioethicists dealing with genetics ask whether nonexistent future persons belong in the domain of present moral deliberation. David Heyd says no. Heyd advocates a "person-affecting approach to morality" which presupposes that only the needs, wants, interests and ideals of actual persons are the sources of value or the objects of value considerations. Value does not derive from the impersonal world, nor from as yet non-existing persons. He defines *genethics* as the field concerned with the morality of creating or procreating people. The genesis or creation or procreation of future persons marks an ethical domain for us, the procreators, but not for those yet to be brought into existence. David Heyd, *Genethics: Moral Issues in the Creation of People* (Berkeley: University of California Press, 1992). Jan Christian Heller criticizes Heyd for being anthropocentric—for deriving value only from persons and not from the world or from God—and for expelling from our ethical domain future persons whose existence is still contingent. Heller proposes a "qualified person-affecting" approach to value as part of an "impersonal theocentric" ethic in order to incorporate contingent future persons into a divine domain of value. Jan Christian Heller, *Human Genome Research and the Challenge of Contingent Future Persons* (Omaha, Neb.: Creighton University Press, 1996), 16.

individual's progenitors taken successful steps toward enhancing the genetic endowment of their offspring, then this would not be the child they actually had. Having a child with defective genes cannot be a violation of that child's right, because it is not possible to respect that right by not having the child or by bequeathing a different genetic constitution. The only child who can claim a right is one that exists, and the particular configuration of genes is definitional to the person who exists. "Genetically defective persons are not analogous to existing individuals who subsequently acquire biologically bad qualities."<sup>52</sup>

John A. Robertson makes a similar argument when asking about the consent or lack of consent on the part of future generations to what we do today to affect their germ-line. If no harm occurs, he argues, then this is a mere theoretical objection. If harm does occur, then the question of identity arises. "Later generations allegedly harmed without their consent may not have existed at all. Different individuals would then exist than if the germ-line gene therapy had not occurred."<sup>53</sup>

Perhaps the CRG position paper writers presumed this kind of distinction between existing and not yet existing persons, and this permitted them to give qualified approval of somatic modification for living persons while proscribing germ-line manipulation.<sup>54</sup> What this means for us here, then, is that if we are to affirm ethical responsibility for the genetic inheritance we bequeath our progeny, then the framework of rights and accountability might be inadequate. As long as the CRG works within this framework, perhaps its conclusions are understandable, even if inadequate.

A framework that includes the will of God for the flourishing of the human race could handle our present responsibility toward persons who do not yet exist. Jan Christian Heller recognizes the problem in the face of germ-line intervention: "a decision to protect a *particular* future person from predictable genetic harm will mean that a *different* person will in fact be born."<sup>55</sup> In order to include those *different* persons within our moral domain, Heller advocates an "impersonal theocentrism" that begins with the assumption that creation as a whole is intrinsically good independent of its ability to advance or promote human ends. Its goodness derives from God. The "impersonal" dimension here refers to the suprapersonal origin of value, God. This, Heller believes, will permit us to make moral decisions concerning both noncontingent and contingent future persons without discriminating between them.<sup>56</sup> It would also permit us to make moral decisions without discriminating between persons who exist and persons who do not yet exist. The point here is this: an ethic that is grounded in God and God's future orients our responsibility today toward persons we will affect (or even effect) tomorrow.

<sup>52</sup> Hardy Jones, "Genetic Endowment and Obligations to Future Generations," in *Responsibilities to Future Generations*, ed. by Ernest Partridge, (Buffalo, N.Y.: Prometheus Books, 1981), 249.

<sup>53</sup> Robertson, *Children of Choice*, 162.

<sup>54</sup> David Suzuki and Peter Knudtson promulgate a "genethic principle" that parallels the CRG: "While genetic manipulation of human somatic cells may lie in the realm of personal choice, tinkering with human germ cells does not. Germ-cell therapy, without the consent of all members of society, ought to be explicitly forbidden." *Genethics*, 163. The Suzuki and Knudtson position is obviously based upon a libertarian ethic so, to be more precise, they should be seeking the consent of those individuals involved rather than the vague "all members of society."

<sup>55</sup> Heller, *Human Genome Research*, 63.

<sup>56</sup> *Ibid.*, 138-39.

### 5 *The Not-yet-future and the Ethics of Creativity*

Would a future-oriented theology of creation and its concomitant understanding of the human being as God's created co-creator be more adequate than what the CRG proposes? It would be more adequate for a number of reasons. First, a future-oriented theology of creation is not stymied by giving priority to existing persons over against future persons who do not yet exist. A theology of continuing creation looks forward to the new, to those who are yet to come into existence as part of the moral community to which we belong. Second, such a theology is realistic about the dynamic nature of our situation. Everything changes. There is no standing still. What we do affects and is affected by the future. We are condemned to be creative for good or ill. Third, the future is built into this ethical vision. Once we apprehend that God intends a future, our task is to discern as best we can the direction of divine purpose and employ that as an ethical guide. When we invoke the apocalyptic symbol of the New Jerusalem where "crying and pain will be no more" (Revelation 21:4), then this will inspire and guide the decisions we make today that will affect our progeny tomorrow.

The creative component to a future-oriented ethic denies that the *status quo* defines what is good, denies that the present situation has an automatic moral claim to perpetuity. Take social equality as a relevant case in point. As one can plainly see, social equality does not at present exist, nor has it ever existed in universal form. We daily confront the frustrations of economic inequality and political oppression right along with the more subtle forms of prejudice and discrimination that the CRG rightly opposes. Human equality, then, is something we are striving for, something that does not yet exist but ought to exist. Equality needs to be created, and it will take human creativity under divine guidance to establish it, plus vigilance to maintain it when and where it has been achieved. Wolfhart Pannenberg puts it this way: "The Christian concept of equality does not mean that everyone is to be reduced to an average where every voice is equal to every other, but equality in the Christian sense means that everyone should be raised up through participation in the highest human possibilities. Such equality must always be created; it is not already there."<sup>57</sup> An ethic that seeks to raise us to the "highest human possibilities" cannot accept the *status quo* as normative, but presses on creatively toward a new and better future. Applied to the issue at hand, Ronald Cole-Turner makes the bold affirmation: "I argue that genetic engineering opens new possibilities for the future of God's creative work."<sup>58</sup>

### 6 *Conclusion*

We opened with an observation of Karl Rahner regarding evolution and human openness toward the future. Self-transcendence and the possibility for something new belong indelibly to human nature. Human existence is "open and indetermined."<sup>59</sup> That to which we are open is the infinite horizon; we are open to a fulfillment yet to be determined by "the infinite and the ineffable mystery" of God.<sup>60</sup> If we try to draw any middle axioms that connect this sublime theological vision to

<sup>57</sup> Wolfhart Pannenberg, *Ethics* (Louisville, Ky.: Westminster/John Knox Press, 1981), 140.

<sup>58</sup> Cole-Turner, *New Genesis*, 98.

<sup>59</sup> Karl Rahner, *Foundations of Christian Faith* (New York: Seabury, 1978), 35.

<sup>60</sup> *Ibid.*, 190.

an ethic appropriate to genetic engineering, openness to the future translates into responsibility for the future, even our evolutionary future. Such a theological vision undercuts a conservative or reactionary proscription against intervening in the evolutionary process. Rahner describes the temptation to condemn genetic research and its application as "symptomatic of a cowardly and comfortable conservatism hiding behind misunderstood Christian ideals."<sup>61</sup> The concept of the created co-creator we invoke here is a cautious but creative Christian concept that begins with a vision of openness to God's future and responsibility for the human future.

The health and well-being of future generations not yet born is a matter of ethical concern when viewed within the scope of a theology of creation that emphasizes God's ongoing creative work and that pictures the human being as the created co-creator. A vision of future possibilities, not the present *status quo*, orients and directs ethical activity. When applied to the issue of germ-line intervention for the purpose of enhancing the quality of human life, the door must be kept open so that we can look through, squint and focus our eyes to see just what possibilities loom before us. This will include a realistic review of the limits and risks of genetic technology.<sup>62</sup> But realism about technological limits and risks is insufficient warrant for prematurely shutting the door against possibilities for an improved human future. Rather than playing God or taking God's place, seeking to actualize new possibilities means we are being truly human.

---

<sup>61</sup> Rahner, *Theological Investigations*, IX:211.

<sup>62</sup> Roger Shinn's advice is salutary here. "I know of no way of drawing a line and saying: thus far, scientific direction and control is beneficial; beyond this line they become destructive manipulation. I think it more important to keep raising the question, to keep confronting the technological society with the issue." *Forced Options*, 142. Deborah Blake says it eloquently: "The risk of the nineties is the seduction of a technological fix. The challenge for the nineties is to find the moral courage necessary to guide and realize the promises made by this new genetics so that our moral wisdom is not outpaced by our technological cleverness." "Ethics of Possibility: Medical Biotechnology for the Nineties," *The Catholic World*, 234.1403 (September-October, 1991): 237.