Universal Principles of Biomedical Ethics and Their Application to Gene-Splicing

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Given the prospects for gene surgery in the next decade, forethought must be given as well to moral guidelines for this new technology. This paper, given at the 1987 ASA conference on gene-splicing, relates relevant bioethical principles to gene-splicing therapy. Consideration is also given to six of the more common cliches and anxieties often associated with genetic engineering in the hopes of refocusing the debate.

When the President's Commission for the Study of Ethical Problems in Medicine and Behavioral Research issued its report in 1982, it concluded that "genetic engineering has become a target for simplistic slogans that try to capture vague fears."[1] One hopes that this paper moves beyond cliches and slogans to a larger understanding of truth and a clearer vision of what is possible in the future.

While I will have more to say later in this paper concerning religious responses to the awesome prospects anticipated in this field of research, suffice it to say here that the National Association of Evangelicals in 1981 passed a two-sentence resolution on this subject. It read: "The NAE reaffirms that the rights of the unborn child are sacred and not to be determined by personal desires of the parents. Human life is a gift of God and no one has the right to tamper with it in euthanasia or genetic engineering."[2] This statement is quite bereft of nuances or notions of ambiguity. One wonders about the sources of influence in NAE policy-making; surely lines of communication with the American Scientific Affiliation and the Christian Medical & Dental Society might have provided a more articulate position.

Fear of the unknown, fear of the future, and fear of scientific discovery have all posed their threats to modern man, whether religiously inclined or not, whether morally sensitive or not. Obviously, thoughtful Christians in the biological sciences must reflect on the ethical implications of genetic engineering as a necessary part of Christian vocational discipleship.

Since God was an incredible risk-taker in creating this world with man as male and female His designated vice-regents, modern scientifically creative man, no

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less than his forebears, must reflect on the implications of the Creation Mandate. "Having dominion over living things" (Genesis 1:28) is an awesome mandate, particularly in a fallen world where the human potential for devising evil is as much an option as doing good. The German Lutheran ethicist, Helmut Thielicke, frequently quoted Johann Goethe on this issue: "Mankind is forever progressing; man remains always the same."[3]

With the new knowledge gained in nuclear physics a generation ago came literally earth-shattering possibilities. Hiroshima marks our pathway as much as the gamma rays or radioactive iodine used at the nearby university medical center. Our ability to kill as well as to heal progressed side by side, with no decisive edge given over to beneficence. Writing on the history of recombinant DNA research, Sheldon Krimsky compared the public's early perception of atomic energy with genetic engineering:

> While the overriding national debate in the atomic-energy episode was over the nation's willingness and the ability to control the new power of the atom, there were also discussions on the kinds of controls necessary for the research activities of scientists who would be using radioactive materials to investigate atomic processes. The recombinant DNA controversy has focused mainly on the investigative techniques and far less on the use to which the techniques may be put.
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> In both the atomic-energy and molecular-genetics debates we see what philosophers call "the egocentric predicament": the knower cannot understand the world without interacting with it, and thereby affecting it. Another way of saying this is that the knowledge-acquisition process is partially constitutive. One cannot know reality as a passive agent.
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> As scientists investigate the world, they change it. If the system they work in is not closed, these changes will be released into the larger environment. It is certainly not new to science that the tools of investigation alter a portion of the reality being investigated.[4]

Most of us recognize that to taste of the fruit of the tree of knowledge does alter our perception of reality. We also are quite familiar with "the egocentric predicament," known more commonly as original sin and less commonly as copycat sin; every generation routinely repeats the sins and errors of its forebears in only a semi-original way.[5] For most of us, ethical controls derived from our Judaeo-Christian heritage matter more than government regulations, though one might suspect—and even hope—that their influence lingers behind some of this legislation. While what is legal may not necessarily be moral, it remains to be demonstrated that what is proposed is ethically justifiable; that is our central task. The law can always be changed.

After a decade of publishing research in genetic engineering, the editor-in-chief of the international journal *Gene*, Waclaw Szybalski, reported:

> I know I speak on behalf of us all when I express the hope that our efforts in genetic engineering will significantly contribute not only to pure science, but also to feeding the hungry, care of the sick, and cleaning-up of our environment, and thus should be enthusiastically supported by our society. It seems incredible that there still are individuals, either misguided or misinformed, who try to create roadblocks in both the scientific and practical applications of molecular genetics. As ever, it is very important that the public be informed about the real benefits modern biology and biotechnology have to offer, and about the absence of any proven risks (in contrast to imaginary scenarios). It is also important to provide some perspective on the insignificance of any hypothetical risks of inadvertent nature, relative to the real dangers to which we are exposed every day, such as tobacco and other carcinogens, addictive drugs (including alcohol), disease, traffic accidents and environmental pollution, to mention just a few. The real risks, as far as genetic engineering is concerned, are those misguided regulatory efforts which create new dangers (e.g., by mandating unnecessary exposure to harsh disinfectants and other environmental pollutants), while discouraging and delaying the delivery of benefits to mankind.[6]

Along with this rather optimistic assessment, Szybalski added as well a personal note with reference to the deaths over this ten-year period of two highly cherished contributing authors:

> Let us hope that the contributions of genetic engineering in general, and of research reported in *Gene* in particular, will help us to better understand and avert or alter the course of the genetically determined diseases. Ahmad and Jack might still be among us if the progress of research on gene-controlled circulatory diseases and leukemia had been more rapid.[7]

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One's perspective on research scientists is always enhanced when such personal goals are shared, when the theoretical is so well blended with the existential.

On a bit of a futuristic note, until genetic engineering can correct our inborn problems, Linus Pauling offered the suggestion about twenty years ago that since the test for the presence of the gene for sickle-cell anemia in heterozygotes is extremely simple, "there should be tattooed on the forehead of every young person a symbol showing possession of the sickle-cell gene (or other deleterious recessive gene), so that two young people carrying the same seriously defective gene in single dose would recognize this situation at first sight, and would refrain from falling in love with one another [at first glance]."[8] With such a projected scenario we would be most uncomfortable, and rightly so. Why, with the prospects of intervening with genetic diseases and curing them, are we still so uncomfortable? As some have suggested, gene-splicing represents but another form of microsurgery.

Obviously, the concern to do no harm has implications for laboratory research as well as for clinical trials.

Universal Principles

Four years ago the Working Group on Human Gene Therapy, an interdisciplinary sub-committee of the NIH Recombinant DNA Advisory Committee (RAC), drafted a document known as *Points to Consider in the Design and Submission of Human Somatic-Cell Gene Therapy Protocols.*[9] In their effort to reflect a consensus amongst the task force of three laboratory scientists, three medical clinicians, three ethicists, three attorneys, two public policy specialists, and one lay person, this group identified five key areas of concern:

1. The objectives and rationale of the proposed research;
2. The research design, anticipated risks and benefits:
    i. Structure and characteristics of the biological system;
    ii. Preclinical studies;
    iii. Clinical procedures, including patient monitoring;
    iv. Public health considerations;
    v. Qualifications of investigators and adequacy of facilities.
3. The selection of patients;
4. Informed consent;
5. Privacy and confidentiality.[10]

These concerns derive from such codes of ethics as the Declaration of Helsinki and other similar ethical codes dealing with clinical human experimentation.[11]

In 1973, having reviewed the major codes of medical ethics from Hippocrates onward, in both the Western and the Eastern traditions, I published an essay on seven "Universal Principles of Medical Ethics" derived from those codes.[12] It became chapter one in Claude Frazier's book, *Is It Moral to Modify Man?*—a title the essence of which still haunts us. Permit me to list these seven universal principles:

1. *Primum, Non Nocere* ("First of all, do no harm")
2. The Sanctity of Human Life
3. The Alleviation of Human Suffering
4. The Confidentiality of the Physician-Patient Relationship
5. The Right to Truth
6. The Right to Informed Consent
7. The Right to Die with Dignity

For years now, these principles have rung in my ears in the processing of issues in biomedical ethics as well as in the teaching of new generations of students as they pause to reflect on ethics in medicine. The first three have particular relevancy to the clinician, while the latter three are quite germane to patient interests. The middle principle, the confidentiality of the physician-patient relationship, serves as a bridge between the clinician and the patient. For our purposes here, the first six principles have obvious implications for genetic engineering. My concern in this paper will be with the prospects of gene-splicing therapy in treating genetic disease in humans.

I. *Primum, Non Nocere* ("First of all, do no harm")

As a universal principle of biomedical ethics, *Primum, Non Nocere* is at least as old as the Oath of Hippocrates: "I will use treatment to help the sick according to my ability and judgment, but never with a view to injury and wrong-doing."[13] Confucius gives this principle in another form, known as "The Silver Rule": "What you do not want done to yourself, do not do to others."[14] Most of us know the positive form of this principle as "The Golden Rule" of Jesus: "In everything, do to others what you would have them do to you."[15] The rule to do no harm has particular relevancy for recombinant DNA (rDNA) research.

In assessing the concerns expressed over the potential hazards of rDNA research, Sheldon Krimsky has reviewed the record and reached this conclusion:

> Some have argued that the public and the NIH overreacted to the potential hazards of rDNA technology. Among their reasons

> for this judgment are that no one has been known to become ill from such experiments and that there is no evidence to support the view that a product of rDNA research could be more hazardous than any of its component elements. It is certainly the case that the furor precipitated by rDNA research was due to the spectre of disaster generated by hypothetical scenarios rather than hard evidence. . . . Was there sufficient suggestive evidence that gene splicing could introduce additional hazards? Certainly, the record shows there was considerable agreement among leading scientists that, left unregulated, rDNA technology could be hazardous.[16]

Obviously, now with the work of the Recombinant DNA Advisory Committee as well as with the creation of institutional biosafety committees in place, appropriate controls have been put in place.

Frank Young, in a letter to the editor in *Science* in January 1987, reminded the public that the safety record of rDNA technology used in industrial facilities as well as for environmental and agricultural applications has been remarkable. He concluded:

> The real value of the OECD [Organization for Economic Cooperation and Development] document is, we believe, not simply that it articulates useful principles for the oversight of organisms manipulated by recombinant DNA techniques, but that it places new biotechnology in perspective; that is, as an extension, refinement, of conventional biotechnology applied to industry, agriculture, and the environment, with which we have substantial experience and success.[17]

Obviously, the concern to do no harm has implications for laboratory research as well as for clinical trials. Whether in cell cultures or animal trials, whether in developing human fetuses, in children or in young adults, appropriate cautions are mandated by one's ethical regard for one's fellows. So far the record is commendable; with the prospects of increasing rDNA capabilities, we may need to review more precisely our definitions of both harm and cure, of doing good and of creating evil.

II. The Sanctity of Human Life

The principle of the sanctity of human life is deeply embedded in the Judaeo-Christian ethic, from the creation narratives through the Ten Commandments to the Sermon on the Mount. Its clearest affirmation derives from the knowledge that man as male and female has been created in the image of God. The author of Genesis writes that "whoever sheds the blood of man, by man shall his blood be shed; for God made him in His own image" (Genesis 9:6). Princeton bioethicist Paul Ramsey has commented on this theme of *Imago Dei*, so central to moral concerns in medicine or in any other field of human endeavor: "The value of a human life is ultimately grounded in the value God is placing on it. . . . Thus, every human being is a unique, unrepeatable opportunity to praise God. His life is entirely an ordination, a loan, and a stewardship."[18]

In July 1975 at Wheaton College, the American Scientific Affiliation cosponsored with the Christian Medical Society a symposium on control technologies.[19] Genetic control was one of the three reviewed (the others were brain control and behavior control). Reporting on those proceedings for the *ASA Journal*, Dr. Robert L. Herrmann correctly cautioned the reader with this necessary observation: "The notion that science, because it describes phenomena in terms of mechanisms, must inherently dehumanize and depersonalize, is mistaken."[20] One can celebrate the principle of the sanctity of human life as joyfully in the laboratory as in the sanctuary. Sanctity implies awe and respect, care as well as caution, healing as well as investigating.

The alleviation of human suffering has been characteristic of Hebraic-Christian compassion.

Our task today is to continue to reflect, "to think God's thoughts after Him,"[21] to continue to relate deeply held human needs and values with truly valid genetic endeavors. For, put in other terms, the central moral question before us asks whether or not clinical, genetic intrusions at so deep a level of human life will ultimately enhance or ultimately degrade human dignity; the dignity of both the patient as well as that of the scientific investigator.

The principle of the sanctity of human life is as applicable to rDNA technology as to reproductive technology, as significant for human life under the electron microscope as for human life under the lights of the surgical amphitheater. Sanctity need not imply inviolability, a ban on intrusions on human life forms. Modern surgery frequently intrudes in order to cure; the microsurgery of gene-splicing can parallel other surgical interventions.

The Catholic bioethicist, Bernard Haring, brings an affirmative note to this research:

> I cannot see why it should be immoral for man to intervene consciously with planning and corrective foresight. The image of God as revealed in the Old and New Testaments does not allow us to accuse man of pride and rebellion if he is constantly searching and seeking to decode the secrets of nature, to apply all his knowledge and art to serve his own development and human vocation.
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> The physician of today no longer defines his role by the Hippocratic notion of "servant of nature" or servant of the ordered potentialities and powers of nature. He is acquiring a

> greater consciousness of his own creative status. He increasingly considers himself an architect and sculptor of the given stuff of nature.[22]

Lest he be accused of both genetic and moral naivete, Haring writes further:

> A realistic appraisal of information on scientific progress and responsibility obliges us to sound a warning against unlimited eugenic engineering and utopian dreams such as the euthenic utopia of breeding selectively particular types of men through the choice of sperm or ovule donors without any respect for man's vocation to marriage and family life. There are bounds set by limited knowledge and techniques, and others arising from man's dignity.[23]

Only the future will tell us where the genetic boundaries really lie; perhaps from the past—from the wisdom literature of Scripture—we will learn quite precisely where the moral boundaries lie as well.

Whenever one stands on the threshold of a new therapy, with the principle of the alleviation of human suffering in one hand and a risky, new procedure in the other, caution would be prudent.

III. The Alleviation of Human Suffering

At the conclusion of our 1975 Wheaton conference on control technologies, Professor Donald M. MacKay, distinguished brain physiologist from the University of Keele in England, was asked to provide a summary paper of his reflections on those proceedings. His reaction then:

> How should Christians view human engineering? Seeking the way of humility, our first reaction might be strongly negative: "I'm content with what God gives me; I don't want to interfere." This reaction may be reinforced by sheer inertia. "It's dangerous. We don't know enough. Where will it all lead? Best keep out . . . let the world get on with it if they will."
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> But will this do? "He that knoweth to do good and doeth it not, to him it is sin." It appears from these new developments that the sum of misery in the world is reducible. God is the Giver of the new knowledge. It is He who will one day ask: "What did you do with it?"
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> At the outset, Dr. Callahan raised the key question: "Do we have a positive obligation to do good, or is our obligation only to avoid doing harm?" In response it was generally agreed that the Christian cannot stop at avoiding harm. We do have an obligation to do good, if the good is well-identified and in our power.[24]

Ever since the curse of disease and disability has befallen the human race, the alleviation of suffering has been a central task. Whether it be the Lord God delivering the Israelites out of the land of Egypt or a midwife in Israel delivering a firstborn son to Jacob, whether it be one of the themes of Isaiah or one of the tasks of Jesus, whether it be in the hospitals begun by monks or in the hospice movement begun by moderns, the alleviation of human suffering has been characteristic of Hebraic-Christian compassion.

Now, through the prospect of gene-splicing, often fatal and usually debilitating genetic diseases may possibly be cured. Such a strategy for the repair of human somatic cells would be a Godsend—another gift from God through the creative insight of scientists who have discovered yet another therapeutic technique to bring relief from suffering. From the discovery of penicillin to the creation of the polio vaccine, from the benefits of neurosurgery to the benefits of microsurgery, from the techniques of the laser to the techniques of the viral vector, medical science has been steadily advancing. Previous strategies from ether before surgery to heart transplants, from psychotherapy to gene therapy have met with considerable resistance within the generation first exposed to the possibilities of the new treatment plan. A gifted few have had an adequate view of the future to sustain hope, to build moral boundaries, to answer anxieties, and to shape the process of scientific advance. Be encouraged to be a part of that vanguard in genetic intervention.

Obviously, where the introduction of gene therapy with patients proves to be either ineffective or further crippling, the intention of the alleviation of human suffering has not been met. Hopefully, sufficient experiments with tissue cultures and animal research will reduce the risks for humans. Whenever one stands on the threshold of a new therapy, with the principle of the alleviation of human suffering in one hand and a risky, new procedure in the other, caution would be prudent. But prohibition in anticipation of unwarranted futuristic scenarios would be both immoral and distracting.

IV. The Confidentiality of the Physician-Patient Relationship

Confidentiality is built into the medical codes of antiquity. The Oath of Hippocrates promises that "whatsoever I shall see or hear in the course of my profession, as well as outside my profession in my intercourse with men, if it be what should not be published abroad, I will never divulge, holding such things to be holy secrets."[25] In the Hebrew Oath of Asaph, the practitioner is admonished: "Ye shall not disclose secrets confided unto you."[26] The modern

Declaration of Geneva declares: "I will respect the secrets which are confided with me."[27] The Wisdom Literature of the Old Testament acknowledges that there is "a time to keep silence and a time to speak" (Ecclesiastes 3:7).

A patient's right to privacy when clinical trials are being conducted should be self-evident. The patient and family stresses of coping with severe illness are sufficient of themselves. The intrusions of media should be resisted through institutional spokespersons who can divulge what the public may reasonably expect to know at a given point in the course of treatment. Otherwise, the experimental series should be conducted with appropriate privacy; the circus atmosphere attendant to some recent surgical interventions should be resisted with vigor.

When the "Bubble Boy," David, died in late February of 1984 of severe immunodeficiency (SCID), little was known of his personal life and less of his family.[28] Since many of the patients who will be candidates for gene-splicing, when this technique comes of age, will be young children, both they and their families deserve the protection of privacy. In sufficient time, the scientific community can learn the results of clinical trials through medical conferences and journals. The lay public can be advised of progress when useful data are available. Where fetuses are treated *in utero*, pregnant women deserve protection from the invasion of their privacy. Obviously, one dimension of confidentiality is privacy.

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The claim of confidentiality protects both patient and clinician from extraneous intrusion. The records of the patient merit protection, and confidences exchanged between clinician and patient deserve the sanctuary of privileged privacy. With the advent of genetic screening, when some sickle cell trait individuals were identified in one screening program, some of their insurance rates were changed.[29] What threats to the continued use of clinical trials will ensue if breaches of confidence are discovered where gene-splicing experiments are being conducted on informed, willing patients?

As with the more traditional forms of medical treatment to which we have become accustomed, confidentiality merits protection when gene-splicing therapy for human genetic diseases becomes refined. With the safeguards constructed in the "Points to Consider" document of the NIH's RecDNA Advisory Committee, patient protection is reasonably secured.

V. The Right to Truth

The patient who submits to any gene-splicing procedure has a right to the truth in processing the risk-benefit, cost-benefit, and burden-benefit calculi of this protocol. The medical clinician has a right to truth from the laboratory scientist in understanding the possible risks, the potential side-effects, the time line changes, and the indications of progress that may reasonably be expected in the development of a patient protocol. The family has a right to truth in order to know what to anticipate and how best to support the patient. Public policy officials have a right to the truth in the fashioning of whatever legislation may be warranted to protect the interests of both the patient and the public. Sloganeering, "red herring" arguments, and science fiction futuristic scenarios from unscientifically qualified individuals serve neither the interests of the truth nor of the human community.

Truth-telling is a hallmark of civilization from time immemorial. The mandate from the Ten Commandments "not to bear false witness" (Exodus 20:16) merely describes the other side of the coin of truth-telling and warns appropriately of counterproductive behaviors. The words of Jesus, "You shall know the truth and the truth shall make you free" (John 8:32), remind us of an atmosphere where the fresh breath of full scientific and ethical disclosure liberates the human spirit to make wiser decisions.

The principle of truth-telling, the principle of not bearing false witness, and the principle of truth-knowing for freedom in decision-making are three slightly different yet very crucial dimensions to understanding truth; a kind of three-legged stool with very carefully nuanced legs, each of the same length and strength but with slightly different craftsmanship. Truth-telling emphasizes factual integrity; not bearing false witness emphasizes personal integrity; and truth-knowing for freedom in decision-making emphasizes logical integrity. The first principle focuses on the facts, the second focuses on the folks providing the data, while the third principle focuses on the freedom to decide derived from sound knowledge.

Only in an atmosphere of truth and full disclosure can physician and patient make responsible decisions. In an essay in *Christianity Today* on "The Inevitability of Death," Dr. Rob Roy MacGregor, professor of medicine and chief of the infectious diseases section of the University of Pennsylvania School of Medicine, underscored the words of Jesus on truth-knowing when he wrote: "The truth can set one free both from false guilt and from the need to utilize unwarranted therapeutic maneuvers. Appropriate care balances a respect for the sanctity and uniqueness of each human life with respect as well for the process of dying."[30] With reference to gene-splicing and paraphrasing Dr. MacGregor, the truth can set us free both from false or wild expectations and from the need to utilize unproven therapeutic maneuvers. Appropriate care balances a respect for the sanctity of human life with respect for the informed risk-taking of innovative techniques.

VI. The Right to Informed Consent

While it will be reserved for later in this paper to reflect upon "slippery slope" argumentations, it is worth noting here that the patient's right to informed consent in human experimentation derives largely from the horrible mismanagement of medical skills experienced under the notorious Third Reich in Hitler's Germany. The subsequent trials in Nuremberg resulted, in part, in the formulation of the Nuremberg Code of Ethics in Medical Research. Point one reads: "The voluntary consent of the human subject is absolutely essential."[31]

From the 1949 International Code of Medical Ethics to the Declaration of Helsinki of 1964 (revised in 1975), the theme of informed consent for patients resonates with a fresh urgency. Interestingly, in St. Paul's conference with the slave, Onesimus, Paul commented: "I preferred to do nothing without your consent in order that your goodness might not be by compulsion but of your own free will" (Philemon 14).

In a classic essay in *The New England Journal of Medicine*, editor Franz J. Ingelfinger wrote of "Informed (But Uneducated) Consent."[32] Hear his perspective:

> The trouble with informed consent is that it is not educated consent. . . . It would be impractical and probably unethical for the investigator to present the nearly endless list of all possible contingencies; in fact, he may not himself be aware of every untoward thing that might happen. . . . When a man or woman agrees to act as an experimental subject . . . his or her consent is marked by neither adequate understanding nor total freedom of choice. . . . The subject's only real protection, the public as well as the medical profession must recognize, depends on the conscience and compassion of the investigator and his peers.[33]

Clinicians walk a fine but not impossibly greased line in balancing all they know about a procedure with what they must tell a patient. To be a professional in a service profession is to live with this kind of trust. The goal of full disclosure, informed consent, truth-telling, and truth-knowing is fully warranted so that a patient might freely decide to undergo gene-splicing therapy where the promise of benefit is reasonably valid.

With experimental trials on humans yet in the future, the initial groups of patients have every right to understand as clearly and as fully as they can comprehend what lies before them. Hopefully, extensive animal trials will have progressed to the point where human trials are fully warranted.

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With so delicate a procedure, neither medical paternalism nor medical arrogance is justified. Using everyday terms and conceptual models that lay people can understand, the patient population deserves the benefit of the sensitivity to patients' rights and feelings that have been the focus of so many recent medical essays, editorials, and pronouncements.

Medical Cliches

Having reviewed these six universal principles of medical ethics and their relevancy for gene-splicing therapy, it may be helpful to analyze three common cliches used with reference to genetic engineering.[34]

Whether in reading the literature or in listening to media broadcasts, one constantly hears references to "playing God," "the slippery slope," and "if it can be done, it should be done" kind of arguments. Please permit a quick review and some brief comments on each.

1. Playing God

Should doctors "play God"? Are we playing God with the issues, the dilemmas, the decisions that modern biomedical technology places before us? This theme has not gone unaddressed in the medical literature. At least three book titles exploring issues in biomedical ethics have incorporated this cliche phrase in their titles: Leroy G. Augenstein's work, *Come, Let Us Play God*,[35] published in 1969; Claude A. Franzier's book, *Should Doctors Play God?*,[36] published in 1971;

and Ted Howard and Jeremy Rifkin's volume on genetic engineering, *Who Should Play God?*,[37] published in 1977. In a recent news report on gene therapy in *Science*, the phrase was used twice.[38]

Roman Catholic moral theologian, Richard A. McCormick, has addressed this cliche question in one of his essays on "To Save or Let Die." Hear his wisdom:

> If our past experience is any hint of the future, it is safe to say that public discussion of such controversial issues will quickly collapse into slogans such as: "There is no such thing as a life not worth saving;" or "Who is the physician to play God?" We saw, and continued to see, this far too frequently in the abortion debate. We are experiencing it in the euthanasia discussion. For instance, "death with dignity" translates for many into a death that is fast, clean, painless. The trouble with slogans is that they do not aid in the discovery of truth; they co-opt this discovery and promulgate it rhetorically, often only thinly disguising a good number of questionable value judgments in the process. Slogans are not tools for analysis and enlightenment; they are weapons for ideological battle.[39]

Probably the best advice comes from physician-ethicist Howard Brody, M.D., Ph.D.:

> The accusation, "If you do so-and-so then you're playing God," is heard with amazing frequency in discussions of medical ethics, considering that it is almost totally devoid of meaning. Such a statement only makes sense if we assume a picture of a God who takes an active interest in, and [regularly] intervenes in, the daily lives of individual human beings. It then follows that either medicine is totally ineffective in accomplishing its goals, or else that physicians are "playing God" every time they interfere in the "natural" course of an illness—in fact, every time they practice medicine. If you do not object to "Playing God" by giving antibiotics for a sore throat, you have no business objecting to "playing God" when the question of allowing to die comes up.
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> If it were agreed upon to forbid the use of the expression "playing God" in all arguments on medical ethics, the quality of such discussions could be enhanced significantly.[40]

With that suggestion I strongly concur.

In formal logic, questions of this kind fall into the category of the "fallacious complex question" according to distinguished logician, Irving M. Copi.[41] This class of questions exhibits four characteristics:

1. They employ loaded terminology.
2. They combine legitimate concern with illegitimate reasoning.
3. They collapse several levels of inquiry into one short-handed question.
4. They require a simple "yes" or "no" answer in the face of a complex, multi-layered issue.

Einstein once observed that "we should make reality as simple as possible, but no more simple than it really is."[41] Obviously, one should avoid fallacious complex questions.

From a psychiatric point of view, anyone presuming to "play God" could be defined as hypo-manic, whose reality testing ability is severely impaired and whose delusions of grandeur border on the psychotic. Obviously, such an individual has lost the ability to determine what is real from what is not. At best, such an individual could be accused of narcissistic character disorder; at the worst, of being completely crazy. Bed rest is the proper prescription here, not bedside consultation. Mentally healthy individuals know who they are, and they also know rather profoundly that they are not God.

From an ethical point of view, life and death decisions are not reserved to the medical profession alone. Judges, generals, admirals, politicians, presidents, premiers, and a host of other professionals also make decisions in life which will alter the life, lifestyle, and death of countless individuals. Such decisions are awesome, difficult, hard, risky, and subject to human error. In the discussion of difficult cases, where different principles clash, where different therapies are advocated and yet where a decision must be made, the phrase "playing God" is essentially useless.

In the discussion of difficult cases, where different principles clash . . . and yet where a decision must be made, the phrase "playing God" is essentially useless.

Our task is to be Christ's faithful disciples pursuing the Creation Mandate to "have dominion over living things" (Genesis 1:28). Our real role is to serve as "God's vice-regent under the Divine Providence," to use the phrase of J. Oliver Buswell, Jr.[43] Our task is to exercise stewardship over all of God's creation, to subdue, to transform, and to reshape the "animated organisms" of life on balance with other biblical principles.[44]

2. *The Slippery Slope*

When one hears the slippery slope theme, the mind quickly returns to the classic essay on medical abuses under the Third Reich written by psychiatrist Leo Alexander in *The New England Journal of Medicine*, July 14, 1949, entitled, "Medical Science Under Dictatorship." Interestingly, while this phrase does not occur there, the parallel phrases of "the entering wedge" and "the infinitely small wedged-in lever" do appear.[45] The article does chronicle the utilitarian slide in German medicine from medical idealism to the euthanasia movement, where the attitude that "there is such a thing as life not worthy to be lived" arose.[46] This article should be read and digested by all contemporary health care professionals.

What does one make of "the slippery slope" kind of argument? Jewish historian, Lucy Dawidowicz, in her essay on "Biomedical Ethics and the Shadow of Nazism" in *The Hastings Center Report*, speaks with uncommon candor on slogans of this kind:

> I am quite clear in my mind about this. I do not think we can usefully apply the Nazi experience to gain insight or clarity to help us resolve our problems and dilemmas. There has been a lot of shoddy thinking and writing, making such facile comparisons. I suppose that we here, as part of the intellectual and academic community, have an obligation to be historically responsible, to serve as a kind of "truth squad" with regard to the subject matter under discussion, and to make the important distinctions that need to be made. . . .[47]

Mark Twain once commented that "history does not repeat itself, it only rhymes."[48] For the serious historian, historical parallels are often illusive. The gift of discernment should accompany any effort to draw historical parallels in medicine or to suggest that any given action will inevitably slide downhill like a snowball to its automatically foreordained outcome. Such thinking often characterizes fundamentalist efforts to think through moral issues; i.e., drinking wine, attending the theatre, playing with cards, playing pool, viewing Hollywood movies, watching television, *etc.*

While some may see dangers in medical technology, any serious effort to draw historical parallels should be reviewed by professional historiographers or medical historians if validity and reliability matter. The central problem with phrases such as "playing God" and the "slippery slope" is that such linguistic shortcuts to logical reasoning soon become mental shortcuts as well. Employing slippery slope terminology can only have legitimacy where cause and effect can clearly be demonstrated, where historical parallels are clear, where medical protocols are in clear violation of morally accepted methods of treatment, and where ethical review of each stage of technological development has been absent.

3. *If It Can Be Done, It Should Be Done*

This alarmist cliche raises anxieties that new medical technologies are somehow usually possessed of a steamroller effect that automatically steams full speed ahead, unaccompanied by moral reflection. While some clinicians may be little more than medical technicians, and while this phrase may have popular coinage with journalists, most experienced physicians recall the intense conversations in doctors' lounges and clinical seminars that usually accompany innovative procedures. With the increased attention new technologies are receiving through conferences and journals devoted to moral reflection on these issues, combined with the growing number of landmark legal cases that are precedent setting, this phrase is commanding less allegiance.

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It might be more worthwhile to separate this phrase into its four component parts: namely, (1) if it can be done, it *must* be done; (2) if it can be done, it *will* be done; (3) if it can be done, it *should* be done; and (4) if it can be done, it *may* be done. Of the first level—if it can be done, it *must* be done—little defense would be forthcoming either from clinicians or from ethicists. With the second perception—if it can be done, it *will* be done—one always must live with the fact that in some overlooked, unregulated laboratory, whether in this country or abroad, someone, somewhere will try any semi-reasonable experiment. Both society and the law will judge the results. On the third level—if it can be done, it *should* be done—our most familiar form of this cliche emerges. However, both clinical experiences and family reactions combined with court rulings are beginning to undermine any alleged confidence in this cliche. The high moral ground, the middle ground, the place of careful reflection resides in the fourth perception: if it can be done, it *may* be done. Here is the place for the careful construction of the ethical criteria necessary to make an informed, morally justifiable decision.

Three Common Anxieties

In addition to the presence of these three vexing cliches, there are three common anxieties associated with gene-splicing: (1) fear of the future; (2) the possibility of human cloning; and (3) the possibility of germ-line therapy.

1. Fear of the Future

With regard to the first—the fear of where this new technology may take us—every recent generation has had to live with this anxiety to some extent, albeit our generation has been rather overloaded with technological burdens. Wild speculations over where genetic engineering may be taking us are of little value. Futuristic prognostications are always difficult, reminding one of the Chinese proverb Alvin Toffler chose to include in his introduction to *Future Shock*: "To prophesy is extremely difficult—especially with respect to the future."[49] Two observations may be useful. (1) Prognostications based upon unscientific speculations and lacking historic perspective should be avoided, discounted, and regularly rebutted. (2) The greater focus of attention should be on the near future and the ethical concerns generated by realizable, short-term goals. Of telling consequence is the review and comparison of the President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research with the Panel on Bioethical Concerns of the National Council of Churches of Christ as they each address genetic engineering. This review appeared in *The Hasting Center Report* (April, 1983). The title tells it all: "Splicing Life, with Scalpel and Scythe."[50]

"If you do not object to 'playing God' by giving antibiotics for a sore throat, you have no business objecting to 'playing God' when the question of allowing to die comes up."

2. The Possibility of Human Cloning

In time it may be possible to biologically clone higher mammals, even man. It may also prove to be a biological barrier in nature. However, since we are the products of both nature and nurture, the only way to truly clone man would be to create a controlled environment—one that reminds me to some extent of the "Bubble Boy," David. Each individual would have to be raised on his or her similar quota of Mozart, Bach, and Beethoven, selections from the Great Books of the Western World, exposure to the same athletic and musical skills, travel to the same cultural shrines, *etc.* Such a controlled environment would prove to be almost impossible to attain, given the generational, longitudinal, psychological, sociological, and ethical difficulties such an arrangement would face. Consequently, human cloning will prove to be impossible and is a red herring to worry about. Bernard Davis of Harvard offers this sage advice:

> For our purpose it is especially pertinent that the most interesting human traits—relating to intelligence, temperament, and physical structure—are highly polygenic. Indeed, man undoubtedly has hundreds of thousands of genes for polygenic traits, compared with a few hundred recognizable through their control over monogenic traits. . . . Education on the distinction between monogenic and polygenic inheritance is clearly important if the public is to distinguish between realistic and wild projections for future developments in genetic intervention in man.[51]

C.S. Lewis wisely warns that "what we call Man's power over nature turns out to be a power exercised by some men over others with Nature as its instrument."

3. The Possibility of Germ-Line Therapy

Anxieties over germ-line therapy have attracted considerable attention. Just two caveats here. (1) If attention is focused on short-term goals—moral insight might accompany the developments in gene-splicing therapy as it progresses and we may begin to ascertain where some of the moral limitations and boundaries may prove to be. (2) If it is biologically and morally permissible to cure diabetes in a patient, why is it somehow inherently immoral to cure such a disease in one's offspring? Obviously, one must be concerned with the transmission in the germ-line of deleterious traits. We surely do speak for and against the future well-being of our children in so many other fields.

Conclusion

Two basic perspectives seem to attach themselves to the possibilities in genetic engineering, the first well put by Dr. Philip Leder of Harvard Medical School: "We're just starting to lift a very dense curtain from a beautiful scene."[52] The second perspective raises a valid caution; biologist Robert Sinsheimer, Chancellor of the University of California at Santa Cruz, inquires: "Do we really wish to replace the fateful but impartial workings of chance with the purposeful self-interested workings of human will?"[53]

Like many twentieth-century technologies, genetic engineering strategies can become yet another power struggle. C.S. Lewis wisely warns that "what we call Man's power over nature turns out to be a power exercised by some men over others with Nature as its instrument."[54]

Remarkable thinking clearly contributed to the construction of the double helix model which is becoming increasingly well understood by scientists. It will take equally remarkable reflection to construct the kind of rigorous moral criteria that will evaluate wisely the direction gene therapy takes. That is our continuing task, and the Lord Christ has promised to be with us in the process, even unto the end of the world.

NOTES

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