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The Christian Religion and Biotechnology

A Search for Principled Decision-making

George P. Smith, II

 Springer

THE CHRISTIAN RELIGION AND BIOTECHNOLOGY

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**The Christian Religion and
Biotechnology**
A Search for Principled Decision-making

by

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INTRODUCTION

Two of the three major conflicts between science and religion—that the earth is round, not flat, and that it revolves around the sun (rather than the sun circling the earth)—have already been resolved. Only one conflict remains—namely, establishing the origins of the universe. Well into the middle of the nineteenth century, it was accepted that, by divine creation described in the first book of the Judeo-Christian Bible, Genesis, and informed by faith, the universe was made.¹

With Charles Darwin's publication of *ON THE ORIGIN OF SPECIES*, in 1859, a new challenging explanation for the origin of life was advanced that, in turn, challenged the traditional roots of Western thought and particularly the Christian fundamentalists or creationists. In essence, Darwin and his disciples—the evolutionists—advanced the proposition that as the environment changed over the years, plants, animals, fungi and micro-organisms changed as well—dividing repeatedly into new species instead of being accepted as immutable since the beginning of time.²

Today, as the twenty-first century commences, a consensus is seen among not only scientists and biblical scholars but mainstream religions and educators as well, that the theory of evolution is a verifiable account of the origins of life; and, furthermore, that its acceptance does not in any way force a denial of religious beliefs.³ In 1996, Pope John Paul II declared that the Roman Catholic Church accepts the theory of evolution. He nonetheless affirmed Pope Pius XII's encyclical, *Humani Generis*, in concluding that if the human body does in fact take its origin "from pre-existent living matter, the spiritual soul is immediately created by God."⁴ Since this assertion remains a belief, and the soul can be neither identified or studied by science, it does not present a problem for evolutionists.⁵

Amplifying his comments at this meeting of the Pontifical Academy of Science, the Pope went on to affirm specifically the realization that, indeed, "science is not a threat to faith."⁶ He has, as such, sought to chart a middle position between the creationists and evolutionists that fosters not only dialogue but an openness to truth.⁷ Through this dialogue, the Pope expressed his belief that scientific knowledge would, in turn, allow the Church to better understand its obligations to provide the criteria for moral conduct applicable to all individuals.⁸ Without capitulating entirely to the other, faith and reason, as well as science and theology, should endeavor to examine each other's claims to truth; for, this form of dialogue "is grounded in the proposition that truth cannot belie truth."⁹ It is hoped that through this discourse between science and theology, a fuller knowledge may be obtained by man of who he is, why he is, and how he should live.¹⁰

Since Darwin's proposal of his theory of evolution, the creationists and the evolutionists have engaged in battle over the years with varying degrees of intensity in social arenas, courts, and legislatures. Today, however, the arena is to be found in the public school system—with the scientific community, supported by the courts, demanding evolution be accepted as the only accepted scientific explanation for the origins of life and creationists demanding evolution be either excluded from

the teaching curriculum or, alternatively, be taught as a competing theory of creation science.¹¹

In the past, pathbreaking scientific and biotechnological developments have occurred without either ethical forethought or serious, informed societal participation.¹² Indeed, it is rare—within contemporary society—to find any level of genuine understanding and communication between scientists and the public.¹³ And, sadly, the simple reason for this is because of a lack of education. In order for there to be a full participation in policy debates over, for example, xenotransplantation, stem cell and gene transfer research, there must be a level of understanding about the fields of genetics, molecular biology, immunology, and infectious diseases, among others. Yet, no honest dialogue may be started and defensible positions on both ethical and policy issues shaped until there is a minimal level of education.¹⁴

The admirable goal of xenotransplantation, and gene transfer research is really quite simple: namely, to pursue alternative remedies for seriously ill patients unable to be assisted from conventional therapies.¹⁵ Scientific advocacy stresses the very real therapeutic benefits accruing from research in these fields while conventional ethics places a central focus on an evaluation of the resulting (or potential) harms of the procedure.¹⁶ Although ethicists “are likely to see certain advocacy activities as disturbingly promotional, and advocates to see ethicists as paternalistic and overproductive,”¹⁷ the effect of both groups on social action can be salutary in that biomedical science is “democratized” by this very open interplay of opposing forces.¹⁸ The more members of the public who are qualified educationally to enter the debate, the more representative the process of democratization will be.¹⁹

The new molecular science requires a re-thinking of the scheme of the universe and of the role of humanity within it. This, in turn, compels a re-evaluation of accepted theological and ethical issues such as: determinism versus free will, distributive justice, the status of human beings in relation to other life forms and the very meaning of personhood.²⁰ “It seems unlikely that dogmatic assertion or even scriptural texts will carry the day.”²¹ What is needed instead is reason and a return to fundamental wisdom together with an appeal “to universal notions about the things that all human beings share in common.”²² With regard to the wonders of the New Biology, it is wise to remember that risk is opportunity’s constant companion.

For some, an individual’s genetic profile is set at the moment of conception and, thus, they are considered persons.²³ Imbued with such status, research on and destruction of embryos is unthinkable.²⁴ When excess frozen embryos from *in vitro* fertilization procedures arise under circumstances where the participating couples no longer wish to use them, it is argued that they be donated to others and thereby provide an option for the embryos to be born.²⁵ Others regard embryos as the personal property of the couples creating them and having no type of moral status.²⁶ Most, however, see embryos as neither persons nor property. As such, they are entitled to a heightened moral status and “special respect,”²⁷ and should not—furthermore—be perceived as commodities which can be purchased and sold.²⁸

Perhaps the easiest, and most equitable way to resolve dilemmas of this nature

is to adopt the recommendations of The American Society for Reproductive Medicine and follow a contractual approach to dispute resolution under which each couple participating in embryo storage agrees to a set of written instructions concerning the subsequent disposition of embryos no longer wanted either because of death, divorce, separation, etc.²⁹

While governmental attempts both to identify and to correct genetic disadvantage borders on eugenics—long regarded by some as “politically suspect, if not unthinkable,”³⁰—the cold reality of the present societal situation is that genetic enhancements are, indeed, inevitable.³¹ The issue then becomes how society can curb the “genetically produced unfairness” that will result from developing enhanced individuals who will be in a more privileged social position than unenhanced individuals.³² When all is said and done, perhaps the ideal should be to promote either “equality of opportunity”³³ or to recognize simply that unequal holdings will and do occur and require them to be acquired justly.³⁴

The ultimate goal of law is to “seek decisions that fall within the boundaries of scientifically sound knowledge and approximately reflect the scientific state of the art.”³⁵ In turn, the practice of science is dependent upon sound law—law which not only supports it by offering “breathing space,” but allows it in turn to “search freely for truth on which all knowledge depends.”³⁶ Science is to be understood, first and last, as relativism—or the effort to establish relations between phenomena for ultimate practical use.³⁷ Science is concerned with structure, while philosophy and religion study purpose.³⁸ As society becomes more and more dependent upon science and technology for its advancement and well being, the law needs “access to sound science” in order to approach and, ultimately, resolve the verisimilitude of issues arising therefrom.³⁹

Although some moral traditions, do assuredly, have religious inspiration—with Roman Catholics outreaching to a “universal common good”—regrettably, there is no universal moral language (or moral *Esperanto*) appropriate fully to an interdisciplinary and public audience that can participate in the discourse.⁴⁰ For Catholics, natural law thinking is supplemented within an historically particular religious tradition: Christianity as Catholicism—with Catholic ethics presenting itself as philosophical ethics.⁴¹ Other religious traditions lack such a cohesive focus. Yet, regardless of the nature of the tradition, a co-ordinating issue binds them together: namely, the extent to which faith should be involved in legal decisionmaking?

Since faith cannot be established by right reason, and may be even opposed to it, a vexatious dilemma thus arises: “To act or to believe out of faith is to act or to believe without reason or for no reasons.”⁴² A condition of rationality is reason.⁴³ Accordingly, the extent to which faith exceeds the boundaries of private life and shapes or directs the public sphere through lawmaking become problematic,⁴⁴ and must, of necessity, be considered on a case by case basis for there is no one, defining solution to this dilemma.

Historically, for Kant, reason and reason alone was seen as the basis for providing guiding principles.⁴⁵ Augustine, Anselm, and Aquinas began with faith and maintained that it was only within the framework of faith that reason or

philosophy finds its place.⁴⁶ The disagreement continues to this day and the contemporary challenge then becomes how to treat, respond or react to the presence of faith as the justification for belief and conduct. Rather than seek to justify beliefs and attitudes of various faiths as true, an understanding of them should be sought and taken as serious and important matters. When relevant, the belief systems should be taken into account in any decisionmaking process at any level.⁴⁷

Already, the law accommodates personal religious beliefs in areas involving death. For example, when an individual's personal religious beliefs would be violated if a declaration of death is made based upon neurological criteria, that determination is held to be invalid.⁴⁸ As well, contemporary case law allows a competent adult, acting on the grounds of religious reasons, to forego medical treatments.⁴⁹ The law is, however, uneven regarding the right of a parent to withhold, on religious grounds, life-sustaining medical treatment for children—particularly when the proposed intervention is not highly invasive and is seen, rather, as likely to assist in returning the patient to full health.⁵⁰

Religion has an interlinking, if not fundamental relevance to law and biomedical technology. It is, alternatively, either to be considered a significant vector of force in the decisional processes of the new molecular biology or as a full partner. The extent of its relevance will be analyzed within different ethical, social and medico-legal contexts. Continuities and discontinuities will be seen within the fields of law, religion, and biomedical science as they not only shape the social discourse here but establish a framework for principled action and policy making.

It has been suggested that the current malaise in medicine is partly, if indeed not totally, a spiritual malaise which can only be broken by an acceptance of spirituality.⁵¹ Indeed, Christian health care professionals are encouraged to cultivate a “spirituality of practice.”⁵² Sadly, over the past years, America has seen a significant decline in the ability and capacity of physicians and other health care professionals to concern themselves with the religious belief and values of their patients.⁵³ This is especially distressing to consider because the central essence of medicine as a “moral enterprise” is being ignored.⁵⁴

Spirituality is seen as being more synthetic than analytic—with some suggesting that doctrinal theology not only forms and informs spirituality and others positing, conversely, that spirituality gives shape and substance to theology.⁵⁵ In its most basic understanding, it is seen as an interaction between belief and behavior set within the context of both the Old and New Testaments and within contemporary culture.⁵⁶ The very word, spirituality, did not appear in the field of medicine until the 1980s.⁵⁷

Perhaps the proper frame of reference for contemporary theology is to place it within the evolutionary paradigm and style it “biotheology”—with biology becoming a significant resource for not only analyzing, but modifying and reconstructing fundamental theological concepts, or, in other words, making it plausible in modern society.⁵⁸ Enhanced relevance is found, as well, when the “sociology of religion” is introduced—or, a study of who religious concepts interact with social life.⁵⁹ This is considered in Chapter 2 of this book. Interestingly, within the last decade, new scientific claims have been advanced which assert there are

definite links between religion and health.⁶⁰ Today, instruction on how to address and accommodate the religious beliefs and concerns of patients is offered in the curricula of more than seventy medical schools.⁶¹ Religion has been defined as “a spiritual way of being in the world” and—thus—much more than but a collection of views and diverse practices.⁶²

Even though morality and religion are not identifiable with each other, it is indisputable that religion carries with it a code of values. The pivotal issue then becomes the extent to which society receives its moral compass from religion.⁶³ The acceptance of the teachings of Christ “gave Western people their spiritual values, their moral values, and their conception of a divine law from which all human laws ultimately derive their validity and their sanctions.”⁶⁴

Within the Christian faith, primary focus is placed in this book on the traditions and views of the Roman Catholic faith. This posture is taken because of the historical wealth of theological, philosophical and ethical writings on the subjects of law, medical science and religion and their accessibility. In the world-wide statistical profile of adherents to the Christian faith of 2,038,905,000, Roman Catholics claim 1,076,951,000 members.⁶⁵ There are, interestingly, 1,226,403,000 adherents to the Muslim religion and 14,535,000 to the Jewish.⁶⁶

Perhaps more than any other religion, modernly, the Catholic Church has asserted a dominant influence in informing and shaping the debates of contemporary society on the issues of biotechnology. While a wide variety of denominational views exist on this topic,⁶⁷ it remains for the Vatican to speak in one, unified voice, and—thus—provide a rich treasure trove of information.

Chapter 1 introduces the major ethical, social, legal, and medical issues of the New Molecular Biology and tackles a consideration of the role of law as a directive or as a non-directive vector of force in the decision making processes. Chapter 2 is a foundational analysis of the role of religion within the *oeuvre* of socio-legal and scientific norms or constructs tested here—historically and modernly—in order to determine the extent to which it informs, shapes or directs ethical and moral conduct, the development of law and the formulation of policy in this age of The New Biology. Religious ethics and morality are raised, as well, in particular context throughout the remaining chapters—especially in Chapter 3 dealing with the extent of reproductive autonomy. Reproductive biology is viewed rightly as the representational paradigm of the new biomedical technology—for, today’s scientific imperative is to advance the nature, the quality, and the limits of life. Indeed, all ethical, social, legal, medical, religious and philosophical conundrums tie to the beginnings and endings of life. Chapter 4, the most comprehensive chapter in the book, probes the centrality of scientific freedom to the advancement or, alternatively when impeded, stagnation in the new science. The goal of minimizing human suffering through genetic enhancements and assisted reproduction is studied in Chapter 5. The vexatious and contemporary issues of cloning and stem-cell research are interwoven throughout the first five chapters—set as such within varying epistemologies consistent with specific chapter interests and *foci*.⁶⁸ Finally, the last chapter in the book considers the inherent right of every competent citizen to have, with state approval if necessary, a fundamental right to a humane death and

thus not be condemned to a futile end-game *charade*.⁶⁹

This book should not be seen as a panegyric exercise but rather as a balanced inquiry into the extent to which law, religion, and medical science are compatible with the goals of biotechnology. Both the continuities and the discontinuities found within these three disciplines can only serve to heighten and deepen the level of analysis and discourse of the New Biology and thereby assist in developing a template for principled decision making; one that must be seen ultimately as situational and not strait-jacketed by *a priori* ethics. Accordingly, in the development of law and policy, a critical balance must always be struck between the gravity of the harm—from both an individual or *micro* and a societal or *macro* viewpoint—and the utility of the social and economic good derived from the execution of such a particular policy of the new science.⁷⁰

In seeking to integrate what is termed a “caring jurisprudence,”⁷¹ with the ethics of justice and the whole decision making process here, a level of sensitivity to the individual experiences of patients and the circumstances under which they lie in the cultural *milieu* must be acknowledged. When a law is passed, a policy developed or a judicial decision made that seeks to lessen personal suffering and achieve the greatest level of social or utilitarian good *and* is guided by humanness and love,⁷² then it should be taken as a sound and effective approach—whether it be development of a new scientific investigation⁷³ or a decision to withdraw or withhold life supports for a medically hopeless, incompetent and terminally ill person.⁷⁴ Similarly, a competent patient concluding medical treatment would be disproportionate to a reasonable hope⁷⁵ of benefit—and, furthermore, not wishing to unduly burden his family with the excessive expense of the additional treatment—should always be allowed to decline the treatment, itself,⁷⁶ without any intervention by the state.

ENDNOTES

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21. M.D. KIRBY, THROUGH THE WORLD'S EYE 48 (2000).
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29. Ethics Committee of the American Society for Reproductive Medicine, *Ethical Considerations of Assisted Reproductive Technologies*, 67 FERTILITY & STERILITY IS (Supp. 1997).
 See Chapter 4, *infra*, text and fn's 378-385, for analysis of the findings of the President's Council on Bioethics regarding surrogation and IVF procedures, BIOTECHNOLOGIES TOUCHING THE BEGINNINGS OF LIFE (2004).
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 See generally Marty, *Our Religio-secular World*, 132 DAEDALUS 42 (2003).
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 Both science and democracy encourage not only unconventional opinions and vigorous debate but— as well—demand adequate reasoning, coherent argumentation and vigorous standards of honesty and evidence. Sagan, *Describing The World As It Is, Not As It Would Be*, in THE WRITING LIFE: WRITERS ON HOW THEY THINK AND WORK at 309 (M. Arana ed. 2003).
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 See F.C.C. COPLESTON, A HISTORY OF MEDIEVAL PHILOSOPHY (1972); N.H.G. ROBINSON, THE GROUNDWORK OF CHRISTIAN ETHICS (1971).
 See generally M. RHONHEIMER, NATURAL LAW AND PRACTICAL REASON: A THOMIST VIEW OF MORAL AUTHORITY (G. Malsbary trans. 2000).
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 Those who stress rationality assume that a belief need not be true for it to be held as rational and it need not be false to be seen as irrational. While "faith seeking understanding" thus seeks a continuity between rationality and the content of faith, others see an inherent discontinuity between religious insight and all forms of rational meditation. C. F. DELANEY RATIONALITY AND RELIGIOUS BELIEF 31, 43 (1979).
 See also PEACOCKE *supra* note 10.

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Duenwald, *Religion and Health: New Research Revives an Old Debate*, N.Y. TIMES, May 7, 2002, at D5 (discussing claims that religion and positive spirituality are beneficial to sound health); Kalb, *Faith and Healing*, NEWSWEEK, Nov. 10, 2003, at 14.
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See A. PEACOCKE, GOD AND THE NEW BIOLOGY 19 (1986) (defining religion as "the ultimate meaning a person finds in his or her relation to all that is"). See also J. BARZUN, *supra* note 37 at 387 (defining religion as a feeling that "combines humility with wonder and sustains the moral law imprinted on the individual conscience"); Gunn, *The Complexity of Religion and The Definition of Religion in International Law*, 16 HARV. HUM. RTS. J. 189 (2003).
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66. *Id.*
67. See GOD AND THE EMBRYO: RELIGIOUS VOICES ON STEM CELLS AND CLONING (B. Waters & R. Cole-Turner eds. 2003); CHAPMAN, *supra* note 12.
68. See generally Symposium, *Conceiving a Code for Creation: The Legal Debate Surrounding Human Cloning*, 53 HASTINGS L. J. 987 (2002); Faden *et al.*, *Considerations of Justice in Stem Cell Research and Therapy* 33 HASTINGS CENTER RPT. 13 (2003).
69. George P. Smith, II, *Monograph*, FINAL EXITS: SAFEGUARDING SELF-DETERMINATION AND THE RIGHT TO BE FREE FROM CRUEL AND UNUSUAL PUNISHMENT (1997).
70. See generally, R. WILSON, ECONOMICS, ETHICS AND RELIGION: JEWISH, CHRISTIAN AND MUSLIM ECONOMIC THOUGHT (1997).
71. S.M. BEHUNIAK, A CARING JURISPRUDENCE chs. 3-5 (1999).
72. Smith, *Stop, in the Name of Love!*, 19 ANGLO-AM. L. REV. 55 (1990).
73. Smith, *Manipulating The Genetic Code: Jurisprudential Conundrums*, 64 GEO. L. REV. 697 (1976).

74. Smith, *Death Be Not Proud: Medical, Ethical and Legal Dilemmas in Resource Allocation*, 3 J. CONTEMP. HEALTH L. & POL'Y 47 (1987).

75. See Principle 56, *The Ethical and Religious Directives for Catholic Health Care Services*, authored by The National Conference of Catholic Bishops (1994), stating, "A person has a moral obligation to use ordinary or proportionate means of preserving his or her life. Proportionate means are those that in the judgment of the patient offer a reasonable hope of benefit and do not entail an excessive burden or impose excessive expense on the family or the community."

76. *Id.*, Principle 57. "A person may forgo extraordinary or disproportionate means of preserving life. Disproportionate means are those that in the patient's judgment do not offer a reasonable hope of benefit or entail an excessive burden, or impose excessive expense on the family or the community."

See generally L.R. KASS, *LIFE, LIBERTY AND THE DEFENSE OF DIGNITY* ch. 7 (2002).

But see Grossman, *Pope Declares Feeding Tube a 'Moral Obligation': Directive Applies to Vegetative Patients*, USA TODAY, April 2, 2004, at 1A (discussed in the body in Chapter 6 at fn's 238—244).

CHAPTER 1

LAWMAKING AND INTERPRETATION IN THE AGE OF BIOTECHNOLOGY

If, as Grant Gilmore observed, “the body of law, at any time or place, is an unstable mass in precarious equilibrium,”¹ it is vitally important to support and maintain a state of strengthened equilibrium for law as it seeks to guide and, ideally, shape the forces of biotechnology and medicine—this, advanced by interweaving moral choices with scientific investigation and logical analysis.² The new state of equilibrium which is sought cannot be achieved unless the law incorporates, or at least accommodates, an understanding which recognizes the difference between reaching objective decisions between alternatives according to articulated and well-defined criteria and making decisions tied to subjective choices required to select criteria and primary goals.³

The social constructs and legal tools necessary for the modern judiciary to meet head-on and deal with the contentious issues of bioethics and biotechnology are in place presently. To resolve problems arising from these potential quagmires, perhaps the major concern is for the courts to remain forever vigilant to the interlinking relationships or synergistic forces found in law, science, ethics, religion, and medicine.⁴ Without vigilance and enhanced awareness of the dynamic and fluid situation here, both the bench and the bar “will increasingly lack understanding of the questions to be asked, let alone the answers to be given” in this new Age.⁵

What is called for is a modified form of judicial activism—not grounded in the heresy of deconstruction—but rather one shaped by reason, understanding, and contemporary social policy and one that is calibrated by the scientific gatekeeping role of the Federal courts. When, owing to exigencies of time, laws become largely impotent or even moribund, and new ones are not enacted because of the lethargic passivity of legislators, their ignorance, or failure to release themselves from the vortex of emotionalism which enmeshes certain issues, then it remains for the courts to seize the initiative and fill the void of indecisiveness. Through interpretative policies guided by reason, common sense, equity, and analogy, the courts can chart, with confidence, a new common law of biomedicine—and one that begins to build a framework for principled decision making upon which stability and predictability can be assured. Absent this legal mechanism or process of decision making, it remains for science to direct the future course of development for the new Age of Biotechnology and Medical Science and law to remain a reactive force. Ideally, however, a full partnership of interest and action should be sought by law, science, ethics and medicine if progress is to be achieved over the succeeding years.

Bioethical Imperatives Newton's Law

Sir Issac Newton's third law of physics applies as much to scientific advancement as it does to other aspects of life itself. Accordingly, for each and every action there is an equal and opposite re-action.⁶ For every new and daring biotechnological advancement, a new medico-legal challenge is presented; a challenge rooted in complex social, religious, moral and ethical vectors of force.

Bioethical Concerns and Connections

Bioethics can be seen as having no defined essence which sets it apart as a distinct study or discipline. Rather, its individuation derives from a defacto set of issues interrelated by what might be termed "family resemblances." While a common thread joining all of the issues is exceedingly difficult to find, the central core comprising the list of these issues—without question—is a felt concern over the technology of control of man's body, his mind and quality of life.

Many of the concerns of bioethics are concerns of public policy—or with legislation, and policy guidelines—at state, local and federal levels, that need to be enacted and enforced with respect to all of the issues comprising the *de facto* set. It has been suggested that bioethical concerns are but those prohibitions all rational people urge everyone to follow in an effort to avoid evils on which common agreement exists.

Outside the individual context of determining how one treats another, at the broader societal level for moral acceptability to be given, a democratic consensus must be reached acknowledging that a certain good must be promoted though its promotion causes some degree or other of harm. It is within this setting where much of what is recognized as "bioethics" is focused. While individual morality operates primarily within a system of restraints, policies affecting society as a whole operate on a level where promotion of good is a moral option. The pivotal question thus becomes, "What goods ought to be restrained (*e.g.*, scientific research)?" Of necessity, priorities, values and goods must be weighed, balanced and compared. Whenever the benefits and the risks of a particular course of action are weighed, it is well to remember that those very elements in the balancing test are based upon judgments about values, with the penultimate goal being the formulation and validation of a final action which minimizes human suffering and maximizes the social good.⁷

A Political Movement

In a more specific sense, bioethics encompasses a whole political movement.⁸ It is a movement which seeks to harness political forces to deal with a plethora of ethical problems relating to health care delivery, both at the *micro* and the *macro* levels of economic distribution. It also endeavors to respond—often through legislative reforms—to complex issues such as physician assisted suicide, cryonic

suspension, genetic discrimination in the workplace, abortion, privacy, sterilization, human experimentation, collaborative reproduction by use of *in vitro* fertilization, artificial insemination, cloning and personal relationships necessary to create a family by homosexuals and lesbians.⁹

All too often, contemporary society's concerns over the need for regulating ethical regimes to guide or even control these activities has driven it in turn to seek medical laws about, for example, death and dying, genetic counseling and screening, reproductive technologies, organ transplants, etc. Often there is little choice for legal passivity or inaction since "the law is a primary vehicle for resolving disagreements about public policy and the treatment of real persons."¹⁰ And, today, Americans seem to be reshaping their political questions ultimately into judicial questions.¹¹ Yet, a healthy degree of skepticism is needed to see the inherent limitations which the legal system has in its efforts to regulate biomedical developments.¹² Each legal tool used must be fine-tuned and re-evaluated constantly by ever changing public policies—all with the purpose of determining which of the tools is best fitted to deal with specific biomedical problems¹³ and which one validates a final action that ideally minimizes human suffering and maximizes the social or common good.

The Future

An over-riding concern of any study of applied bioethics over the years to come is the extent to which diverse notions about ethics and bioethics will be reconciled and, consequently, whether a comprehensive moral philosophy of medicine will emerge from this reconciliation. To date, philosophical bioethics has dominated religious bioethics. As awareness of cultural diversity intensifies and societal differences increase among cultural groupings, and indeed fundamentalism grows, it may well be seen that religious values—which underlie public dialogue on scientific issues within this group—will come to the forefront and even predominate.¹⁴

The Politics of Morality Bioethicists as Expert Witnesses

The late President Ronald Reagan observed that "politics and morality are inseparable."¹⁵ Consequently, since "morality's foundation is religion, religion and politics are necessarily related. We need religion as a guide; we need it because we are imperfect."¹⁶ In this regard it is well to recall the biblical admonition that "Where the Spirit of the Lord is, there is liberty."¹⁷

In the realm of the New Biology, courts are being required—inevitably—either implicitly or explicitly, to take positions on one or more complex moral issues. When situations as this occur, it is better arguably for the judges forced with the responsibility for making decisions here to have an "informed understanding of the relevant normative issues and available moral positions, than a superficial, uninformed view."¹⁸

In a secular pluralist society, however, care must always be taken by the courts to foreswear acceptance of any one claim to intrinsic moral superiority. Rather, multiple moral perspectives may be presented and evaluated when provided by a case in litigation.¹⁹ Bioethicists, or those trained in analyzing and studying moral issues, might well be considered as proper experts to assist the judiciary as they probe these issues when they are cast inextricably within medico-legal cases.²⁰ Very often, bioethicists are sought as experts by courts for their expertise in moral argument and persuasion.²¹

Yet, care must be taken, as the late Professor John C. Fletcher of the University of Virginia cautioned, to make a qualitative distinction between expertise *about* an ethical issue and expertise *in* ethics (or making specific moral judgments). A vast scholarly knowledge concerning particular issues does not, *ipso facto*, translate into any particular expertise in or ability to make either specific moral judgments or to pursue subsequent actions in complex clinical cases. Stated simply, then, bioethicists should aspire to obtain a level of expertise on particular issues and related policy options and avoid status classifications as “experts” in making clinical case judgments. Rather, bioethicists should content themselves to be expert consultants.²²

Dr. Edmund D. Pellegrino, of The Georgetown University Medical School—no doubt the foremost Roman Catholic bioethicist in the country—has cautioned that there is a real danger for the judiciary in relying upon ethics experts witnesses to assist in reaching an ethical resolution of disputed, substantive, normative questions.²³ The adversarial atmosphere found within the courtroom all too often destroys the important pedagogical function of an ethics expert; this because the clinical experiences and vast knowledge of prevailing ethical practices, together with the experts analytical skills in assessing moral arguments, are all called into question and challenged on complex legal grounds.²⁴ As important for Dr. Pellegrino is his belief that “the role of the courts is to resolve legal, or moral disputes.”²⁵ Accordingly, he argues that when matters of morality underpin law, they should be argued as widely and openly as possible when a law is being framed and not in the narrower arena of a court proceeding.²⁶

By assuming the role of a non-activist, passive umpire in bioethical cases, and thereby deferring to hoped for legislative initiatives, the courts—all too often—foredoom a passive legislative lethargy which may guarantee years of inaction and uncertainty. Obviously, each court must balance its responsibility to interpret the existing laws using contemporary standards of justice with its responsibility to delegate law making responsibilities to legislatures. Yet, the judiciary must be mindful that it has, in a very real way, a shared responsibility for law making with the legislature. Since, under the common law tradition, the courts have a clear and decisive role to play in not only interpreting but in shaping new policies and laws.²⁷

Even with the growing dominance of legislation, common law adjudication both at the state and federal level of government—remains a vital form of lawmaking.²⁸ Yet, it is to be remembered that, from a conservative or traditional viewpoint, Common law judges have no power to issue advisory

opinions or proffer generalized codes of conduct. They have no power to rule for the future even about problems that seem certain to arise. This means that for the common law to deal with a technology the technology must exist and have operated in a way that angered someone enough for that person to have claimed injury and sought legal redress. Thus, to the extent that a rapid response or a response in advance to a biosocial development is important, the common law cannot provide it. Common law is reactive, not proactive.²⁹

Science and Religion

As has been seen, the two great systems of human thought are science and religion. The predominant influence over the conduct of most individuals may be said to be religion. When science intrudes into daily life it does not make its presence felt intellectually, but rather through technology.³⁰ Although there is a religious perspective present in the lives of most, religion's stylized, institutionalized role has declined sharply over the years. While traditional Christian doctrines are being displaced from personal consciousness, they are not replaced—however—by rational scientific thought; for science is just as elusive and inaccessible to the public as organized religions.³¹

Because contemporary existence has been altered dramatically by scientific achievement through technological applications, lives are changed radically—with the corresponding conclusion reached that traditional religions often appear to be lacking in modern relevance in resolving both personal and social problems.

If the Church is largely ignored today it is not because science has finally won its age-old battle with religion, but because it has so radically re-oriented our society that the biblical perspective of the world now seems largely irrelevant. As one television cynic recently remarked, few of our neighbors possess an ox or an ass for us to covet.³²

The deep questions of existence are approached differently by science and religion. While science is based on both careful observation and experimentation which in turn allows for theories to be constructed connecting different experience, religion asserts unalterable truths, which cannot be modified to accommodate changing ideas. Accordingly, the true believer stands by his faith regardless of whatever evidence may be deduced against its efficacy.³³ Yet, for the scientist, if scientific irregularities prove a theory to be fallacious, it will be abandoned and a new approach adopted.³⁴

Bently Glass, in his John Calvin McNair Lectures, suggests that when a critical examination of the nature, origins, and methods of science is made, a logical conclusion is reached. Namely, that “science is ineluctably involved in questions of values” and “is inescapably committed to standards of right and wrong”—moving unavoidably “toward social aims.”³⁵ Finding trust, not belief, as the guiding factor in faith,³⁶ and terming trust in science as scientism or scientific,³⁷ he proceeds to recognize a commonality which surely gives rise to at least a

synergistic linkage—if not symbiotic relationship—between the two.

What has been seen by many through the years as a closed causal system within science is viewed more correctly today as no more than but a “circumscribed” and “approximate set of causal conditions” rather than a “set of sufficient natural causal conditions without qualification.” Consequently, divine action is allowed without “compromising the causal conditions set out by scientific theory and practice.”³⁸

The advancements of modern science have been achieved not by attacking dualism—or the principle that man has both a spiritual and a materialistic side—but by setting it aside and defining as “nonscientific” inquiries into the spiritual realm.³⁹

Indeed, in recent years, a retreat from dualism has almost given rise to its disappearance. In its place has come a new assumption: “people are just matter and energy.”⁴⁰ Proving the non existence of the soul is, for example, not a claim of modern science. Instead, most twentieth century scientists have operated on the opposite philosophical assumption: namely, that science deals only with propositions that are falsifiable or, in other words, those that can be tested empirically and shown to be wrong.⁴¹ As such, the validity of other systems is not challenged by science.⁴²

It has been suggested that for a truly contemporary relevance to be seen between religion and science, both disciplines need to develop a Theology of Science which would be analogous to what is termed the Philosophy of Science. Within this new theology, clarifications can be made, related theories discussed, and tensions resolved in an open atmosphere of not only truth seeking but mutual respect.⁴³

As two strands of the human experience, religion and science do not stand in opposition to each other. While distinct, they are strongly interactive and both must be subject to critical scrutiny. As such, particularly with issues of the New Molecular Biology, modern society does not allow Scripture nor Church religious traditions to be accepted as self-authenticating.⁴⁴ As noted previously, relevance is crucial to validity.

It is only by developing a modern science of spirituality—devoid of mythology and mythological themes—⁴⁵ that religion can lay claim to be a relevant and “independent moral force”⁴⁶ in today’s society as opposed to being taken either as a meditating force, synergistic influence or mere neutralizing principle. In order to achieve this independent status, religion must examine its “actual cognitive content” and test “the validity of its claims.”⁴⁷ From this self-examination may come a “modern science of spirituality” that incorporates “direct experiential evidence”⁴⁸ together with a “sensory experience and its empiricism (scientific and pragmatic)” as well as “mental experience and its rationalism (pure and practical)” and adds, as a final component, “spiritual experience and its mysticism (spiritual practice and its experiential data.)”⁴⁹

Science and Technology

The reality of social behavior is that science and technology are the great engines of modern times; and these engines drive and force constant change. Far

from becoming simpler, the very real promise of science and technology is that they will become more difficult and, indeed, unyielding. Finding definitive solutions to both the tendentious problems and the opportunities they present is especially difficult since no “solution” can ever be taken as final—this because “with changing technology come changing dimensions of the problems.”⁵⁰

Indeed, error has a high pragmatic value in science, for it is viewed as but the process of induction. Science, then, cannot be seen as but a mere collection of facts. Rather, it is to be framed, initially, by a question or a set of questions. “Most often the labor begins with a wrong hypothesis; experiment exposes the fallacy; the question is reframed and confronted with experiment until at last the framed question leads to a new finding supported by secure evidence.”⁵¹

Chief Justice Warren Burger held to the view that law and ethical standards are not proper subjects of research and discovery. Rather, they must be considered to be the fruits of slow evolutionary processes. “The law,” he opined, “does not search out as do science and medicine; it reacts to social needs and demands.”⁵² Law is but a means, a tool, and not an end in itself. Accordingly, “tools are not ordinarily made to hammer out solutions to hypothetical problems but for real problems, which means that the problem must arise, exist, and be recognized before the law reacts to provide a solution.”⁵³

Law’s Purpose

There is general agreement that the principal purpose of law is to not only define and protect individual rights and ensure public order, but to resolve disputes and redistribute wealth and thereby optimize economic efficiency.⁵⁴ Additionally, laws should dispense justice, provide a structure for preventing or compensating injury, and be “a lever for moving human behavior.”⁵⁵ Accordingly, all legal systems may be viewed correctly as existing “to effect some change in human behavior.”⁵⁶ By seeking to alter socio-cultural influences, law can truly shape and re-shape behavior.⁵⁷

Law is the language of social regulation.⁵⁸ It thus obeys systemic imperatives often irrelevant and in conflict with efforts to achieve a genuine understanding and wise resolution of moral issues.⁵⁹ As a language, law competes with other languages of religion and morality, of love and friendship, of custom and compromise, of pragmatism and social accommodation. These languages are spoken more comfortably, fluently and with more conviction in daily life than the language of law.⁶⁰

Toward an Ethic of Openness and Participation

As a way to meet and possibly even lift the veil of ignorance and suspicion from the biotechnological sciences, it has been suggested that the scientific ethic of openness be recovered. This ethic holds to the idea that not everything worth doing must be done secretly and at top speed.⁶¹ Indeed, open dialogue among members of scientific, philosophical, ethical and general communities at large is crucial

before and during “biomedical genies” are released from their bottles—not afterwards. When the culture of science changes in this respect and becomes more open, the chances of socio-medico-legal misdirections and even mishaps are minimized significantly.⁶²

Deliberative Democracy

As more bioethical conflicts arise over, for example, abortion, physician-assisted suicide, patient autonomy and informed consent—controversies will proliferate. No doubt, then, the central question raised is what is the proper foundation upon which informed, bioethical debates can be undertaken. Deliberative democracy has come into vogue, recently, and been advanced as the foundation upon which this dialogue can commence.⁶³

With the central purpose of deliberative democracy being to promote the legitimacy of collective decisions,⁶⁴ this concept seeks to expand both the number and use of deliberative forums where citizens may enter into discourse over the contentious issues of the new Age of Biotechnology. Through moral disagreement comes—ideally—a “manifest mutual respect” for opposing views or, in other words, mutually respectful decisionmaking.⁶⁵

Through subsequent deliberating stages of debate, leaders in turn present their proposals, citizens respond, revisions are made, citizen reaction is received and the stages recur. The best example of this process is seen in Oregon’s efforts in the early 1990’s to structure priorities for publicly funded health care under Medicaid. Initially, the priorities list designed by The Oregon Health Services Commission was shaped primarily by utilitarian cost-benefit calculations. Encountering as it did much public criticism, a comprehensive process of consultation was undertaken which gave the Commission an opportunity to have wide community outreach through open meetings. With further deliberations by the Commission, a revised list was drawn up and submitted and was regarded generally as a marked improvement over the original plan.⁶⁶

Deliberative democracy, viewed as but a complement to the legislative process, is an attractive idea. The principal drawback to its effective implementation is that the average, ordinary, reasonable American is not informed—sufficiently—to enter into meaningful discourse on the ramifications of the new Age of Biotechnology. Logic is all too often put “on hold” while emotional feelings control and often resolve the debate.⁶⁷ Similarly, hard economic realities are ignored or postponed—repeatedly—until the time their ultimate and forced implementation causes more discord and havoc than would have occurred if they had been considered as a first order priority.⁶⁸

Stated otherwise, perhaps the greatest single reason why—even with an ethic of openness within a deliberative democracy—little constructive debate can occur at the community level is the inability of the public to understand the language of the scientists; or in other words, the language of statistics.⁶⁹ Given an unsophisticated citizenry, as a consequence of this situation, it becomes even more

important for the courts and the legislatures to recognize their joint responsibility to fill the breach.⁷⁰

Scientific Gatekeeping Experts in Scientific Evidence

It is agreed, generally, that the reliability of evidence derived from a scientific principle depends upon three factors: “(1) the validity of the underlying theory; (2) the validity of the technique applying that theory; and (3) the proper application of the technique on a particular occasion.”⁷¹ Thus, neither an invalid technique nor a valid technique applied improperly will yield reliable results.

In February, 1998, at a meeting of The American Association for The Advancement of Science, Supreme Court Justice Stephen Breyer encouraged—cautiously—the new, developing practice among some federal judges of appointing independent experts to assist in evaluating highly technical and scientific evidentiary proofs.⁷²

Since 1923 with the case of *Frye v. United States*,⁷³ and more definitively with *Daubert v. Merrell Dow Pharmaceuticals, Inc.*,⁷⁴ in 1993, the courts have struggled with decisions regarding what information to admit as evidence involving scientific disputes and what to exclude. Indeed, Chief Justice Rehnquist in his opinion in *Daubert*, while recognizing the gatekeeping responsibility of judges under Rule 702 of the Federal Rules of Evidence, observed that this responsibility does not, however, impose “on them either the obligation or the authority to become amateur scientists in order to perform that role.”⁷⁵

Relevance, admissibility, weight, and sufficiency of evidence are the most significant concepts in the law’s epistemology. Therefore, since scientific expert testimony is evidence, it is subject to scrutiny under each of these four classifications. The scientific reliability of scientific evidence was, under *Daubert*, made the very benchmark of its admissibility.⁷⁶ Thus, the very purpose of the *Daubert* rule, then, was to reduce—if not eliminate—the flow of “crank science” into the adjudicative processes.⁷⁷

In *Frye* the solution to evaluating scientific expert testimony was thought to be found by simply having the courts rely upon credentialed scientists in order to determine whether so-called “experts” were properly credentialed. This, of course, presents a vexatious quandry: if nonscientific, non expert judges and juries are not regarded as competent to judge the *content* of expert information, how then are they to be recognized as competent to judge credentials of those who would give expert information.⁷⁸

Epistemic competence may be thought of correctly as but a matter of degree—for not all experts are equally competent, just as not all non experts are equally epistemically incompetent.⁷⁹ Sadly, a putative expert’s demeanor or ethos, training in speech and theater, ability to convey a “glow” to otherwise acceptable positions and exude confidence as well as seem sincere and convincing are all too often evaluated at a higher level than is an expert’s medical expertise.⁸⁰

The central concern emerging from this inquiry, then, is how a scientifically untrained judge becomes sufficiently competent to perform the gatekeeping task set by *Daubert*.⁸¹ “Moreover, assuming the judge admits the evidence, how could a scientifically untrained trier of fact, whether judge or jury, be sufficiently epistemically competent to assess competing putatively scientific claims by competing expert witnesses when, *ex hypothesis*, that fact finder does not have the requisite expertise to judge the evidence itself?”⁸²

In 1997, writing for the majority in the case of *General Electric, et al., v. Robert K. Jones, et ux*,⁸³ Chief Justice William H. Rehnquist ruled that a district court’s determination—based on scientific evidence—should be upheld unless it is demonstrated to be manifestly erroneous. This standard, more commonly known as “an abuse of discretion,” applies generally to the entire spectrum of a trial court’s evidentiary rulings.⁸⁴

Although the majority fails to explore in depth the judge’s gatekeeping role, an insightful concurrence by Justice Stephen Breyer sets forth some concrete steps to be taken in order to allow judges to meet conscientiously their roles as evidentiary gatekeepers. Admonishing the judiciary to exercise with special care its gatekeeping duties (*e.g.*, determining whether particular testimony is reliable) when law and science intersect,⁸⁵ Justice Breyer lists four important guidelines to be followed. First he suggests the district judge use the pre-trial conference, under Rule 16 of the Federal Rules of Civil Procedure. This Rule allows the judge to narrow the scientific issues in dispute.⁸⁶ Second, judges should use pre-trial hearings where they have the opportunity to examine potential experts.⁸⁷ Third, the court should consider the appointment of a special master, or specially trained law clerks.⁸⁸ And, finally, Justice Breyer suggests that judges employ Rule 76 of the Federal Rules of Evidence which allows them to appoint their own experts.⁸⁹

While observing that the United State Supreme Court received sixty amicus curiae briefs during its 1997 term which allowed professional organizations and others to offer written opinions and facts about scientific controversies before the court, Justice Breyer has applauded a five year pilot project to be undertaken by The American Association for The Advancement of Science which will seek to develop lists of neutral experts and place them, upon request, with federal judges.⁹⁰

The French Technocrat

In France, a new class of legal decisionmakers has been given formal recognition as “technocrats.” Although given special training in science, mathematics, physics, chemistry, economics, law, decision theory and administration, it is an overstatement to conclude these individuals create a system different from the United States where scientists make those decisions that judges and juries would make normally. Rather, the French technocrat is trained to be a generalist manager—one whose skills in management and organizational decision making give him the “competence with science to comprehend its use in policy decisions.”⁹¹ Although not comprising an elite scientific cadre, “it does seem clear that they are far better trained in scientific matters than the average American judge

or juror.⁹² Perhaps it would be well for the American judiciary to study whether this French approach to judicial administration would have a practical value in the U.S. court system.

A New Court of Biological Science

It may be practical at this time to re-visit and possibly re-shape the idea first proposed by Professor Arthur Kantrowitz in 1967 of structuring a Science Court⁹³ and elevating the idea today to the status of a Biological-Bioethical Science Court.

Among the very positive achievements of the rather short-lived presidency of Gerald Ford was the creation of a presidential advisory group to study new advances in science and technology. In 1976, the task force issued an interim report⁹⁴ and took up the idea of how, to the extent possible, a structure or mechanism could be created whereby the scientific bases for controversial public policy could be resolved when technical disputes arose between biased experts.⁹⁵ The task force concluded that the basic mechanism needed for reform here was an adversary hearing which would be open to the public and be governed by a disinterested referee. Here, the “expert” proponents of opposing scientific positions would present their cases before a panel of scientist-judges—with the judges, themselves, being drawn from consultations with scientific societies and other professional organizations, and in no way subject to personal bias with an organizational affiliation with parties working in the area of dispute.⁹⁶

After evidence is heard, questioned and defended, three judge panels would proceed to prepare a report on the dispute—noting as such the points upon which the advocates agree and reaching judgments where disputed statements of fact are in issue. Their jurisdiction would also allow specific research projects to be suggested as a method of clarifying unsettled points.⁹⁷

The whole idea of a Science Court then, and as restructured here into a Biological Science or Bioethics Court, would be to reduce the extension of authority beyond competence and thereby avoid what has been defined variously as tyranny.⁹⁸ Stated otherwise, the whole point of a new science court proposal today would be—much as it was proposed years ago—to allow for a structured process whereby separate biological and scientific issues could be analyzed by experts on science and policy question and, in turn, be evaluated by public representatives charged with making informed policy choice. Informed gatekeeping could then be a practical, rather than aspirational, goal for the judiciary to set *and* achieve.⁹⁹ No final scientific answers would be forthcoming in a Science Court. Rather, conclusions would be reached by reliable procedures which in turn would demonstrate those reasonable steps taken to ensure “the best possible provisional answer” is given.¹⁰⁰ Reconsidering the feasibility of a biological science court certainly forces a need to perhaps revisit, as well, whether a specialized court for the environment would also enhance the efficient, expeditious administration of justice.¹⁰¹

Paradigms of the New Biology Decorporation

While Peter Jennings may have surprised his ABC news audience on the evening of April 27, 1998, with his report on body transplants, Professor Robert J. White of the Case Western Reserve Medical School has been experimenting since the early 1960's with first isolating monkey brains¹⁰² and, more recently, with several decorporated heads.¹⁰³ Indeed, in 1971, a group of Cleveland neurosurgeons transplanted successfully several monkey heads onto the bodies of other monkeys and then proceeded to revive the transplanted heads to a state of full consciousness for some thirty-six hours. And, according to any reasonable definition of what being alive for the brain is (*e.g.*, generation of brain waves), the scientific procedure was recorded as a success.¹⁰⁴

Interestingly, U.S. Patent number 4,666,425 is for a device for perfusing an animal head. More specifically, the invention relates to both a method and device for providing a physical and biomedical level of support for decorporated heads.¹⁰⁵ It is speculated, furthermore, that maintenance of a severed human head would not be that difficult of an undertaking.¹⁰⁶

Technically, once achieved, the severed and conscious human head would have a mental capacity approximately the same as a quadriplegic and might well suffer—rather predictably—from analogous problems of depression over the loss of a functioning healthy body and, of course, varying degrees of isolation from people not willing to accommodate or accept them. Using voice controlled computer systems and other devices adapted to quadriplegic life, decorporated heads could be afforded a surprising degree of autonomy.¹⁰⁷

Words such as alive, comatose, and dead are all used properly to describe a severed head. Thus, if a head were able to see, think and talk, would it be improper for it to be considered alive? In many respects, the individual who is paralyzed below the neck is in the same state as a decorporated head and, always regarded as being alive. Indeed, the word, paralyzed, while being a valid adjective, does *not* deny definitionally or taxonomically such people are still alive.¹⁰⁸

Accordingly, the word—decorporated—could be used to reference those whose heads are severed in much the exact same way as the word, paralyzed, is used—certainly not as a word connoting or denoting a denial of life but, instead, merely adjectival to acknowledge a certain life condition. So long as a severed head is conscious and communicative, it may be regarded properly as alive. Once consciousness is lost, however, the head would then fit the definition of comatose. Eventually, with the loss of brain waves and the cessation of molecular reactions, the head is then to be seen as dead—regardless of whether blood is still being pumped through it.¹⁰⁹

Elizabeth Taylor

Elizabeth Taylor decided, reportedly, in 1990, that she would combine decorporation with cryonic suspension and ultimate cloning. Educated to these new

scientific advances by her friend, Michael Jackson, Ms. Taylor will, at death, allow her head to be removed surgically from her body and stored in a specially designed container termed a “cryostat” where it will first be packed in ordinary ice and placed subsequently in dry ice where its temperature will be lowered to minus 109 degrees fahrenheit. Ultimately, the head will be cooled by liquid nitrogen to minus 320 degrees where it will be stored long term.¹¹⁰ These neuro-suspensions cost \$50,000.00. ALCOR, one of four cryotoriums in the country, has presently twenty-two neuro-suspensions and thirteen whole bodies.¹¹¹ In America, altogether, there are some seventy-three suspended humans, with fewer than one thousand worldwide.¹¹²

At an appropriate scientific time, Ms. Taylor’s head could be used—at least theoretically—to regenerate, from a single cell, a new clone of her. Alternatively, her head could be transplanted to a reanimated cadaver with a body free from drug, alcohol and food addictions that plagued her originally. The National Enquirer magazine quoted Ms. Taylor as saying upon her revival or regeneration, she would be finally “able to live the life I’ve always wanted, without a body constantly racked by pain and discomfort.”¹¹³ She is reported to have continued saying that she would not have “to turn to drugs and alcohol to escape” the miseries of life and she could eat whatever she wanted in her new state.¹¹⁴

Cryobiology

Cryobiology, or the study of low temperature biology, has been both the source and impetus for maintaining an abiding faith that death may be conquered.¹¹⁵ The contributions of cryobiology to medicine include free preservation, cryosurgery, advanced research into the free preservation of large mammalian organs and a plethora of other exciting uses.¹¹⁶ Although experimentation and success in transplantation of human organs proceeds with definite success,¹¹⁷ the total cyronic suspension of an entire human body *and its revival* remains speculative at best.¹¹⁸

In the 1950’s, biologists working with low temperatures coined the term “cryobiology” in order to describe those biological investigations which were conducted well below normal body temperature.¹¹⁹ Cryogenics refers broadly to the technology of low temperature experiments, while cryonics pertains to all disciplines and programs centered on human cold-storage.¹²⁰ Interestingly, in 1663, an English scientist, Henry Power, composed a mixture of ice and salt and immersed a jar of eels in it, thereby freezing them. After one night they were revived and the phenomenon known as “suspended animation” was originated.¹²¹

As malfunctioning parts of a human body become subject to replacement, the procurement and preservation of new organs becomes of central importance.¹²² While the molecular bases of freezing damage are not fully understood, it is certain that some whole organs subjected to freezing below a certain temperature have either been nonfunctional after thawing or have become nonfunctional within a short time.¹²³ Thus, it is understood that a successful freezing and restorative organ programme requires mastery of more than the mere ability to successfully freeze the component cells.¹²⁴

The greatest danger of any person undergoing cryonic suspension is the need to provide as much expeditious care as possible to protect the brain and the cells. The brain remains intact for anywhere from three to five minutes, at normal body temperature, after death. However, the brain can remain without oxygen for even longer periods of time as the body temperature is decreased -196° celsius. At this temperature all changes virtually stabilize and the body may remain in a near perfect state of preservation for an indefinite period.¹²⁵

The body cells would, if left unprotected, literally burst on freezing because the human body is composed of seventy-five percent of its weight in water and this water would expand on freezing. Since the prevention of ice crystals inside the body cells is the basic purpose of perfusion, this method, as opposed to embalming, is the lynch-pin of successful cryonic suspension. In perfusion a protective chemical, glycerol, is combined with dimethyl sulfoxide (DMSO), which serves as a rapid penetrant in carrying the glycerol to the cells through the bloodstream. Consequently, ninety percent of the cells' water is absorbed. This combination assures that the formation of ice crystals will occur not inside the cell but outside.¹²⁶

Since perfusates with a high percentage of glycerol or DMSO are acknowledged to be toxic to the cells, other chemicals must also be used in the perfusion.¹²⁷

Thomas Donaldson

Thomas Donaldson, a forty-six year old resident of Santa Barbara County, California, believed to be dying because of an inoperable malignant brain tumor, made newspaper headlines in 1990 when he sought judicial recognition of his right to self-determination by seeking to be “suspended” *before* he was pronounced legally dead.¹²⁸ Before the tumor spread throughout his brain and damaged it irretrievably, he wanted his head to be severed from his body and placed in cryonic suspension. Together with samples of tissue and blood, Mr. Donaldson expected, over time, that his body would be regrown. With other individuals using cryonic suspension, the suspension had been performed *after* they were pronounced dead. Here, Mr. Donaldson sought to have what he asserted was his constitutionally protected right to be cryonically suspended *pre-mortem*. In order to complete the suspension, Donaldson petitioned the State of California to exculpate those physicians and their assistants who, in reality, would be assisting in his murder-suicide.¹²⁹

On January 29, 1992, the California Court of Appeals denied Mr. Donaldson's request to have his body cryogenically preserved *pre-mortem*, or before his terminal illness caused death.¹³⁰ Characterizing Donaldson's request as profoundly different from the physician-assisted withdrawal of life-support systems in the more traditional right-to-die cases, the court stated that one placed on life-support systems takes a “detour” that normally postpones an immediate encounter with death—with the withdrawal of treatment merely allowing a delayed death to occur.¹³¹ With the *Donaldson* case, however, no life-extending measures would have been discontinued. Instead, a third party would have been allowed to kill Mr. Donaldson and thereby hasten Donaldson's ultimate death encounter. Observing that such

actions have never been given judicial recognition or validated by statute, the court refused to act in such a manner. Under the facts, the court went on to recognize the legitimate state interest in protecting society from allowing third parties to either aid or abet suicide, and held that Mr. Donaldson's assistant, could not aid, advise, or encourage Donaldson's own suicide.¹³² Shortly, after this ruling by the Court of Appeals, Mr. Donaldson's cancer went into remission.¹³³

The U.S. Supreme Court decision in *Cruzan v. Director, Missouri Department of Health*¹³⁴ may well become a useful construct for subsequent courts to rely upon when presented with similar scenario to that of Thomas Donaldson, for, in *Cruzan*, five of the Justices were found to be in agreement that there is substantive constitutional protection for the right to die.¹³⁵

Justice O'Connor, in her concurrence with the majority, found a liberty interest within the Due Process Clause of the Constitution to sustain and validate this right.¹³⁶ She implied that when a competent adult makes an informed decision to end his life, that decision is constitutionally protected.¹³⁷ The Court held that while a person does have a constitutionally protected liberty interest in refusing unwanted medical treatment, the state may require the elevated evidentiary standard of clear and convincing evidence to establish the incompetent patient's preexisting desire to terminate treatment.¹³⁸ Moreover, the Court assumed in its holding that rejection of medical treatment by a competent person includes the right to reject artificial deliveries of food and water.¹³⁹ The states are able to set and determine whatever standard of evidentiary proof—a clear and convincing standard of proof—necessary to sustain a claim of right to die made by a competent or incompetent adult.¹⁴⁰

Mr. Donaldson, however, is a competent adult dying of inoperable brain cancer. Consistent with *Cruzan*, a strong argument could be made that he is within the Court's guidelines in determining the extent of his autonomy and declining further medical treatment. It is one thing to condone his individual statement of autonomy and self-determination; yet, it is quite another to structure, then validate, a state policy promoting an implementation of that policy by exonerating, both civilly and criminally, those individuals assisting in actualizing his right.

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Death or Cryonic Suspension

There are basically two types of death: clinical and biological.¹⁴³ Clinical death proceeds biological death and occurs normally when one's heart and respiratory systems stop. The pupils simultaneously become fixed and dilated and tendon reflexes cease.¹⁴⁴ However, from a biological point of view death occurs gradually. Thus even after a recognition of clinical death certain biological activities occur.¹⁴⁵

Death is classically defined as the cessation of three interdependent vital body functions—circulation, respiration, and brain activity.¹⁴⁶ Cessation of breathing and loss of heartbeat are still viewed by many as the crucial death signs.¹⁴⁷ Only when artificial means are utilized to sustain these two functions has it been recognized that new criteria in determining death should be considered.¹⁴⁸ Owing to recent and startling advances in medical technology¹⁴⁹ and in the field of organ transplantation,¹⁵⁰ it is now recognized that death may occur when the brain ceases to function. Such an occurrence is termed “brain death.”¹⁵¹

While some commentators have drawn attention to what they perceive as sharp distinctions between the legal and the medical definitions of logical death,¹⁵² the law generally treats the matter as a medical question of fact determined by the “ordinary standards of medical practice” in each community, and the laws and customs of each state.¹⁵³ The Uniform Anatomical Gift Act, while establishing procedures for regulating donations of organs, acknowledges simply that the death of a donor will be determined by the donor's attending physician.¹⁵⁴ The Act does not however define but rather appears to operate on the premise that the act of death will be determined by those standards which are widely accepted and applied in the ordinary course of events.¹⁵⁵

Meeting in Australia in 1968, the World Medical Association argued against the use of a precise statutory definition of death by noting:

This definition [of the time of death] will be based on a clinical judgement supplement if necessary by a number of diagnostic aids [of which the electroencephalograph is currently the most helpful]. However, no single technical criterion is entirely satisfactory in the present state of medicine, nor can any one technologic procedure be substituted for the overall judgement for the physician.¹⁵⁶

Interestingly, the President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research approved unanimously in drafting the Uniform Determination of Death Act, that death be defined as an occurrence in which there is:

- (1) irreversible cessation of circulatory and respiratory functions or
- (2) irreversible cessation of all functions of the entire brain; including the brain stem. A determination of death must be made in accordance with the accepted medical standards.¹⁵⁷

None of the current movement in clarifying the legal and medical concepts of death is particularly heartening to either individuals presently in cryonic suspension

or those anticipating its use. If one were “suspended” before death, the real issue becomes how should the law deal with this occurrence, especially from the standpoint of the disposition of a decedent’s estate. Presently there exists in the law of Property a doctrine termed, Wait-and-See, which is used to determine whether an interest vests within the period of time allowed.¹⁵⁸ This approach mitigates the harshness of the Rule Against Perpetuities which holds a “non-vested interest in property failed unless it was certain to vest, if it ever vested, within the period of the Rule”¹⁵⁹—twenty-one years plus a life in being.

The same approach could be utilized in developing a working definition of cryogenic suspension. Thus, cryogenic suspension would be recognized and defined in law and medicine as that state where, under medical supervision, body temperature is lowered to such a degree that a condition of temporary cessation of vital process is achieved.¹⁶⁰

Modifying the basic tenets of the Rule Against Perpetuities, one could rather arbitrarily determine that he could remain in a state of cryonic suspension twenty-one years without fear of being pronounced dead. At the conclusion of this period, a court would determine whether such a possibility or feasibility of a scientific breakthrough existed for a cure of the disease which affected the person in suspension. If the state of the art had advanced to such a level that a successful cure for the suspended person’s illness existed, then the court could exercise its broad equitable powers of supervision to allow continued suspension for a period not to exceed ten additional years, at which time a final determination would be made regarding that status of the cryonically suspended person. On the contrary, if at the end of the initial twenty-one year period a judicial determination was made that no immediate or scientific advances promised the realistic hope of a cure and there was no real chance of revival, then a decision could be made to thaw the suspended individual and thereby recognize that death occurred and the estate could be settled.

Obviously, in order to encourage or allow physician-scientists or lay persons to participate in the preparation of an individual for cryonic suspension before death, an exculpatory clause would have to be inserted in the contract for suspension. This would confer on doctors, scientists and others an immunity from civil and criminal liability for either failing to find a cure for the illness or participating in a medical intervention (for example, the initial suspension itself) subsequently determined by a court to be life ending. It would also be wise to have either a judicial recognition of the immunity from a criminal prosecution for murder in connection with the acts of cryonic suspension undertaken by a physician on a living individual or a statute that would admit the acts undertaken to initiate the suspension as an absolute bar or total defense to the prosecution.

In those cases where one seeks to have his remains cryonically preserved *after* a determination of death is made, the law should be less flexible than in the cases where the suspension has been undertaken *before* death. Failure to recognize death as death would play havoc not only with the law of property and succession, but act to destabilize the very social and religious fabric of society. It is astounding to conceive of a society where there is no ending. As one commentator has observed, “[d]eath is the source of meaning. If you could live forever, life would be

meaningless. Death is the source of man. There is no self without death.”¹⁶¹

The approach postulated here for legally and medically recognizing a state of cryonic suspension has several advantages. It does not allow an estate to go unsettled for any period of time longer than the original mandate of the Rule Against Perpetuities. Indeed, in most cases the period of determinable suspension would be much less than that which the Rule allows. It provides hope for those few individuals who believe in cryonic suspension and revival. Finally, it recognizes an objective form of societal power in a judge, much akin to that power which society places in physicians in determining whether to stop life sustaining processes of comatose or terminally ill individuals.¹⁶² A judge given a power of this nature would of course be expected to rely upon scientific judgment regarding the particular investigation of the suspended individual’s medical problem and possibilities of it being resolved.¹⁶³

Dolly

When in February, 1996, Scottish scientists documented proof that for the first time an adult mammal was cloned in the person of a sheep named Dolly,¹⁶⁴ both national and international concerns were raised that this startling achievement could well presage the ability to clone human beings.¹⁶⁵ Although not verified scientifically, a claim by a scientist from Geneva, Switzerland, Dr. Erhard S. Hiestand, asserted a genetically engineered headless human clone has been created in Japan and was to be used to supply organs for transplant surgery.¹⁶⁶

Earlier this year, G. Richard Seed—a Chicago scientist—announced his intention to clone a human being.¹⁶⁷ And, in New York, another scientist, Stuart A. Newman, applied for a patent on a method for making creatures that are part human and part animal, called chimeras.¹⁶⁸ While U.S. Patent Office policy forbids granting patents on human beings and is thus consistent with the 13th Amendment’s prohibition of slavery, the Patent Office has never been faced, until now, with the issue of the extent to which an animal could be human before determined to be worthy of patent protection.¹⁶⁹

Clonal propagation, or artificially induced sexual reproduction, is characterized by the creation of individuals derived from a single parent and identical, in genetic profile, to that parent. Accordingly, those derived from only a single parent—without benefit of origin from sexual congress—are recognized as members of the same clone. Throughout the plant and microbial (*e.g.*, bacteria) kingdoms, as well as in many lower animals, (*e.g.*, earth worms) examples of clonal reproduction may be seen.¹⁷⁰

Research into artificial sexual reproductive techniques, and more specifically, cloning, is said to “go to the very nature of the individuality which is implicit in any legal order.”¹⁷¹ Accordingly, ethical and religious objections tie to the nature of cloning as being an unreasonable and “unnatural” interference with “normal” procreative processes.¹⁷² It is not only a form of inbreeding but is said to endanger evolutionary development and the very values of human diversity which come from it.¹⁷³ Fears of the degradation of parenthood, then, and the dehumanization of man

by the promotion of genetic bondage or slavery as a consequence of genetically engineering individuals according to preconceived designs, underscore the conclusion that human cloning is a direct assault on the principle of the sanctity of human life.¹⁷⁴

Two legislative approaches to the issue of human cloning present themselves: enforcing a total prohibition on this form of sexual reproduction in order to safeguard ideals of humaneness and the sanctity of life—together with personal privacy and individual autonomy—or, promoting a selective regulation of cloning thereby seeking to accommodate the humanitarian goal of providing infertile couples with biologically linked descendants and thereby promote the improvement of the gene pool.¹⁷⁵

In March, 1997, President Clinton banned the use of federal funds for human cloning,¹⁷⁶ but settled subsequently on a five year work moratorium.¹⁷⁷ In June, however, the then National Bioethics Advisory Commission recommended federal legislation be enacted to allow a limited number of scientists to create cloned human embryos. The use of the embryos by implantation to make cloned human babies would be prohibited however.¹⁷⁸

It has been determined that the Federal Food and Drug Administration has the authority to regulate human cloning. Thus, any efforts undertaken to attempt research in this area must be initiated with the filing of a formal application to the FDA which would then undertake a lengthy review. Anyone failing to follow this procedure will be prosecuted.¹⁷⁹

Judicial Review

The standard of judicial review deemed appropriate for evaluating a total legislative prohibition of cloning would be determined by a primary determination of the extent to which a right to clone is incorporated in the fundamental right or procreative privacy. Thus, if sexual reproduction is recognized as a fundamental right, “the state must show a compelling interest in regulating cloning which can only be furthered by a complete ban.”¹⁸⁰ Further, since interests in preserving genetic variability would—of necessity—entail selective regulation, a total ban designed to further these interest would most probably be unconstitutionally overbroad.¹⁸¹ Yet, the thirteenth and fourteenth Amendments—whose undergirding values find expression in the interests in preserving the nuclear family unit as well in protecting privacy and individual autonomy—might be asserted to justify legislative programs designed to prohibit cloning.¹⁸²

Conclusions

For Justice Antonin Scalia, it is clear and unequivocal that the best way to attack the vexing new social issues of contemporary society is for Congress to draft the necessary laws to resolve or regulate those issues and not expect the Supreme Court to continuously revise the U.S. Constitution in order to reach desired results.¹⁸³ Speaking before a leadership meeting of the American Medical

Association, Justice Scalia observed that after Congress makes a judgment “. . . we do our job correctly when we apply what Congress has written as basically and honestly as possible.”¹⁸⁴ The justice continued by stating that, “If you have very bad statutes, not only should you expect a result to be a very bad result, I would argue that you should criticize the judges as being in violation of their oath if they do not produce a bad result, because it’s not supposed to be our call.”¹⁸⁵

Chief Justice Burger held to the conviction that the law cannot be expected to “steer” the course of medical science or research but does have a duty to hold them in bounds and thereby guarantee they are kept within society’s speed limits.¹⁸⁶ But query, who sets the speed limits? Who is the driver, and whom the passenger?

The dilemma for modern courts in their administration of justice is to strike a balance—guided always by the standard of reasonableness—between judicial activism (or Scalia passivity) and deliberative democracy. Unduly weighting and trusting the democratic process almost assures an intellectual lethargy which gives rise ultimately to ignorance and thereby assures the validity of Judge Richard Posner’s conclusion that “most people are ignorant about most matters”¹⁸⁷—and, here, most especially medical science. Waiting for legislative blueprints to map the perimeters of the New Biology is also an almost certain guarantee for egregious delays and disappointments.

Aided by newly energized policies of scientific gatekeeping, the judiciary has a high-powered vehicle to establish a tempered level of judicial activism as certified architects or engineers of the New Biology. Drawing upon the expertise of bioethical experts, utilizing the Breyer approach to the Federal Rules of Evidence in scientific cases, and re-evaluating the feasibility of implementing a Biological Science Court will provide the judiciary with a fresh opportunity to set about the business of developing and thereby interpreting a new common law of biotechnology—all achieved by using the traditional tools of legal analysis, deductive reasoning, public policy and analogous applications of principles.

Even those who share Justice Scalia’s conservative view of judicial interpretation and thus require themselves to react to only those arguments framed by lawyers, cannot be unmindful of the fact that lawyers choose among the possible arguments that they make based upon their expectations of what will be acceptable by the particular judges before whom they practice.¹⁸⁸ It therefore incumbent upon judges to demonstrate a spirit of open-mindedness and seek solutions to medico-legal dilemmas spawned by the unbridled development of biotechnology. Showing an open receptivity to entertain a variety of biomedical reasoning models (all in line with traditional legal analytic frameworks) will go far to signal the practicing bar that they, in turn, may advocate creative legal strategies for argumentation instead of being rebuffed by unyielding judicial deference to a legislative process sometimes totally incapacitated if not moribund. Interestingly, it has been suggested that judges and legislators alike, should follow the lead of physicians by learning “to tolerate uncertainty, accept ambiguity, deal with the complex and turn away from mere wonder.”¹⁸⁹

Judges—in the words of Cardozo—should not “yield to spasmodic sentiment, to vague and unregulated benevolence.” Rather, they should “exercise a discretion

informed by tradition, methodized by analogy, disciplined by system, and subordinated to ‘the primordial necessity of order in the social life.’”¹⁹⁰ Oliver Wendell Holmes, Jr., saw his first business as a judge was “to see that the game is played according to the rules” whether he liked them or not.¹⁹¹ In the bioethical and scientific decisionmaking cases of today and tomorrow, I would suggest that the words of Cardozo and Holmes shape the direction and the mandate of judicial analysis and interpretation.

In the final analysis bioethics should be viewed as a natural response to not only socio-politico-religious-ethical medical dilemmas, but to increased knowledge and threatened rights and not as a new discovery of basic principles.¹⁹² As such, bioethics does not require application of a new morality.¹⁹³ Morality is neither invested nor legislated. Rather, it is “discovered” by an unpacking, explication and articulation of individual intuitions about what ought to be undertaken and what ought not be done.

When new lines of action are discovered, derived rules will then emerge that, in turn, lead to defined results presenting new conflicts with basic ethical and moral norms.¹⁹⁴ While this process of discovery evolves, it would be well to promote a new debate on human rights among members of the legal community as well as scientists, technologists and philosophers which, in turn, would hopefully guide and shape the whole process itself.¹⁹⁵ Of necessity, the debate will focus its analysis on an examination of the extent to which the plethora of legal, medical, scientific, philosophical, and technological considerations combine within the brave new world to either challenge or complement the more traditional rights of humanity. Once considered, it will then be necessary to decide whether a redefinition or reshaping of these rights is needed as a direct consequence of a set of new contemporary values and standards emerging from the complex bioethical conundrums of the twenty-first century.¹⁹⁶ If realized, this debate will then give rise to and promote a structure for legal coherence to complex bioethical decisionmaking heretofore absent—all shaped and directed, as such, by an enlightened judiciary.

ENDNOTES

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2. Bazelon, *Medical Progress and The Legal Process*, 32 THE PHAROS 34 (1969).
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3. Bazelon, *id.*
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4. *See generally*, Idelman, *The Role of Religious Values in Judicial Decision Making*, 68 IND. L. J. 433 (1993).
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See Bork, *The Challenges of Biology for Law*, 4 TEX. REV. LAW & POLITICS 1 (1999).
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7. These ideas are drawn from GEORGE P. SMITH, II, BIOETHICS AND THE LAW: MEDICAL, SOCIO-LEGAL AND PHILOSOPHICAL DIRECTIONS FOR A BRAVE NEW WORLD (1993) and Smith, *Biomedicine and Bioethics: De Lege Lata, De Lege Ferenda*, 9 J. CONTEMP. HEALTH L. & POL'Y 233, 237 (1993).
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See generally N.K. KOMESAR, IMPERFECT ALTERNATIVES: CHOOSING INSTITUTIONS IN LAW, ECONOMICS & PUBLIC POLICY (2000).
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14. Thomasma & Pellegrino, *On The Future of Bioethics*, 6 CAMB. Q. HEALTHCARE ETHICS 373 (1997).
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58. *Id.* at 168.
59. Schneider, *supra* note 8 at 16, 22.
60. *Id.* at 21.
61. Caplin, *Why Don't They Love Us Anymore?*, 2 Newsletter, U. Pa. Ctr. Bioethics, at 4 (Spring, 1997).
62. *See generally*, Pellegrino, *Balancing Science, Ethics and Politics: Stem Cell Research, A Paradigm Case*, 18 J. CONTEMP. HEALTH L. & POL'Y 591 (2002); Symposium, *Genetics and The Law: The Ethical, Legal and Social Implications of Genetic Technology and Biomedical Ethics*, 3 U. CHI. L. SCH. ROUNDTABLE 416 (1996).
63. Gutmann & Thompson, *Deliberating About Bioethics*, 27 HASTINGS CENTER RPT. 38 (1997).
See also, J. GREGORY & S. MILLER, SCIENCE IN PUBLIC COMMUNICATION, CULTURE & CREDIBILITY (1998). *See generally* Greenawalt, *Religion and American Political Judgments*, 36 WAKE FOREST L. REV. 401 (2001).
64. Gutmann & Thompson, *id.* at 39.
See e.g., Bix, *Physician-Assisted Suicide and Federalism*, 17 J. LAW, ETHICS & PUB. POL'Y 53 (2003).
65. *Id.* at 40.
See generally Jewett, *Science and The Promise of Democracy in America*, 132 DAEDALUS 64 (2003).
66. Gutmann & Thompson, *id.* at 41.
See also, A.R. JONSEN, THE BIRTH OF BIOETHICS 367-371 (1998).
67. Smith, *Nuisance Law: The Morphogenesis of An Historical Revisionist Theory of Contemporary Economic Jurisprudence* 74 NEB. L. REV. 658, 733 *passim* (1995) (discussing the demise of the average ordinary reasonable person).
68. *See* Williams, *Limits to Economics As a Norm for Judicial Decision*, 21 HARV. J. L. & PUB. POL'Y 39 (1998).
69. Schwartz, *Genetic Knowledge: Some Legal and Ethical Questions* in BIRTH TO DEATH: SCIENCE AND BIOETHICS at 25 (D. C. Thomasma & T. Kushner eds. 1996).
70. *Id.*
See R. A. POSNER, LAW, PRAGMATISM AND DEMOCRACY 106-107 (2003).
71. P. C. GIANNELI & E. J. IMWINKELREID, SCIENTIFIC EVIDENCE 2d at §1.1 (1993).
See generally, Fed. Judicial Center, REFERENCE MANUAL ON SCIENTIFIC EVIDENCE (1994); Symposium: *International Perspectives on Scientific Evidence*, 30 U.C. DAVIS L. REV. 941 (1997).
72. AP, *Breyer Cautiously Endorses Use of Neutral Experts*, WASH. POST, Feb. 17, 1998, at 2.
See also Haack, *Trials and Tribulations: Science in The Courts*, 132 DAEDALUS 54 (2003); Runkle, *Court Appointed Scientific Experts*, 14 NAT'L JUD. COLLEGE ALUM. MAG. 5 (2000).
73. 293 F. 1013 (D.C. Cir. 1923).
74. 509 U.S. 579, 589 (1993).
75. *Id.* at 600, 601.
See D.H. KAYE, SCIENCE 75-77, 87-99 (1997).
- The framework for principled decision making which the Supreme Court has constructed for the admission of scientific evidence includes the Federal Rules of Evidence 104(a), 201(b), 401, 402, 403, 702, 703 and 706(a) as well as the Federal Rules of Civil Procedure 50(a) and 56.

76. Brewer, *Scientific Expert Testimony and Intellectual Due Process*, 107 YALE L. J. 1535, 1542 (1998).
77. *Id.* at 1631.
78. *Id.* at 1627.
79. *Id.* at 1678.
80. *Id.* at 1622 *passim*.
81. *Id.* at 1551, 1552.
82. *Id.*
83. 118 S. Ct. 512 (1997).
84. *Id.*
85. *Id.* at 519.
86. *Id.* at 520.
87. *Id.*
88. *Id.*
89. *Id.*
90. *Supra* note 57.
See generally D. FAIGMAN, LEGAL ALCHEMY: THE USE AND MISUSE OF SCIENCE IN THE LAW (1999).
91. *Supra* note 76 at 1566, n. 128.
92. *Id.*
93. Kantrowitz, *Proposal for an Institution for Scientific Judgment*, 153 SCIENCE 763 (1967).
94. Task Force of The Presidential Advisory Group on Anticipated Advances in Science and Technology, *The Science Court Experiment: An Interim Report*, 191 SCIENCE 654 (1976).
 President Reagan endorsed the findings of this task force. *See* PHYSICS TODAY 50 (Oct. 1980).
95. *See* Mazur, *The Science Court: Reminiscence and Retrospective*, 4 RISK: Issues in Health & Safety 161 (1993).
96. Martin, *Procedures for Decisionmaking Under Conditions of Scientific Uncertainty: The Science Court Proposal*, 16 HARV. J. LEGIS. 443, 451 (1979).
97. *The Science Court Experiment: An Interim Report*, 4 RISK: Issues in Health & Safety 179 *passim* (1993).
98. *Id.* at 180.
99. Martin, *The Proposed Science Court*, 75 MICH. L. REV. 1058, 1064 (1977).
100. *Id.* at 1058.
101. Smith, *The Environment and The Judiciary: A Need for Co-operation and Reform*, 3 BOSTON COLL. ENT'L AFFAIRS L. REV. 627 (1974); Whitney, *The Case for Creating A Special Environmental Court System*, 14 WM. & MARY L. REV. 473 (1973).
102. White *et al.*, *Isolation of The Monkey Brain: In Vitro Preparation and Maintenance*, 141 SCIENCE 1060 (1963).
103. *See* White *et al.*, *Cephalic Exchange in the Monkey*, 70 SURGERY 135 (1971).
104. *Id.*
See Weiss, *Monkeys Control Robotic Arm with Brain Implants*, WASH. POST, Oct. 13, 2003, at A1 (detailing how scientists have used brain implants in monkeys which allow them to control a robotic arm with only their thoughts—thus giving rise to the hope that someday paralyzed people with spinal cord injuries may, as well, be allowed to operate machines as they would their hands).
105. C. FLEMING, IF WE CAN KEEP A SEVERED HEAD ALIVE . . . : DIS-CORPORATION AND U.S. PATENT 4,666,425 (1988).
106. *Id.* at 30.
See also ABC News with Peter Jennings, April 27, 1998.
107. Fleming, *If We Can Keep a Severed Head Alive: A Response to Bellotti's Review*, 4 BIOETHICS 162, 163 (1990).
See generally, Robert Bahr, *A New Ethical Question: Head Transplants* 81 SCIENCE DIG. 76 (May 1977).
108. Fleming, *id.*

109. FLEMING, *supra* note 105 at 30, 31.

Under the Uniform Brain Death Act of 1978, section one states that “an individual who has sustained irreversible cessation of all functioning of the brain, including the brain stem, is dead.” 12 UNIF. L. ANN 65 (1996). A decorporated entity under this proposed law could be recognized arguably as alive.

Under the 1980 Uniform Determination of Death Act, which superseded the 1978 Brain Death Act, an individual who has sustained “(1) irreversible cessation of circulatory and respiratory functions or (2) irreversible cessation of all functions of the entire brain, including the brain stem, is dead. 12 UNIF. L. ANN. 593 (1996). Accordingly, under section one of this Act, a decorporated entity would be dead, legally, because of the clear loss of circulatory and respiratory functions. Yet, under part two, the animated brain would be alive, and thus, the person arguably still alive. *See generally*, Roy, Venet & Roberge, *Death, Dying and The Brain*, 13 PRIMARY CARE 367 (1986).

110. George, Herz & Taylor, *Liz’ Crackpot Plan for Eternal Life*, THE NATIONAL ENQUIRER, Jan. 16, 1990, at 50.

111. O’Connor, *Putting Death on Ice*, THE PLAIN DEALER, June 15, 1997, at 1J.

112. *Id.*

113. George, *et al.*, *supra* note 110.

114. *Id.*

115. CURRENT TRENDS IN CRYOBIOLOGY (A. Smith ed. 1970); H. MERRYMAN, CRYOBIOLOGY (1966).

116. R. PREHODA, SUSPENDED ANIMATION (1969); Guttman, Khalessi & Berdinkoff, *Whole Organ Preservation* 6 CRYOBIOLOGY 339 (1970); Mazur, *Cryobiology: The Freezing of Biological Systems*, 168 SCIENCE 939 (1970); Valeri & Brodine, *Current Methods for Processing Frozen Red Cells*, 5 CRYOBIOLOGY 128 (1968); Smith, *Through a Test Tube Darkly: Artificial Insemination and The Law*, 67 MICH. L. REV. 127 (1968).

117. *See* E. NIZSALOVSKY, A LEGAL APPROACH TO ORGAN TRANSPLANTATION (1974).

118. *See generally*, B. LUYET & P. GEHENIO, LAW AND DEATH AT LOW TEMPERATURES (1940).

It is estimated that there are some thirty-four bodies interred cryonically—with most of them being in California. NEWSWEEK, July 7, 1990, at 9.

119. PREHODA, *supra* note 116 at 9.

120. R. ETTINGER, MAN INTO SUPERMAN 251 (1972); BUTTERWORTHS MEDICAL DICTIONARY at 369 (A. MacNalty ed. 1965).

121. PREHODA, *supra* note 116 at 73.

122. *See* Guttman, Khalessi & Berdinkoff together with Masur, *supra* note 116.

123. Mazur, *supra* note 117 at 946-959.

124. *Id.*

See R. NELSON, WE FROZE THE FIRST MAN (1968). In 1976, there were a reported twenty-four bodies in cryonic suspension. *See* NEWSWEEK, Aug. 16, 1976, at 11.

125. NELSON, *id.* at 48.

See L. KAVALER, FREEZING POINT 248-256 (1968) for a description of the cryogenic preparation of a human corpse.

126. NELSON, *supra* note 124 at 49.

127. For another detailed and very graphic description of the procedure used to prepare an individual for cryonic suspension, *see* NELSON, *supra* note 124 at 136-156.

128. Gorney, *Frozen Dreams: A Matter of Death and Life*, WASH. POST, May 1, 1990, at D1. *See also* Donaldson v. Van de Kamp, 4 Cal. Rptr. 2d 59 (Ca. Ct. App. 1992).

129. Gorney, *id.*

See generally, Pommer, *Donaldson v. Van de Kamp: Cryonics, Assisted Suicide, and the Challenges of Medical Science*, 9 J. CONTEMP. HEALTH L. & POL’Y 589 (1993); G. P. SMITH, II, MEDICAL-LEGAL ASPECTS OF CRYONICS: PROSPECTS FOR IMMORTALITY (1983).

130. Donaldson v. Van de Kamp, 4 Cal. Rptr. 2d 59, 60 (Ca. Ct. App. 1992).

131. *Id.* at 63.

132. *Id.*
See generally, Smith, *All's Well That Ends Well: Toward A Policy of Assisted Rational Suicide or Merely Enlightened Self-Determination?*, 22 U.C. DAVIS L. REV. 275 (1989).
See Smith, *supra* note 52 at 465-467.
133. O'Connor, *Putting Death on Ice*, THE PLAIN DEALER, June 15, 1997, at 1J.
See Wakefield, *Nicely Iced*, WASH. CITY (D.C.) PAPER, July 11, 1997, at 20; G. P. SMITH, II, THE NEW BIOLOGY: LAW, ETHICS, AND BIOTECHNOLOGY 99-100, 115-29 (1989).
134. 497 U.S. 261 (1990).
135. *Const'l. Law Conference*, 59 U.S.L.W. 2272 (1990).
136. Cruzan, 497 U.S. at 287 (O'Connor, J., *concurring*).
137. *Id.* at 228 (O'Connor, J., *concurring*).
138. *Id.* at 279-81.
139. *Id.* at 262.
140. *Id.* at 275. *But see generally*, G. P. SMITH, II, FINAL CHOICES: AUTONOMY IN HEALTH CARE DECISIONS (1989).
141. Donaldson v. Lungren, 4 Cal. Rptr. 2d 59, 60 (Cal. Ct. App. 1992).
142. *Id.* at 63.
143. *See* Albano, *The Medical Examiner's Viewpoint*, in THE MOMENT OF DEATH: A SYMPOSIUM at 19, 20 (A. Winter ed. 1969).
- It has been suggested that there is a third form or degree of death—cellular death. This is not complete until at least two days after clinical death and refers to the irreversible degeneration or disorganization of individual body cells. *See* Ettinger, *Lasting Indefinitely*, ESQUIRE, May, 1965, at 64.
- Three additional forms of death have been suggested. The first is apparent death, which occurs when the outward appearances of vital functions such as respiration, circulation and motor activity have ceased. The second is relative death, which is a term used to describe the bodily state between the cessation of cardiac and respiratory activity. Complete resuscitation is quite possible in the early stages of relative death. Finally, there is absolute death, or the condition where the resuscitation of a body as a whole or even where the resumption of physiological functions of either individual organs or cells is impossible. *See* Malmin & Perry, *A Review of Tissue and Organ Viability*, 4 CRYOBIOLOGY 104 (1967). *See also*, B. R. FURROW, S. H. JOHNSON, T. JOST & R. L. SCHWARTZ, HEALTH LAW 710, 711 (1987).
144. Albano, *id.*
See generally, DEFINING DEATH: A REPORT ON THE MEDICAL, LEGAL AND ETHICAL ISSUES IN THE DETERMINATION OF DEATH, (President's Comm. for the Study of Ethical Problems in Medical, Biomedical & Behavioral Research eds. 1981).
145. Albano, *supra* note 143.
146. D. HENDIN, DEATH AS A FACT OF LIFE 25 (1973).
147. *Id.* at 19.
148. *Id.*
See Lynn & Cranford, *The Persisting Perplexities in The Determination of Death* in THE DEFINITION OF DEATH: CONTEMPORARY CONTROVERSIES ch.6 at 112 (S. J. Younger, R.M. Arnold *et al.*, eds. 1999) (criticizing the binary criteria of death as confusing and calling for a unitary standard holding that irreversible cessation of all functioning of the entire brain results in death).
149. Smith, *Religion, Law and Conscience In a Brave New World*, in THEOLOGICAL AWARENESS AND TEMPORAL RESPONSIBILITIES 65 (Serra Found ed. 1985); Smith, *The Medico-Legal Challenges of Preparing for a Brave Yet Somewhat Frightening New World*, 5 J. LEGAL MED. 9 (April, 1977).
- See generally*, Smith, *Death Be Not Proud: Medical, Ethical and Legal Dilemmas in Resource Allocation*, 3 J. CONTEMP. HEALTH L. & POL'Y 47 (1987).
150. Smith, *Market and Non-Market Mechanisms for Procuring Cadaveric Organs*, 1 MEDICAL LAW INT'L 17 (1993); Dukeminer, *Supplying Organs for Transplantation*, 68 MICH. L. REV. 811 (1970).

151. J. KOREIN, BRAIN DEATH: INTERRELATED MEDICAL AND SOCIAL ISSUES (1979). See Lynn & Cranford, *supra* note 148; Smith, *Legal Recognition of Neocortical Death*, 71 CORNELL L. REV. 850 (1986).

See also Showalter, *Determining Death: The Legal and Theological Aspects of Brain-Related Criteria*, 27 CATH. LAWYER 112 (1982); *supra* note 135.

152. Task Force on Death and Dying of the Institute of Society, Ethics and Life Sciences, *Refinements in Criteria for the Determination of Death*, 22 J.A.M.A. 48, 51-52 (1972).

153. *Id.* The various definitions of death which may be found among state laws serve specific purposes in deciding, for example, issues of inheritance and survivorship.

154. Uniform Anatomical Gift Act, § 7(b).

155. See Capron & Kass, *A Statutory Definition of the Standards for Determining Human Death: An Appraisal and a Proposal*, 121 PA. L. REV. 87 (1972).

156. International Comments, *Declaration of Sydney*, 206 J.A.M.A. 657 (1968).

157. Minutes of Meeting XI of the President's Commission for the Study of Ethical Problems in Medical and Biomedical and Behavioral Research, July 9, 1981, at 3.

See Capron, *The Bifurcated Standard of Determining Death*, in Younger, Arnold *et al.*, *supra* note 148 ch. 7 at 129, 130 (observing that although the Uniform Determination of Death Act has problems, when challenged in the courts, it has been upheld since the "courts understand that the standard for determining death imposes no limitation on the separate decision to terminate life support in a terminally patient who does not meet the standard.").

158. RESTATEMENT OF LAW OF PROPERTY (Tent. Draft No. 2, 1979) at 73.

159. *Id.*

160. From a medical standpoint, suspension is defined as a condition of temporary cessation of any vital process. See TABER'S CYCLOPEDIA MEDICAL DICTIONARY at 1396 (C. Thomas ed., 14th ed. 1981). The term "suspended death," was coined by Ettinger and defined as "the condition of a biologically dead body which has been frozen and stored at a very low temperature, so that degeneration is arrested and not progressive. The body can be thought of as dead, but not very dead; it cannot be revived by present methods, but the condition of most cells may not differ too greatly from that in life." ETTINGER, *supra* note 120 at 3. Such a definition does not resolve the problems discussed. Indeed, this definition highlights the need for a working legal-medical concept of cryonic suspension. See also Smith, *Cryonic Suspension and The Law*, 17 OMEGA-J. Death & Dying 1 (1986-87); Ettinger, *Cryonic Suspension and The Law*, 15 U.C.L.A. L. REV. 414 (1968).

161. O. SEGERBERG, JR., THE IMMORTALITY FACTOR 266 (1974).

162. See generally, Schuyler, *The New Biology and The Rule Against Perpetuities*, 15 U.C.L.A. L. REV. 420 (1968); Hoffman & Morriss, *Birth After Death: Perpetuities and The New Reproductive Technologies*, 38 GA. L. REV. 575 (2004).

163. Ettinger has argued that if cryonic suspension were to be recognized as an heroic measure designed to sustain life, then, the concept of "mercy freezing" might have some legal validity and would thus be defined as, "freezing a terminally ill patient before clinical death." ETTINGER, *supra* note 120 at 260. "Mercy freezing" is, however, more likely to be viewed as "mercy killing" by both the legal and medical professions.

164. Weiss, *Scottish Scientists Clone Adult Sheep*, WASH. POST, Feb. 24, 1996, at A1.

See Weiss, *Animals in U.S. and Europe Now Pregnant With Clones: Methods Mimic Those That Created Dolly*, WASH. POST, June 28, 1997, at A1.

See also Lanza, Dresser & Damiani, *Cloning Noah's Ark*, 283 SCIENTIFIC AMERICAN 84 (Nov. 2000).

165. *Id.*

See Amer, *Breaking the Mold: Human Embryos, Cloning and Its Implications for a Right to Individuality*, 43 U.C.L.A. L. REV. 1659 (1996); *Will Cloning Beget Disaster*, WALL ST. J., May 2, 1997, at A14.

See also Brown, *Human Clone's Birth Predicted*, WASH POST, May 16, 2002, at A8; Crewdson, *Gynecologist Claims Impending Births of 5 Cloned Human Babies*, CHICAGO TRIB., June 23, 2002, at C1.

The United Nations has been studying the cloning issue and exploring the feasibility of drafting an International Convention against Reproductive Cloning of Human Beings. U.N. Press Release

42955, Feb. 26, 2002. See Lynch, *U.S. Seeks to Extend Ban on Cloning*, WASH. POST, Feb. 27, 2002, at A8; Erlanger, *France and Germany Seek a Ban on Cloning Humans*, N.Y. TIMES, Aug. 22, 2001, at A4. On November 6, 2003, the United Nations decided to postpone further deliberations in human cloning for two years. *U.N. Postpones Debate on Human Cloning*, WASH. POST, Nov. 7, 2003, at A2.

See generally, U.S. Senate Hearings on Scientific Discoveries in Cloning: Challenges for Public Policy, Subcomm. on Public Health & Safety, Comm. on Labor & Human Resources, Mar. 12, 1997, #38-922CC.

166. THE SUN, March 25, 1997, at 3.

See Weiss, *Human Cloning's Numbers Game: Technology Puts Breakthrough Within the Reach of Sheer Persistence*, WASH. POST, Oct. 10, 2000, at 1; Weiss, *U.S. Fertility Expert Announces Effort To Clone a Human*, WASH. POST, Jan. 27, 2001, at A3.

See also Blitz & Cookson, *Italian May Be First to Clone Human*, FIN. TIMES (LONDON), April 6, 2002, at 7; Reuters, *Scientists Skeptical About Claim of Cloning*, L.A. TIMES, April 7, 2002, at A9.

167. Weiss, *Scientist Plans to Clone Humans*, WASH. POST, Jan. 7, 1998, at A3.

See Weiss, *U.S. Fertility Expert Announces Effort to Clone a Human*, WASH. POST, Jan. 27, 2001, at A3; *Scientists Prepare to Clone Human*, WASH. POST, Mar. 10, 2001, at A16; Weiss, *Scientist Claims Cloning, Implanting Human Embryo*, WASH. POST, Jan. 18, 2004, at A18.

See also Rogers, *China heads Race for First Human Clone*, THE SUNDAY TIMES, July 14, 2002 at 5 (reporting on how top research scientists have produced more than 30 cloned human embryos for periods of up to ten days when they become masses containing several hundred cells—all undertaken with the ultimate goal of providing sources for “spare parts” for people with, for example, heart disease, Parkinson’s or diabetes).

168. Weiss, *Patent Sought on Making of Part-Human Creatures*, WASH. POST, April 2, 1998, at A12.

169. *Id.*

See Gillis, *A New Call for Cloning Policy: Group Says Patent Would Apply to Human Embryos*, WASH. POST, May 17, 2002, at A12 (discussing the University of Missouri Patent No. 6,211,429 for specific laboratory techniques for making cloned mammals).

170. Note, *Sexual Reproduction and Genetic Engineering: A Constitutional Assessment of The Technology of Cloning*, 47 S. CAL. L. REV. 476 (1974). See KASS, *supra* note 8 at ch. 5.

171. Note, S. CAL. L. REV., *id.* at 499.

See also Robertson, *Liberty, Identity and Human Cloning*, 76 TEX L. REV. 1371 (1998).

172. Note, S. CAL. L. REV., *supra* note 170.

173. *Id.* At 560.

174. Kiernan, *The Morality of Cloning Humans: Theologians and Philosophers Offer Provocative Arguments*, CHRONICLE HIGHER ED., July 18, 1997, at A3; Broadway, *A Rush to Judgment on Human Cloning*, WASH. POST, Feb. 7, 1998, at C8; U.S. Senate Hearings on Ethics and Theology, *A Continuation of The National Discussion on Human Cloning*, Subcomm. on Pub. Health & Safety, Comm. on Labor & Human Resources, June 17, 1997, #41-668CC.

The religious approaches to the cloning issue can be placed within three essential categories: opposition to it on strict theological grounds (*e.g.*, the Roman Catholic position); reservations concerning the safety of the technology and the unpredictable consequences of its use and development; and qualified acceptance of it (by Jews and Muslims) because human cloning is seen as not violating either the theological affirmation or being unethical. A.R. CHAPMAN, UNPRECEDENTED CHOICES: RELIGIOUS ETHICS AT THE FRONTIERS OF GENETIC SCIENCE 94, 95 (1999); Wooden, *Human Cloning Would Be A Crime Against People*, CATHOLIC STANDARD, Aug. 14, 2003, at 3 (noting the Vatican’s position that it should be banned internationally); Goodstein & Grady, *Split on Clones: Research v. Reproduction*, N.Y. TIMES, Feb. 13, 2004, at A18 (reporting on the wide divergence, within the religious community, over cloning).

175. Note, S. CAL. L. REV., *supra* note 170 at 480.

See Munro, *The New Patent Puzzle*, NAT’L J. Mar. 2, 2002, at 1. See generally, Weiss, *Fertility, Innovation or Exploitation?* WASH. POST, Feb. 9, 1998, at A1.

176. Weiss, *Human Clone Work Will Be Regulated*, WASH. POST, Jan. 20, 1998, at A1. S. 368 (1997) and H. 922 (1997) seek a permanent ban of federal funding for human cloning, while H.R. 923 seeks to impose an outright ban on human cloning. Neither of these bills were enacted into legislation.

177. Weiss, *id.*
See Gugliotta, *United Against Human Cloning, Hill Leaders Differ on Specifics*, WASH. POST, Feb. 4, 1998, at A4.
See also Delaney, *Scientists Prepare to Clone a Human: Experiment Aims to Help Infertile Couples*, WASH. POST, Mar. 10, 2001 at A16; Weiss, *Human Cloning Bid Stirs Experts' Anger*, WASH. POST, Mar. 7, 2001, at A1.
178. Weiss, *Panel Backs Some Human Clone Work*, WASH. POST, June 4, 1997, at A1.
 In 1997, the California State Assembly became the first state to legislate a prohibition on cloning a human being as well as the purchase or selling of an ovum, zygote, embryo, or fetus for the express purpose of cloning a human (Cal. Health & Safety Code § 24185 (1997)). A five year moratorium was placed on human experimentations in human cloning and heavy civil penalties imposed for violations thereof (\$250,000.00 to 1 million). (*Id.* at § 24187). Efforts to extend the moratorium indefinitely and prohibit a person engaging specifically in "human reproductive cloning" has been undertaken. SB 1230 (Sept. 23, 2002).
 On June 3, 1998, the Governor of Michigan approved legislation forbidding human cloning experimentation and thereby allowed Michigan to become the second state to follow California's lead (Senate Bill #864, H. B. #4962). MICH. COMP. LAWS ANN. § 333.16274 (West 2000).
179. Weiss, *supra* note 176; Schwartz, *FDA Sets Safety Framework For Cell & Tissue Therapies: Rules Would Cover Attempted Human Cloning*, WASH. POST, Mar. 1, 1997, at A3.
180. Note, S. CAL. L. REV., *supra* note 170 at 498.
181. *Id.*
182. *Id.*
183. A. SCALIA, *A MATTER OF INTERPRETATION: FEDERAL COURTS AND THE LAW* (1997).
184. Johnson, *Deciding Abortion, Suicide Issues Is Duty of Congress Scalia Says*, WASH. POST, Mar. 10, 1998, at A7.
185. *Id.*
186. Warren E. Burger, *supra* note 52 at 216.
187. RICHARD A. POSNER, *THE PROBLEMS OF JURISPRUDENCE* 112 (1990).
But see DELIBERATIVE DEMOCRACY (J. Elster ed. 1998).
188. Williams, *supra* note 68 at 44.
189. Cassell, *The Sorcerer's Broom: Medicine's Rampant Technology* in *BIRTH TO DEATH: SCIENCE AND BIOETHICS* 177 at 188, 189 (D.C. Thomasma & T. Kushner eds. 1996).
190. B.N. CARDOZO, *THE NATURE OF THE JUDICIAL PROCESS* 141 (1921).
191. O. W. HOLMES, Jr., *Ideals and Doubts* in *COLLECTED PAPERS* 307 (1920).
192. Clouser, *Bioethics*, in *CONTEMPORARY ISSUES IN BIOETHICS* 54 at 62 (T. L. Beuchamp & L. Walters eds. 1984).
See generally Wade, *Bush's Advisers on Biotechnology Express Concern on Its Use*, N.Y. TIMES, Oct. 17, 2003, at A18 (discussing the President's Council on Bioethics new cautionary report, *BEYOND THERAPY: BIOTECHNOLOGY AND THE PURSUIT OF HAPPINESS*).
193. *Id.*
See Kirby, *Bioethics '89: Can Democracy Cope?*, 18 L. MED. & HEALTH CARE 5 (1990).
194. E. B. BRODY, *BIOMEDICAL TECHNOLOGY AND HUMAN RIGHTS*, chs. 1-3 (1993).
195. *See generally*, Smith, *supra* note 1.
196. *See* Schneider, *supra* note 8.
See also KASS, *supra* note 8 at ch. 1 (2002).
See generally Greenawalt, *Judicial Resolution of Issues About Religious Convictions*, 81 MARQ. L. REV. 461 (1998).

CHAPTER 2

RELIGION: MEDICO-LEGAL NORMS OR CONSTRUCTS

In January, 1982, the United Nations acknowledged that religion or belief is a fundamental element in one's conception of life and that, accordingly, "freedom of religion or belief should be fully respected and guaranteed."¹ As such, freedom of religion and belief are to be seen as contributing factors to the attainment of world peace and social justice.²

The major religious groups, in rank order of membership size in the United States and the world are: Christian, Jewish, Muslim, Buddhist, and Hindu.³ At least fifteen to twenty percent of the people in daily life in America are other than Christian in their self understanding.⁴

It was determined in 2001, that nine thousand and nine hundred distinct and separate religions were in the world—increasing by two or three new religions a day.⁵ Indeed, the study of alternative "new" religious movements has become a "growth industry,"⁶ with nearly twenty percent of the Christian world being found within these movements.⁷ While the secularization of religion is, to be sure a charted phenomenon, nonetheless religion—as seen—by these statistics seem to be forever adapting to new social ecosystems.⁸ The apparent paradoxical relationship between secularization and religion has been explained by suggesting that while individuals are, to an extent, outgrowing belief in the supernatural (referred to commonly as secularization), new alternative, hardier forms of religious movements are growing.⁹

Representing social and spiritual reconfigurations already under way, these new religious movements—often referred to as "midwives of new sensibilities"—are seen as responding directly to the every evolving spiritual demands of contemporary times.¹⁰ As such, they are more about relationships and caring for its members rather than faith.¹¹ Indeed, ". . . people form relationships and only then come to embrace a religion."¹²

Classical Beginnings

One of the most important issues concerning the human experience is seen in the endless search for distinctions between the spiritual and the secular.¹³ For the early Greeks, health was viewed as a balance or harmony not only within the body, but between the body as well as the natural and social worlds. When the balance was disturbed by disease, it was seen as being caused by nature or by divining force.¹⁴ Christianity sought to elevate the spirit over the body—with health being expanded through terms of spiritual integrity.¹⁵

During the Hellenistic period, healing (and healers) were classified as two types: medicine or medical and religious.¹⁶ While a significant overlap was seen between “rational” medicine and religious healing,¹⁷ still, by the early second century, a substantial medical consensus was found that began to explain disease as a matter of “humoral excess or imbalance” while religious healers understood all non traumatic disease” as caused directly by either divine influences or demonic powers.¹⁸ Although there was occasional conflict, medical healing and religious healing occurred side by side within the late Hellenistic world.¹⁹

From the fifth century through the fifteenth century or Middle Ages, religion was recognized as taking a firm hold on science—with one consequence being that almost all mental disorders were understood to be the end result of demonic possession.²⁰ Indeed, demonology was seen as not so closely connected with physical health as it was with mental health.²¹

Monastic or Monastery Medicine came into prominence from 500—1200 where it was not only taught but practiced under the direction of the Church.²² By the twelfth century, medical schools had been established yet recognized their professional responsibility to serve as an education base of operation for the clergy.²³ Interestingly, well into the Renaissance—or that historical period between the Middle Ages and modern times—physicians were generally priests.²⁴ Because of the growing commitment of the priest-physicians to the task of treating the sick—with a corresponding neglect of their ecclesiastical duties—the Church, while not condemning the practice of the medicine or surgery, nonetheless emphasized the primacy of theological study for their priests.²⁵ It remained for the Fourth Lateran Council in 1215 to forbid the practice of surgery by clergy in major orders (*e.g.*, priests, bishops). It was permitted to be practiced by those in minor orders (*e.g.*, acolytes, lectors), however.²⁶

With the advent of the Scientific Revolution in 1600 through 1700, the twin healing traditions were severed irrevocably. Spurred by the philosophies of Descartes, Hume, and Locke that advanced a new method for seeking knowledge tied exclusively to an examination of empirical data and a rational, scientific method of analysis, the Church found its moral authority and its exclusive command over truth had collapsed. “Since the experimental method could not be readily or confidently applied to God . . ., religion was rooted out of science, including medicine.”²⁷

Building upon the successes of the Scientific Revolution, the Age of Enlightenment began in France from 1700—1800 and spread throughout Europe and North America. Inasmuch as reason was seen as the essence of human nature, and science as the mechanism or process for explaining the universe, a direct challenge was made to what heretofore were long accepted traditional religious values.²⁸

Emerging Frontiers

Over the following years—indeed over the last five hundred years—what is seen and recorded is a gradual splitting of the healing traditions of religion and

medicine. Yet, within the past decade, however, positive signs have been made toward a reconciliation between the two.²⁹ This healing or accommodation has been facilitated by research which shows—to various degrees—that religious and spiritual needs of medical patients are related intimately to their physical health and, furthermore, that a significant source for emotional healing is to be found in religious beliefs and practices.³⁰

While the validity of research in the mind-body field often fails to yield a consensus judgment, since 1972, serious medical studies in behavioral medicine, neuroimmunology, neuroendocrinology, psychiatry, and social medicine have converged to produce both a greater understanding and an acceptance of the effects of psychological factors on physical health.³¹ There is of course, by no means, a full appreciation of the interaction of mind-body. While poorly substantiated claims of the relationship are of some valid concerns,³² it is suggested that the principal barrier to acceptance is ideological.³³ This concern is tied as such to traditional scientific emphasis placed on reductionism, materialism, and universalism as tools and required proofs of validation. Whether medical science will accept, for purposes of research validity, that a specific set of thought patterns can result in effects which are “predictable, measurable, and reproducible physiological changes” remains to be seen.³⁴ What is known with certainty is that this frontier is one that can only be cleared over time and with considerable patience.

Religious, Medical and Legal Interrelationships

Religion and religious involvement may well promote better health care between behavioral standards in several ways. More specifically, religious teachings promote respect and care for the body and with this often comes a level of practice and participation which has the effect of increasing a believer’s social network and frequency of interpersonal contacts with other like-minded individuals.

The church, then, becomes a type of extended family providing social interaction and outreach which—in turn—increases the likelihood that sick and infirm church members will receive a communal monitoring of their medical conditions.³⁵

The religiously devout are more helpful and thus are given a greater sense of purpose and meaning of life.³⁶ Some studies have shown that there is a definite relationship between religiousness and a lessening of coronary artery disease, stroke, hypertension, cancer, immune system dysfunction and negative health behaviors (*e.g.*, smoking, drug and alcohol abuse and risky sexual behaviors).³⁷ Not only may religion affect health care determinants, devout religious involvement may only prevent illness and speed recovery.³⁸ More and more, religious beliefs and practices are seen as a first line coping mechanism for physical illness.³⁹

At its most basic level, law deals with relationships among people.⁴⁰ Similarly too is health care; for its maintenance and advancement are not really about results but, more importantly, about relationships of knowledge, trust and care between doctor and patient.⁴¹

Perhaps the central factor in coping successfully with physiological maladies is to be found in the concept of spirituality or spiritual health,⁴² which defines itself

in relation to culture.⁴³ Spirituality is a personal phenomenon involving a quest for meaning in life.⁴⁴ The themes associated with spiritual health include love, charity, meditation, purpose, and self-actualization.⁴⁵ Hope is pivotal to spiritual well being⁴⁶ and is integral to the whole healing process. Once hope is lost, the very will to be healthy is eroded.⁴⁷

Faith and hope are seen, correctly, as primal instincts.⁴⁸ As spiritual needs, they are met generally through religious practice. They are strengthened in turn through religious experiences followed by human relationships.⁴⁹ Prayer is not only a part of spiritual health but seen properly as a form of medicine or type of medical intervention.⁵⁰

Contemporary Frameworks for Analysis

As perceptions of the natural world change and a new spirit of biological investigation is fostered, religious principles must become “operationalized”⁵¹ or—in a word—relevant in contemporary society.⁵² It is only in this way that religion will be able to continue as a means through which human culture itself will be sustained.⁵³

All religions deal with the same basic issues of human existence.⁵⁴ And, interestingly, their fundamental texts were written within the context of pre-scientific societies rendering them today, in very substantial part, unresponsive to the type and complexity of issues raised by the new molecular age. From a dialogue with science, however, ethical, religious, theological and spiritual values will be informed and—where necessary—altered,⁵⁵ changing much like ethical norms do with experience and over the course of time.⁵⁶

The trend toward privatization of religious beliefs, making religion in America a “private affair” and a personal journey, de-emphasizes the need for ties to formal religious institutions and social confession.⁵⁷ The challenge, then, for mainline religion is to develop a rational basis of faith that examines its tenets and bases of belief and is thus not tied merely to traditional (or historical) teachings.⁵⁸

In order for there to be a reasoned ethical discourse between faith and reason, the epistemological distinction between theological and philosophical ethics must be understood. While unaided human reason guides philosophical ethics, theological ethics enrich this type of reason by divine revelation by accepting the fact of revealed moral guides. For the Roman Catholic tradition, scriptural proofs are enlarged by traditions but also by the teachings of the official magisterium. Reason is not, therefore, abandoned in theological ethics nor are faith and reason contradictory. “Rather, they complement and supplement each other. Much of what theological ethics posits is also derivable by reason.”⁵⁹ So, then, while *much* of the theological ethic derives from reason, it cannot claim to be a total “product” of it—and herein lies what may be considered a discontinuity in attempting to show the contemporary relevance of faith in biomedical decisionmaking.⁶⁰

Karl Rahner, S.J., one of the most influential thinkers of the 20th century, urged in 1967 that Natural Law theology does not require a static, non-evolutionary view of human nature. Urging a new openness to the possibilities of improving the

physiological condition for humans, he cautioned that to resist human self-manipulation would not only be cowardly but a misunderstanding of Christian ideals. Since the human race has always modified the natural environment, intentionally or unintentionally through changes in genetic characteristics and through diet, medicine, environment and voluntary selective breeding, it was important—he argued—for the Church to see that as to the issue of genetic manipulation, it should approach this new science as a mark of human courage—a courage which God ennobled man by granting him responsible freedom to seek the ultimate goals of life as conceived within the human context.⁶¹ Religious traditions which see human beings as being empowered by God to be co-creators believe they have not only permission but a responsibility for defining eugenic policy.⁶²

Scriptural Heritage

No Christian ethic can be found that is not tied to, in some manner, sacred scripture. And, similarly, no Christian medical ethic can be posited which is neither formed or informed in some manner by scripture. Because of this biblical foundation or “straight jacket,” the proposition has been advanced that biblical precedent is too confining and rigid for use in contemporary bioethics.⁶³ The late distinguished Jesuit theologian, Richard A. McCormick, has gone so far as to suggest that Christian Scripture is but the story of Jesus, not a systematic set of laws, that structures both the foundation for and the criterion of morality.⁶⁴

The primary challenge which confronts efforts to integrate religion and science in contemporary society is to find a level of understanding that accommodates a premodern world view with present views of modernity.⁶⁵ Perhaps a first step toward such a discourse can be taken by accepting a fundamental guiding Christian principle as dispositive: namely, that all uses and applications of genetic knowledge, medicine and biotechnology should be governed and judged by the ethical norms of fairness, justice, and love.⁶⁶

While there is no uniformity of view regarding the New Biology found within the major categories of Christian and Jewish faith, or within various other faith communities for that matter,⁶⁷ all religions deal essentially with the very same issues of human existence⁶⁸ and respect and utilize fairness, justice, and love as both norms or standards and as constructs for life decisions.⁶⁹

Shaping Constructive Dialogue with Theology, Science and Law

A primary goal for many religious thinkers has been to develop a process for determining how to lead science and technology toward a level of awareness and appreciation of human and environmental values.⁷⁰ Given the growing trend of placing and then testing scientific development within a framework of moral understanding and normative values, the choice is “having theologians and religious ethicists contribute a theological perspective or having scientists attempt to be

moral philosophers.”⁷¹

The foundational texts of most religious communities, as well as scripture itself, do not address the complex issues of biotechnology and molecular biology. While the religious texts do establish broad ethical norms for purposeful living, the task becomes one of adapting a mechanism for them to apply to the biomedical issues of contemporary society; in other words, how to re-shape and, thus, modernize them into a constructive dialogue with science—one which escapes the confines of abstract applications and offers specific guidance and modern ethical norms for resolving concrete biomedical conflicts.⁷²

Whether it is practical to pursue the development of a common framework for morality and ethical analysis within the context of the New Biology, is problematic.⁷³ Advocates of post modernism argue that a “Christian rather than denominational approach to bioethics” is to be preferred. Whatever course is followed, the challenge remains the same: namely, how to show—and thereby attempt to restate—the relevance of these religious principles to a skeptical secular society.⁷⁴

In an effort to address the basic theological and ethical issues associated with the new medico-science technologies and, thus, engage the issue, much study have been undertaken over the years by various ecumenical and denominational bodies beginning in 1973 with the efforts of The World Council of Churches to study the ethical significance of science and technology.⁷⁵ Through the succeeding years, various other studies were commissioned by various organizations such as the World Conference on Faith and Science and The Future. Interestingly, their findings were never granted any official standing but merely accepted as the views of each study panel.⁷⁶ The Roman Catholic Church did—however—in 1987, begin to both clarify and shape the official dialogue for its members through the issuance of its “Instruction on Respect for Human Life in Its Origin and on the Dignity of Life.”⁷⁷

All too often, a recitation of traditional beliefs is set forth without an interpretation of their implications for scientific applications.⁷⁸ While of marginal universal significance, these faith-based denominational efforts nonetheless provide a rich opportunity for education and interaction as well as for the development of a broader-based perspective on the religious, moral and ethical ramifications of the New Biology.⁷⁹ Only time will tell whether these “seedlings” will take root from these critical engagements and provide normative values for biomedical decision making.

As the astonishing positive successes of genetic research and engineering and of genetic medicine continue to be charted with clarity, the role of moral theology—grounded in various faith traditions—should be used to frame guidelines for determining if and when various specific applications of these technologies, within an appropriate ethical context, may be utilized. Richard McCormick suggested the controlling consideration should be, “Will this or that intervention (or omission, exception, policy, law) promote or undermine” the integrity of the human person.⁸⁰

The central concern of Fr. McCormick is the integrity of personhood. For him,

personhood begins at conception and, accordingly, would be violated by human stem cell experimentation, cloning, and generally, *in vitro* fertilization.⁸¹ In this regard, McCormick is *micro*—as opposed to *macro*—in his viewpoint. Long range or societal benefits from scientific advances of this nature and other genetic research are of secondary concern.

Drawing upon a contemporary interpretation of *tikkun olam*—or the mandate to participate in an active partnership in the repair and perfection of the world—the Jewish community supports scientific discoveries and human applications of genetic research.⁸² And, interestingly for Presbyterians, “prophetic inquiry” directs that they endeavor to utilize modern technology and science in affirming the dynamic character of the creation through the teachings and interpretations of the biblical tradition.⁸³

Law and policy making as well as administrative and judicial decision making should not—indeed, cannot—favor one denominational theology over another. Rather, balanced decisions must be made incorporating, when appropriate, moral, ethical (*e.g.*, religious) values with scientific objectives for individual growth and societal advancement. When cases or issues for consideration arise, they are just that: individual and fact sensitive. Yet, nevertheless, their evaluation can be undertaken by a template shaped by a balancing of costs versus benefit: use or non use—all designed to achieve a positive, just good.

No substantive resolutions are needed. The role for the various church theologies should be, rather, “interrogative.”⁸⁴ For any dialogue between science and religion to be effective, “fallibilism” must then be an acknowledged given. In other words, both parties need to accept the proposition that they may not only be incorrect in their understandings of each other, but “in their inferences about the implications of their positions, in their development of their own arguments and even in some basic claims they have never questioned.”⁸⁵

Love and Justice

While there are differences between a legal order, system of morality and set of religious beliefs, it does not follow that contemporary legal order does not contain elements of moral religious beliefs.⁸⁶ All laws are norms set within a hierarchy whose foundation is to be found in love; for it is within the primary form of love that justice is found.⁸⁷ Indeed, Augustine saw the ethics of love as the essence of justice.⁸⁸ For him, without the ethics of love, there could be no true orderliness—this, because nature would be disturbed by man’s wilfulness.⁸⁹ “Without love there could be no justice for there would be lacking a cogent motive, and pattern, for men to render to other men their due. . . .without love as a gift of God’s grace man could not love the proper things properly.”⁹⁰ In addition to including rules and concepts, law is—at its most basic level—but a set of relationships among people.⁹¹

Despite the obvious tensions or discontinuities between law and religion, one cannot truly flourish without the other. Without religion, law degenerates into little more than a mechanical legalism; and religion without law loses its social

effectiveness.⁹²

There are four elements shared by law and religion: ritual, tradition, authority and universality.⁹³ Within every religion is found two legal elements—one which relates to the social processes of the particular community sharing a faith and the other “to the social processes of the larger community of which the religious community is a part.”⁹⁴ Indeed, it has been suggested that the two major dimensions of man’s social life may be seen as law and religion even though, as such, they are dialectically interdependent vectors of force.⁹⁵

In the final analysis, perhaps it is best to see law as a way in which both justice and love are translated into complex social situations within various communities.⁹⁶

Since love is situational, it has been argued persuasively that it—rather than binding rules and *a priori* principles—should direct moral responses (*micro* and *macro*) at all levels of decision making in issues of the New Biology.⁹⁷ Accordingly, the standard of humane treatment in end-of-life cases should be shaped and guided by love just as scientific decisions regarding the suitability of investigation. In one case, the construct is personal and in the other it is communitarian.⁹⁸

America’s Emerging Constitutional Philosophy

Ever since America was founded, the national symbol has been an eagle supported in its flights and its destiny by two powerful wings: plain reason or common sense and humble faith.⁹⁹ The founding generation drew its common sense from not only the traditional wisdom of ancient philosophers and moralists, but from the scriptures;¹⁰⁰ for, it was evidence to them that a faith in the God of Abraham, Isaac and Jacob was an ideal magnification of human reason.¹⁰¹ Indeed, for the founders, of all philosophies and religions, Judaism and Christianity served as the best unified foundation for republican institutions because they encouraged virtue and sharpened a zest for liberty.¹⁰²

From the very beginning of the Nation, the “dominant metaphor for church-state relations was that public officials must act as ‘nursing fathers’ to the religious and moral habits of the people . . .”¹⁰³ Put simply, as a religious people, the majority of early Americans believed wholeheartedly that they owed their liberty to their creator.¹⁰⁴

In the United States Constitution, the action to separate church from state was driven significantly by the same recognition that religion concerns itself with differing senses or levels of reality than those of the political world.¹⁰⁵ Accordingly, two clauses in the First Amendment enunciate with clarity the boundaries of church and state—the Establishment Clause forbids the government from making any “law respecting the establishment of religion,” and the Free Exercise of Religion Clause prohibits the government from restricting religious belief or practice.¹⁰⁶ While these two clauses, especially the second one, are taken in contemporary society as affirming rights of individual conscience together with the appropriateness of religious pluralism, there is strong historical evidence suggesting however that the framers were more interested in recognizing the establishment of religious duties free from state interference.¹⁰⁷

One of two driving and very practical forces behind the crafting of the religion clauses in the First Amendment was an evangelical conviction that religion—and not just individual conscience—was to control a limited government that in turn must be subordinate to a sovereign God. A second fundamental conviction undergirding the separation of church and state was that the state should, quite simply, be secular and not religious. It was this unyielding view that was in direct opposition to the Republican belief that the state should support religion in order to promote public morality. It was mainly on the arguments that, for the sake of religious integrity, religion should be insulated from state support, that the secular view of the state triumphed in the Establishment Clause.¹⁰⁸

Religion's Role

The role of religion in a constitutional democracy is, surely, at the apex of current legal and social debate.¹⁰⁹ Since questions about religion involve moral issues, they are presented regularly both to the courts and to the legislatures. And, furthermore, since these two bodies are not “philosophically reflective enough to deal with moral issues which are integral to debates on religious issues,”¹¹⁰ difficulties in meaning, interpretation and application are a given. Under these circumstances, it could be viewed as improper to demand of the state that it be subject *always* to “the higher law of God.”¹¹¹ Nevertheless, it has been suggested that since the “bedrock of moral order is religion,” politics and morality can only be viewed as inseparable.¹¹² Interestingly, today political activists now include religious believers who seek not only to shape public policy but often to seize state power.¹¹³

If the proposition is advanced that only religion provides morality with a foundation,¹¹⁴ then it follows that religion may be taken as an “independent moral force” in American society.¹¹⁵ Yet, the extent of its independence remains a complex and volatile issue. While some religions advance civic responsibility as a noble virtue and set high levels of moral performance in daily life, others stress a form of political withdrawal and personal passivity and, still others, are obsessive and fanatical.¹¹⁶

Historically, however, religion is seen as an associative force that serves to strengthen moral solidarity as well as political attachment.¹¹⁷ This is seen dramatically in the work of various communities of faith where strong welfare organizations are developed which, in turn, draw upon high levels of popular participation in promoting multiple forms of everyday assistance.¹¹⁸

Political Underpinnings

Religions, and the moral theologies attendant to them, have a decidedly political character.¹¹⁹ Indeed, Judaism, Christianity and Islam are regarded, in the main, as political. While being prophetic, they have sought nevertheless, and continue to seek, to challenge the socio-political *status quo* and attack the economic inequalities of society as well as endeavor to protect the sick and unhealthy and be

a voice for the abused and other marginalized interest groups.¹²⁰

When ecumenical political dialogue is engaged, it is a significant and positive undertaking because it provides a forum where citizens and members of faith communities can seek consensus or more often to merely diminish dissension or simply clarify issues of common disagreement, “but always to cultivate the bonds of political community, by reaffirming their ties to one another, in particular their shared commitment to certain authoritative politico-moral premises.”¹²¹

Often defined as a Christian nation, America still advocates a discursive type of religious pluralism.¹²² Allowing, indeed tolerating, an open debate on religion itself becomes the short run or immediate goal. When, however, religion does not inform the debate, but rather undergirds it, the central concern is the extent to which “belief or nonbelief in a God makes the difference in one’s normative stance.”¹²³

A distinct feature of modernity is the notion that law is totally secular, without a founding God and, thus, independent of any divine command other than the force of human reason¹²⁴ which is, of necessity, directed toward the establishment of intelligible order.¹²⁵ A contrary view suggests, “everyone must invoke some God or other because . . . everyone has to speak normatively”—for participation in any public activity calls for an acknowledgment of the need for law.¹²⁶

No doubt, the central question to be posited today is: In a constitutional democracy defining itself as a secular polity, can religion ever be represented as the basis of the rule of law?¹²⁷ Can the law’s secular legitimacy be derived from religious principles, values, moral teachings or practices apart from validating a specific historical religion?¹²⁸ Finally, does moral adherence to a body of law require belief in a God or not?¹²⁹ Throughout most of recorded human history, there has always been a connection between God and the law.¹³⁰ For example, the all inclusive name the Bible uses for “God” is *elohim* which means “authority”—first, divine and secondarily, human.¹³¹

Whatever the template for contemporary analysis is tied to—a convenantal theology of the Bible, Platonic natural law, Hobbesian natural law or a philosophically informed morality seen in the English Common Law—in America, “the majority of the citizens believe themselves obligated by a prior, divine morality, despite the fact that most of them are unable to argue for it theoretically.”¹³² It is for the philosophers and moral theologians to make these arguments.¹³³

Evolution and Christian Thought

While Charles Darwin’s *ORIGIN OF SPECIES* first appeared in 1859 and advanced a theory of organic evolution, arguing—as such—current living species evolved from pre-existing species, more than a century earlier a French naturalist, Chevalier de Lamarck, advanced a theory of progressive evolutionary development derived from “vital forces within living things and the inheritance of acquired characteristics.”¹³⁴ Rather than accept Lamarck’s theory that the process of natural selection was driven by a benign process of individual adaption, Darwin postulated a “survival of the fittest” process in evolutionary development. Indeed, the central

feature of Darwinism became the concept of natural selection.¹³⁵

For the Christian world at that time, the ultimate challenge of Darwinism to it was stated thusly: “Beneficial variation was random and natural selection cruel. If nature reflected the character of its creator, then the God of a Darwinian world acted randomly and cruelly.”¹³⁶ The Darwinian theory of a mindless process of natural selection suggests a universe not only blind to life and humanity but totally indifferent to its operation.¹³⁷ Yet, within this theory was found the elements of what is termed “evolution theodicy.” This, in turn, gave rise to a movement that advocated the acceptance of God’s aloofness or separation from natural evil and thus stood outside a strictly scientific framework of analysis but instead was wed to metaphysical presuppositions about the nature of God.¹³⁸

Interestingly, while philosophy and science have always been influenced by theology—and especially so with evolutionary theory—evolutionists deny steadfastly the influence.¹³⁹ Yet, as observed, a central metaphysical presupposition infuses the whole of the technical ordering of evolutionary science: namely, that evolution’s success is tied to a doctrine of God. In other words, “It is a theological view that preceded evolution historically and became the metaphysical landscape on which the theory was constructed.”¹⁴⁰ Today, one of the leading authorities in the field has suggested that the process of evolution should be seen within an historical context which, in turn, serves as an enhanced guide to understanding nature.¹⁴¹

It is thought that evolutionary information comes from two central sources: the science of genetics and from contemporary culture.¹⁴² From this comes the view that religion is to be seen “as an information system within culture that is part of the effort of nature to understand itself and conduct itself in freedom.”¹⁴³

The interrelatedness of all creation is shown time and again by scientific work in genetics. Indeed, the new DNA discoveries restate with convincing clarity the shared evolutionary heritage of all living things¹⁴⁴ and the constant lifetime interaction between genes and the environment.¹⁴⁵ Interacting with the biological sciences as a co-efficient, or at least a vector of force, in influencing the total development of the individual is the environment—both the cultural and the physical. Because of the fact that, as cultural beings, individual shape the contexts in which social interactions occur, they exhibit an inherent capacity for ethical behavior and spiritual development.¹⁴⁶ Indeed, the mystery of the human spirit and the capacity for self-transcendence will never be eliminated by the New Biology.¹⁴⁷

While human nature is illuminated by genetic science, it is not explained totally. The complexity, transcendence, and mystery of the human person remains and thus serves as a reference point of intersection between culture and theology as well as the natural sciences.¹⁴⁸ A positive force in contemporary society is to be seen in the new and ongoing dialogue between genetics, molecular biology, and the theology of human nature which seeks to build upon these very points.¹⁴⁹ When a distinctly religious voice in, for example, medical ethics becomes passive or is lost, this in turn encourages a form of moral philosophy for the market place and thus places law as the dominant source of morality.¹⁵⁰ It can only be hoped that from this inter-cultural discourse will come new frameworks for principled decision making

which, in turn, promote reasoned and balanced ethical responses to personal and societal challenges of this age of the New Biology.¹⁵¹

A Papal Clarification

On October 23, 1996, in an address by John Paul II to the Pontifical Academy of Science, the Holy Father suggested science and religion are compatible. “Science can purify religion from error and superstition, religion can purify science from idolatry and false absolutes. Each can draw the other into a wider world, a world in which both can flourish.”¹⁵² As to the specific issue of the theory of evolution, the Pope acknowledged that it is “more than just a hypothesis.”¹⁵³ While not mentioning Charles Darwin by name, the statement is seen nonetheless as advancing the idea that religious faith and the teaching of evolution can co-exist easily.¹⁵⁴ Indeed, while observing that there are a number of different theories of evolution, the Holy Father, went on to observe that, “It is possible to accept evolution as a theory while affirming that the spiritual and philosophical elements must remain outside the competence of science.”¹⁵⁵ At least for Roman Catholic theology, what had been—up to this time—the most significant point of argument and division between the genetic revolution and theology as a body of thought,¹⁵⁶ is no longer in issue.

Darwinism and Intelligent Design

In 1991, Philip E. Johnson constructed the philosophical underpinnings of a contemporary intelligent-design movement which, in essence, asserts the theory of Darwinian evolution is based on inaccurate assumptions and weak evidence.¹⁵⁷ More specifically, the small and vocal number of biologists, chemists, philosophers and mathematicians who constitute the membership of the movement, argue that because of the refusal of mainstream science to consider anything but natural explanations for things, it is therefore biased subjectively against proofs of supernatural intervention in the evolutionary process. Thus, the efficacy of the evidence for evolution through natural processes is called in question.¹⁵⁸

Proponents of the theory of intelligent design believe, simply, that an intelligent agent (but not necessarily using the word, God) has guided the history of the earth.¹⁵⁹ Criticized as not being a science, the president of The National Academy of Science has termed intelligent design as nothing more than a “way of restating creationism in a different formulation.”¹⁶⁰

For the vast majority of the scientific community, evolution began billions of years ago and was both unsupervised and impersonal. Yet, others find significant gaps in the scientific record that leave evolution more a theory than a documented fact. Accordingly, they put forth the notion that the evolution of the species took place over time by the grand design of a transcendent personal creator. These Creationists also contend that the true age of the earth should, as inferred from the Bible, be computed in thousands of years—not billions.¹⁶¹

With the publication in 1965 of *THE GENESIS FLOOD*, the term, “creation

science” was introduced into the American vocabulary.¹⁶² Soon thereafter, a whole movement took shape.¹⁶³ Followers of the creation science movement, termed creationists, adopt the Biblical narrative of the Book of Genesis as their theory of origin,¹⁶⁴ accepting as such the creation of the world by a personal God.¹⁶⁵ For the creationists, only two possible constructs can be employed to resolve the question of the origin of life and of the universe: theistic and atheistic. In other words, God is acknowledged as the creator of history or life and seen as a evolutionary dynamic.¹⁶⁶

The book of Genesis has not been accepted in the public school classrooms of the Nation as a teaching source nor has creation science succeeded in re-shaping mainstream science. Indeed, led by the National Academy of Science, mainstream scientific organizations have rejected totally the creationist approach.¹⁶⁷

Central to the claims of the legitimacy of creationism is an apparent conundrum: normally, if creationists accept the Bible as true and infallible, why is it regarded as important to link science with it? The answer given is that since creationism does not qualify as a science in that it does not afford a set of hypotheses capable of being tested, a higher level of legitimacy is sought for it by placing science at its heart or as its *modus operandi*.¹⁶⁸ “Modern Americans cling to scientific rhetoric no matter what the issue.”¹⁶⁹ Indeed, “scientific sanctification” validates many conservative beliefs by attributing scientific credibility to their biblical interpretations.¹⁷⁰ What is seen in reality, then, is that by shifting attention from issues of faith and value to those of scientific interpretation, the scientific creationists have “reduced the Bible to the level of a science [text].”¹⁷¹

Since mainstream Christians and Jews do not see the Bible and evolutionary theory as inconsistent, modern creation science is not a contemporary issue of great moment.¹⁷² Rather, they understand that science, itself, can neither tackle and resolve the moral issues of the day nor serve as a template for living life to the fullest. Put simply, “whether rejected or accepted, evolution cannot speak to the vital issue of right and wrong.”¹⁷³

Scopes and Its Aftermath

When in 1925 in Dayton, Tennessee, a high school science teacher, John T. Scopes, taught a class on evolutionary theory, a national debate was thereby triggered over the origins of humans which—in turn—forced the Nation to confront not only its fears and suspicions of scientific knowledge, but its application and uses as well.¹⁷⁴ In essence, the “Scopes Monkey Trial” pitted religion, and a fundamentalist view of divine creation (*e.g.*, creationism) against scientific thought on evolution. It became a harbinger of the utilization of evolutionary biology that did not begin however until after World War II.¹⁷⁵ William Jennings Bryan represented the fundamentalist cause and argued for a strict, literalist approach to interpreting the Bible. Clarence Darrow, as opposing counsel, was more interested in promoting secularism than individual freedom.¹⁷⁶ Bryan worried that the public school teaching of Darwinism—with its emphasis on the argument that humans were products of a random, survival-of-the-fittest evolutionary process, would fuel

“militarism, imperialism [and] the exploitation of labor eugenics.”¹⁷⁷

In 1925, the Tennessee Legislature became the first state in the Nation to enact a law against the teaching of evolution in the public schools. Not only was Darwinism banned, but all teaching concerned with human evolution as well and criminal sanctions were imposed for violations. Originally initiated by the ACLU as a means of invalidating the state’s anti-evolution statute as a violation of the First Amendment, Bryan and Darrow elevated their legal arguments to issues of high drama and emotion: religion and morality. In the end, Scopes lost and was found guilty by a jury and the court imposed a fine of \$100.00. On appeal, the Supreme Court of Tennessee went back to the original legal issue—that is, whether the anti-evolution statute was inconsistent with the state constitution’s religion clause which forbade preferences being given, by law, “to any religious establishment or mode of worship.” With but one dissent, the court held that the challenged legislation was constitutional. Yet, on a technicality, Scope’s conviction was reversed. Since, under the Tennessee Constitution, any fine greater than \$50.00 could be assessed only by a jury, it was held that the trial judge had no jurisdiction to impose the \$100.00 fine.¹⁷⁸

The historians of the 1950’s and the commentators of the 1930’s saw the Scopes trial at two levels: both groups agreed that it was a defeat for fundamentalism, while the commentators of that period during which the trial occurred saw it as a “media spectacular.”¹⁷⁹

In the end, then, perhaps the Scopes trial can be viewed properly as “a step in the triumph of reason over revelation and science over superstition.”¹⁸⁰ Or, stated otherwise, the enduring importance of Scopes is that it embodied the quintessential “American struggle between individual liberty and majoritarian democracy, and cast it in the timeless debate over science and religion.”¹⁸¹ The Scopes controversy continues to persist even today.¹⁸² It is recast now as creation science (as opposed to creationism) versus evolution.¹⁸³

The Continuing Debate: Strategizing Against Evolution

It was not until 1968, and the case of *Epperson v. Arkansas*,¹⁸⁴ that the federal constitutionality of prohibiting the teaching of evolution in public schools was decided by the United States Supreme Court. Here, again, the ACLU joined in seeking a declaratory judgment against a forty year old anti-evolution statute which had never been used. With but one dissent, the Court held that the statute was void because it sought to establish a religion and thus violated the Establishment Clause.¹⁸⁵ “Religious purpose alone became the Court’s basis for striking the law.”¹⁸⁶ Stated simply, it was held that there could be no state prohibition against teaching a scientific theory or doctrine for reasons that would counter the fundamental principles of the First Amendment.

In 1987, in the case of *Edwards v. Aguillard*, the United States Supreme Court held that a creationism law in Louisiana forbidding the teaching of the theory of evolution in public elementary and secondary schools, unless accompanied by instruction in the theory of creation science, was invalid facially as violative of the

Establishment Clause of the 1st Amendment.¹⁸⁷ The purpose of the challenged legislation was to discredit evolution by counter balancing its teachings at every turn with the teaching of creationism—either of which would promote the beliefs of certain religious groups.¹⁸⁸

With the ultimate demise of the anti-evolution statutes through *Epperson*, opponents of the theory of evolution have two, possibly three, strategies in their present battle to eviscerate or bury the theory. First line attacks have centered on supporting attempts to exclude evolution from being taught in the classrooms altogether—asserting as such that the teaching of evolutionary theory promotes the religion of secular humanism.¹⁸⁹ Accordingly, its inclusion in public school science curricula violates the Establishment Clause of the U.S. Constitution. Courts have rejected this view generally—holding that the theory of evolution is scientific and, thus, not to be taken as a religious belief.¹⁹⁰

The second strategy has focused on efforts to either compel the teaching of creationism as another valid scientific theory on the origins of life or, alternatively, to discredit the validity as well as the importance of the theory of evolution in the sciences. This strategy has been advanced by efforts to legislate in the states Balanced Treatment Acts designed to require public schools to give balanced treatment to creation science with evolution science.¹⁹¹ This approach has also not been successful.¹⁹²

Another clever approach—and no doubt the third strategy—to advancing the creation science movement, has been seen more recently in 1999, with the actions of the Kansas State School Board in adopting a new statewide science curriculum which wipes out virtually all mention of evolution and related concepts such as natural selection, common ancestors and the origins of the universe.¹⁹³ While the science standards neither prohibited the teaching of creationism, they discouraged clearly the teaching of evolution. Even though these standards were but guidelines, thus allowing each school board within the state the freedom to decide whether to continue to teach evolution, the State School Board had the final authority to determine the content of standardized tests. Accordingly, it was decided—beginning with the 2000-2001 school year, that both the 7th and 10th grade state science examinations would not contain questions regarding the origin of life, the earth and the universe. The practical effect of this decision is that the teaching of evolution in the classroom is now discouraged, at best, and—at worst—eliminated totally.¹⁹⁴

In November, 2000, a new state board of education was elected in Kansas. It proceeded to reject the 1999 science standards and went on to adopt in February, 2001, new standards which identified evolution as one of the unifying concepts of science.¹⁹⁵ These standards direct students who have completed the twelfth grade of education to acquire an understanding of biological evolution and the origin and evolution of the earth and the universe. The statewide science examination will, furthermore, contain specific questions on evolution.¹⁹⁶ Automatically, every four years, the science standards will be reviewed.¹⁹⁷ As well, school board elections are conducted within that time frame. It will be interesting to observe whether history will repeat itself and the creationists try again to do administratively what they have

found difficult—legislatively and judicially—to achieve: namely, delete the theory of evolution from the public school curriculum.¹⁹⁸ Interestingly, while as seen, a volatile subject of considerable debate, the Catholic school system teaches—nonetheless—both the science of evolution together with the belief that the human soul is the result of divine design.¹⁹⁹

One overriding point remains clear: since the U.S. Supreme Court failed to address clearly in *Edwards v. Aguillard* the multiple relationships and interactions of religion, science, and secular humanism within the bounds of public school education, unending controversy will continue.²⁰⁰ Indeed, all of the Supreme Court's decisions since the Tennessee Supreme Court's decision in *Scopes v. State* have failed to slow the spread of creationism. Rather, they have encouraged fundamentalists, more and more, to abandon evolution-teaching public education for creation-affirming church affiliations or home schooling where their faith, and that of their children, can be nurtured and sustained.²⁰¹

New Outreaches and Challenges

Even with the “failures” of public education to accommodate fundamentalism in curricular offerings, with higher education, however, a most interesting occurrence is being recorded: that is, religion—as an academic subject—is no longer confined to divinity schools and Sunday pulpits. Today, it is probed, and its relevance examined, in undergraduate and graduate programs in sociology, political science, international relations, business, and medicine.²⁰² Rather surprisingly, this new-found student interest in the field of religion and the quest to make its tenets applicable to the contemporary problems of daily professional living is having the effect of reshaping the content and the direction of the whole of the social sciences.²⁰³ The extent to which explicit religious arguments should be introduced into public debate remains an open-ended issue however.²⁰⁴

In 2002, Ohio became the latest battleground for the introduction of the intelligent design theory into the state school science curriculum. Drawing upon the language of a Congressional Conference Report²⁰⁵ on the major federal education law enacted earlier in the year,²⁰⁶ Representatives John A. Boehner and Steve Chabot of Ohio urged the Ohio Board of Education to adapt the science curriculum in the state to consider, in addition to teaching biological evolution, the full range of other scientific views that exist on this topic. Opponents of this effort view it as nothing more than a wider campaign to mandate the teaching of intelligent-design theory into the nation's science classrooms.²⁰⁷

Citing a Zogby opinion poll taken in 2001 that found 71 percent of those surveyed supporting the idea of offering students “the scientific evidence against evolution,” the two congressmen argued that excluding this other evidence would be nothing less than “a censorship of opposing points of view.”²⁰⁸ Further support for the lawmakers proposition was offered from a proposed amendment to an amendment by Senator Rick Santorum to Senate Bill 1 for extending the Elementary and Secondary Education Act of 1965. The amendment passed June 13, 2001, on a 91 to 8 vote,²⁰⁹ and—while being considered “a sense of the

Senate”—never succeeded in becoming a part of an ultimate revision of the Act itself that was passed in January, 2002, as the No Child Left Behind Act of 2001.²¹⁰

Interpreting, Reconciling, or Stabilizing

In the May, 1959, Rede Lecture at The University of Cambridge, C. P. Snow articulated his thesis: that contemporary (post-war) society was composed of two competing and often clashing cultures: the (literary) intellectuals and the scientists.²¹¹ Since science was not a subject presented easily to the public through literature (*e.g.*, journals and magazines) the self—proclaimed intellectuals ignore the value and importance of the ideas and values science sought to promote. Thus, the scientific ethic remained largely invisible as an intellectual, moving activity.²¹²

In the second edition of *THE TWO CULTURES* published in 1963, Snow suggests the emergence of a new third culture which will close the communications gap between the literary intellectuals and the scientists and will, further, be recognized as new public intellectuals or synthesizers. As such, they will be interpreters of the ideas and values of the continuing scientific revolution.²¹³

Today, Snow's third culture has undergone a radical transformation—for literary intellectuals no longer communicate at any sustained level with scientists; rather, scientists communicate directly with the general public. In the past, the traditional intellectual media played what has been termed “a vertical game”—with journalists writing up and professors writing down.²¹⁴ In contemporary society, “third-culture thinkers tend to avoid the middleman and endeavor to express their deepest thoughts in a manner accessible to the intelligent reading public.”²¹⁵ Indeed, what in the past was seen as “science,” is now “public culture,”²¹⁶ for science *is* the news.²¹⁷ Yet, having the capacity to synthesize scientific knowledge remains an enormous problem for the average citizen.²¹⁸

Borrowing from Snow's ideas, perhaps religion could serve as a stabilizer or interpretative “third culture” between Law and Medical Science. Others would no doubt see this idea as but an aspirational goal arguing, as such, that religion is a destabilizing force since most of the tenets of main-line religious faiths are, as observed, still rooted in and tied to historical biblical precedents which, in turn, lack a contemporary “real-world” focus for application.

A democratic and political process tied more to television sound bites than intelligent and informed deliberations among its citizens is a process guaranteeing itself of lethargic inactivity if not stagnation. It is for the judiciary to fill the breach and continue its role as interpreters of the Common Law and when need be, architects of the new Age of Biotechnology. Ideally, when individual cases of profound disagreement arise over issues of medical science, courts and legislatures should remain passive and allow resolution of these disputes within each concerned family unit and, where possible, their church or community of faith.²¹⁹ Oftentimes, the at-risk family and its religious support groups are unable to cope with understanding the ramifications of ultimate decisions regarding medicine. “Meditating structures”²²⁰ can only go so far in discerning and promoting legal justice—or, the obligation to support the common good.²²¹ The common good is

shaped by the legislatures and the courts and—ultimately—it remains for an enlightened judiciary to interpret its course. It is regrettable, but a fact in contemporary society, that every complex moral issue is more often than not, transformed into a legal issue.²²² Since law and morality intersect in daily life, it is not surprising that the courts are called upon to arbitrate.²²³ Invariably, law supports some visions of how life should be lived within the community while, at the same time, undermining others.²²⁴

A Synergistic Partnership

Religion, and its denominational theologies, set normative standards for ethical conduct and, thus, serve as a construct for social decision making. Alternatively, as suggested, these norms and constructs can be seen properly as a third culture—interpreting, reconciling and stabilizing law and medical science. Yet, if the view is accepted that the “bedrock of moral order is religion,”²²⁵ it must follow that law and science not only build upon it but are linked irretrievably to it in all of their present policies and actions.

The alternative hypothesis suggests the synergistic forces of law, religion, and science combine in a dynamic partnership to form a communitarian alliance dedicated to providing a framework in which man can pursue the peace of ordered harmony which allows for a balanced happiness in his social, spiritual, and physical relationships.²²⁶ Within the alliance, the rank or equality of status depends largely upon the frame of reference taken for each problem presented

Historically, there can be no disputation of the first order significance of the moral and ethical theories and principles derived from religion. In contemporary society, however, law—as has been suggested—must assume the primary role of directing and stabilizing all courses of human affairs—fortified in interpretative analysis, to be sure, by ethical and moral principles. In public matters, however, if not a Jeffersonian “wall of separation” between matters of church and state, then at least a Madisonian “scrupulous neutrality” must be maintained if faithfulness to the original intent of the framers of the Constitution is to be respected.²²⁷

While Americans believe in “The Living Constitution” as a “morphing document” evolving from age to age according to majority wishes²²⁸—expressed and manifested ideally, as such, through a “deliberative” democratic process²²⁹ (sadly, not guided by informed judgment)—the central weakness to this theory of living constitutionalism is that there is no one guiding principle for it to follow.²³⁰ In contemporary issues of bio-medicine, there is little “rational” deliberation by the populace. This condition, in turn, forces the judiciary—as interpreters of the laws and the social conscious—to define and inevitably test current medico-legal issues by the text and legislative history of the Constitution thereby providing, ideally, both predictably and stability to both an evolving and highly contentious area of the law.²³¹

Compatibilities and Incompatibilities

As seen in Chapter 1, the duality of man or the recognition of his spiritual and

material sides, has not been the grounds upon which contemporary science has advanced. Rather than challenge and attack this concept, science has merely set it aside and defined as non-scientific all inquiries into spiritual matters.²³² As the scientific dialogue has assumed increasingly that man is no more than matter and energy, dualism has nearly disappeared.²³³ Yet, throughout modern science, there remains a continuing search for an intersection point between values and empiricism.²³⁴

Perhaps the noblest and most practical point of balance between religion and science should be love, justice or humaneness—for its achievement by man promotes the essence of faith by instilling meaning and value to the life-experience and also enhances one's overall physical well being. Stated otherwise, the fulcrum of this balancing test between religion and science is the achievement of a point of equilibrium that promotes policies and shapes direct actions that minimize suffering and improve the social well-being of all men.²³⁵

There is a common misperception that religion needs only faith in order to sustain itself. The correct understanding is that "religion requires belief and belief is built on knowledge."²³⁶ Within differing contexts, both science and theology, then, seek truth and wise judgment.²³⁷

Toward Reconciliation

Not every scientist must become a believer nor every believer embrace science totally in order for there to be a reconciliation between science and faith. While viewed from vastly different perspectives, the biblical and the scientific description of the creation of the universe and the beginning of life or earth present identical realities. Once these perspectives are identified, they can coexist rather comfortably. If an acceptance of the need to read and understand the Bible on the Bible's terms—complete with subtleties of interpretation—is understood and science then admits it is powerless to either confirm or deny a purpose for life, a true reconciliation between science and faith will be achieved.²³⁸

Scientific investigation is in fact very similar to religious experience. In science, the defining event is when that which was unknown becomes visible and even clear. In spirituality, experiences with meaning, purpose, and teleology are foundational. Thus, semantic differences remain small between scientific insight and what is termed—in the language of religion—revelation.²³⁹

A Unified Goal and Response

The theologies of the world religions not only demand an answer but also prompt a response to the problem of suffering—for they assist in seeking an explanation to, or rationalization of, suffering. In one very real sense, then, the New Biology is considered properly as a theological response to the enigma of human suffering. The medical scientists and physicians endeavor to cure. Through therapeutics and investigation, the purpose of religion and medical science is the same: to minimize or ameliorate suffering.²⁴⁰

It remains ultimately for law to serve as a primary mechanism for effecting this duality of purpose through wise and humane legislation, administrative policy making, and judicial interpretations designed to assume both distributive and corrective justice in the delivery of health care and the advancement of medical science²⁴¹ which, in turn, promote the personal dignity, value and integrity of the human person.²⁴²

ENDNOTES

1. Declaration on the Elimination of All Forms of Intolerance and of Discrimination Based on Religion or Belief, GEN.A/RES/36/55, Jan. 18, 1982, 21 I.L.M. 205 (1982).
2. *Id.*
See RELIGIOUS HUMAN RIGHTS IN GLOBAL PERSPECTIVE (J. Witter, Jr., & J.D. van der Voyer eds. 1996), vols. 1, 2; R. FALK, RELIGION AND HUMANE GLOBAL GOVERNANCE (2001); Gunn, *The Complexity of Religion and The Definition of Religion in International Law*, 16 HARV. HUM. RTS. J. 189 (2003).
See also ENCYCLOPEDIA OF HUMAN RIGHTS at 55 (E. Lawson, compl. 2d ed. (1991)).
3. H.G. KOENIG, M.E. McCULLOUGH & D.B. LARSON, HANDBOOK OF RELIGION AND HEALTH 20 (2001).
Another source claims 19 distinct major religions, religious systems or quasi religions at the end of the 20th century. 1 WORLD CHRISTIAN ENCYCLOPEDIA 3—23 (D.B. Barrett, G.T. Kurian & T.M. Johnson eds., 2d ed. 2001).
4. HEALTH CARE AND SPIRITUALITY 68 (R.B. Gilbert ed. 2001).
5. Lester, *Oh, Gods!*, ATLANTIC MONTHLY, Feb. 2002, 37 at 38.
See also Barrett, *et al.*, *supra* note 3.
6. Lester, *id.* at 38.
7. *Id.* at 44.
Broken down, global Christianity figures reveal that there are 33,820 denominations/para denominations with 3,445,000 congregations/churches composed of 1,888 million affiliated Christians. Barrett, *et al.*, *supra* note 3 at 10.
8. Lester, *supra* note 5 at 39; Keddie, *Secularism and Its Discontents*, 132 DAEDALUS 14 (2003).
9. *Id.* at 39.
A survey released by the Pew Global Attitudes Project of the Pew Research Center found that six in ten Americans describe religion as being “very” important in their lives. Without defining clearly what religion is — as opposed to spirituality — the survey found that while secularism is prevalent widely throughout Europe, Japan, and the former Soviet bloc, America is placed within a class with many developing and Islamic nations where there is often a strong link between religion and the state. James, *Religion Plays a Vital Role for 6 in 10 Americans, Survey Reveals* INT’L HERALD TRIB., Dec. 21-22, 2002, at 5; Broadway, *Putting Spirituality to The Test: Research Explorers Connection to Community, Coping Ability*, WASH. POST, Nov. 1, 2003, at B9 (concluding that one’s spiritual perspective is central to understanding the extent to which patient’s cope with illness and treatment).
See generally Callahan, *Religion and The Secularization of Bioethics*, 20 HASTINGS CENTER RPT. 2 (Sp. Supp., July-Aug. 1990).
10. Lester, *supra* note 5 at 42.
11. *Id.*
12. *Id.* (quoting Professor Rodney Stark, ACTS OF FAITH (2000)).
See A. J. REICHLEY, FAITH IN POLITICS 1 (2002) (noting that about 85% of Americans identify with some religious faith).
13. F.M. FROHOCK, HEALING POWERS 45, 46 (1992).
14. *Id.*
15. *Id.*
16. G.E. TINKER, MEDICINE AND MIRACLE: A COMPARISON OF TWO HEALING TYPES IN THE LATE HELLENIC WORLD 1 (1983).
17. *Id.* at 2.
18. *Id.* at 10.
19. *Id.* at 73, 74, 122.
20. KOENIG *et al.*, *supra* note 3 at 22.
21. *Id.*
22. *Id.* at 33.
23. *Id.* at 34.
24. *Id.* at 35.
25. *Id.*

26. *Id.*
27. D.A. MATTHEWS, THE FAITH 17 (1998).
28. *Supra* note 20 at 40.
See generally W.F. BYNUM, SCIENCE AND THE PRACTICE OF MEDICINE IN THE NINETEENTH CENTURY (1994).
29. *Supra* note 20 at 591.
 A complete historical timeline of religion, science and medicine interacting from 2,000,000 B.C.—2,000 A.D. is found at p's 24—49 of the KOENIG *et al.*, book, *supra* note 20.
30. *Id.* at 591.
31. Myers & Benson, *Psychological Factors in Healing: A New Perspective on an Old Debate*, 18 BEHAVIORAL MED. 1, 8 (1992).
32. KOENIG *et al.*, *supra* note 3 at ch. 4.
33. *Supra* note 31 at 9.
34. *Id.*
See MATTHEWS, *supra* note 27 at 39 *passim*.
See also Kass, Friedman *et al.*, *Health Outcomes and a New Index of Spirituality*, 30 J. SCIENTIFIC STUD. REL. 203 (1991); Stuart, Deckro *et al.*, *Spirituality in Health and Healing*, 3 HOLISTIC NURS. PRACT. 35 (1989); Lehmann & Benson, *Nonpharmacologic Treatment of Hypertension*, 4 GEN. HOSP. PSYCHIATRY 27 (1982).
35. KOENIG *et al.*, *supra* note 3 at 99, 193.
See D.A. MATTHEWS, THE FAITH FACTOR 23 *passim* (1998); King *et al.*, *Beliefs and Attitudes of Hospital Inpatients About Faith Healing and Prayer*, 39 J. FAM. PRAC. 349 (1994).
36. KOENIG *et al.*, *supra* note 3 at 100.
See H. BENSON, *infra* note 48 at 179, 180 (observing fellowship within religious communities is restorative and may well trigger a “multifactorial sequence of biological processes leading to better health”).
37. KOENIG *et al.*, *id.* at 394.
See Oman & Reed, *Religion and Mortality Among the Community-Dwelling Elderly*, 88 AM. J. PUB. HEALTH 1469 (1998).
38. KOENIG *et al.*, *id.* at ch. 25.
See Strawbridge, Cohen *et al.*, *Frequent Attendance at Religion Services and Morality over 28 Years*, 87 AM. J. PUB. HEALTH 957 (1997).
39. *Id.* at 440.
But see Sloan & Bagiella, *Claims About Religious Involvement and Health Outcomes*, 24 ANNALS BEHAV. MED. 14 (2002) (disputing the validity of a relationship between religious involvement and health maintenance). This Winter, 2002, issue of the ANNALS is a symposium dealing—in a balanced manner—with Spirituality, Religiousness, and Health.
See Koenig, Cohen *et al.*, *Attendance at Religious Services, Interleukin-6, and Other Biological Parameters of Immune Function in Older Adults*, 27 INT'L J. PSYCHIATRY 233 (1997).
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See generally CHRISTIAN PERSPECTIVES ON LEGAL THOUGHT (M. W. McConnell, R.F. Cochran, Jr., & A.C. Carmella eds. 2001).
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42. M.E. O'BRIEN, SPIRITUALITY IN NURSING 151 (1999).
See C.N. SHEALY, SACRED HEALING: THE CURING POWER OF ENERGY AND SPIRITUALITY chs. 6, 7 (1999); Praill, *Approaches to Spiritual Care*, 91 NUR. TIMES 55 (1995).
See generally Schiller & Levin, *Is There a Religious Factor in Health Care Utilization?: A Review*, 27 SOC. SCI. & MED. 1369 (1988).
43. *Supra* note 41 at 41, 42.
See also E.D. PELLEGRINO, HELPING AND HEALING: RELIGIOUS COMMITMENT IN HEALTH CARE (1997).
44. HEALTH CARE AND SPIRITUALITY (R. B. Gilbert ed. 2001) at 38, 48.
45. *Id.* at 38.

46. O'BRIEN, *supra* note 42 at 61, 62.
See Thompson, *Nurturing Hope: A Vital Ingredient in Nursing*, 11 J. CHRISTIAN NUR. 11 (1994).
 Waldfogel, *Spirituality in Medicine* in 24 PRIMARY CARE: CLINICS IN OFFICE PRACTICE at 963 (J. L. Randall & J. S. Lazar eds. 1997).
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See also SHEALY, *supra* note 42 at ch. 8; N. COUSINS, HEAD FIRST: THE BIOLOGY OF HOPE (1988).
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See Ross, *Spiritual Aspects of Nursing*, 19 J. ADV. NUR. 439 (1994); Lebacqz, *Faith Dimensions in Medical Practice* in 13 PRIMARY CARE: CLINICS IN OFFICE PRACTICE at 263 (M. S. Victoroff ed. 1986).
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See INTEGRATING SPIRITUALITY INTO TREATMENT (W.R. Miller ed. 1999).
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50. S. GOLDBERG, SEDUCED BY SCIENCE 9, 41 (1999).
See also Cohen, *Prayer as Therapy*, 30 HASTINGS CENTER RPT. 40 (May-June, 2000); Wallis, *Faith and Healing: Can Prayer, Faith, and Spirituality Really Improve Your Physical Health? A Growing and Surprising Body of Scientific Evidence Says They Can*, TIME Mag., June 24, 1996, at 58; Kalb, *Faith and Healing*, NEWSWEEK, Nov. 10, 2003, at 44.
51. A. R. CHAPMAN, UNPRECEDENTED CHOICES: RELIGIOUS ETHICS AT THE FRONTIERS OF GENETIC SCIENCE 208 (1999).
52. A. PEACOCKE, GOD AND THE NEW BIOLOGY 85, 86 (1986).
53. *Id.* at 112, 113.
54. *See* J.B. MILLER & K.E. McCALL, THE CHURCH AND CONTEMPORARY COSMOLOGY (1990).
 The problem of theodicy—or the relationship between faith in a transcendent and loving God and the coexistence of human suffering—defies a full rational explanation. Morgan, *Theology, Medicine and Health* in COMPANION ENCYCLOPEDIA OF THEOLOGY at 822 (P. Byrne & L. Houlden eds. 1995).
55. *Supra* note 51 at 3, 4.
56. R. POLLOCK, THE FAITH OF BIOLOGY AND THE BIOLOGY OF FAITH 48 (2000).
57. B. CLARK, & B.R. CLARK, THE PHILOSOPHY OF RELIGION 170 (1998); H. J. BERMAN, THE INTERACTION OF LAW AND RELIGION 95 (1974).
58. R. TRIGG, RATIONALITY AND RELIGION: DOES FAITH NEED REASON 194 (1998) (observing, further, that without an ability to reason one could never be prepared for a revealed God at 214).
59. E. D. PELLEGRINO & D. C. THOMASMA, *supra* note 47 at 112.
60. *See generally* J.B. ARDEN, SCIENCE, THEOLOGY AND CONSCIOUSNESS (1998).
 Rarely, will theological ethics yield precise answers to medico-moral dilemmas. Instead, a direction or point of reference will be indicated which in turn allows a probe to be made beneath the surface of answers of human life issues that come too easily. Morgan, *supra* note 54 at 839.
61. Rahner, *The Problem of Genetic Manipulation* in K. RAHNER, 9 THEOLOGICAL INVESTIGATIONS 225 (G. Harrison trans. 1972).
See GENETIC ETHICS: DO THE ENDS JUSTIFY THE GENES? ch. 19 (J.F. Kilner, R.D. Dentz & F.E. Young eds. 1997).
62. J.R. NELSON, ON THE NEW FRONTIERS OF GENETICS AND RELIGION 160, 239 (1994).
See Schaeffer, *Revolution in Biology Drives Revolution in Theology, Ethics and The Law*, NAT'L CATH. RPTR., Oct. 22, 1999, at 15.
63. P.F. CAMENISCH, RELIGIOUS METHODS AND RESOURCES IN BIOETHICS at 266, 274 (1994).

64. G. SCHROEDER, *THE SCIENCE OF GOD* at 10, 11 (1997).
See generally A.N. WILSON, *GOD'S FUNERAL* (1999).
65. K. WILBER, *THE MARRIAGE OF SCIENCE AND SOUL: INTEGRATING SCIENCE AND RELIGION* 14 (1998).
See generally CATHOLIC PERSPECTIVES ON MEDICAL MORALS (E.D. Pellegrino, J.P. Langon & J.C. Harvey eds. 1989).
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67. *Id.*
See CARING AND CURING: HEALTH AND MEDICINE IN THE WESTERN RELIGIOUS TRADITIONS (R.L. Numbers & D.W. Amundsen eds. 1986) (surveying the faith traditions of twenty religions); E.D. PELLEGRINO & D.C. THOMASMA, *HELPING AND HEALING* ch. 3 (1997).
68. *See* THE CHURCH AND CONTEMPORARY COSMOLOGY (J.B. Miller & K.E. McCall eds. 1990).
69. *Supra* note 66.
See generally J.I. LAVASTIDA, *HEALTH CARE AND THE COMMON GOOD: A CATHOLIC THEORY OF JUSTICE* (2000).
70. CHAPMAN, *supra* note 51 at 19.
71. *Id.*
72. *Id.*
73. *Id.* at 24, 25.
74. *Id.* at 25.
75. *Id.* at 31, 32.
76. *Id.* at 32.
 Various reports, policy statements and studies have been commissioned by eight major North American Protestant denominations (including the Methodist, Episcopal, Lutheran, Presbyterian and Baptist churches) which address the religious and ethical ramifications of the science of genetics. *Id.* at 34 *passim*.
77. *See* K.D. O'ROURKE & P. BOYLE, *MEDICAL ETHICS: SOURCES FOR CATHOLIC TEACHING* (2d. ed. 1993).
78. CHAPMAN, *supra* note 70 at 40.
79. *Id.* at 37.
See generally GOD AND THE EMBRYO: RELIGIOUS VOICES ON STEM CELLS AND CLONING (B. Waters & R. Cole-Turner eds. 2003) (various denominational positions—by Methodists, Baptists, Presbyterians—are set out in the appendices).
80. R.A. McCORMICK, *THE CRITICAL CALLING: REFLECTIONS ON MORAL DILEMMAS SINCE VATICAN II* at 267 (1989).
 Alterations of infrahuman life—if judged to be advantageous to a fuller human life—may be allowable under the Roman Catholic faith. Kimura, *Religious Aspects of Genetic Information* in HUMAN GENETIC INFORMATION: SCIENCE, LAW AND ETHICS at 157 *passim* (CIBA Foundation ed. 1990). *See also* GENETIC ENGINEERING (A.S. Moraczewski ed. 1983).
81. *See* Delaney, *Pope Condemns Cloning of Human Embryos & Organ Transplant Technology*, WASH. POST, Aug. 30, 2000, at A18. *See generally* Russell, Stoeger & Coyne *infra* note 155.
 Further clarification of the Vatican's position on human cloning came in August, 2003, by the President of the Pontifical Council for the Family when he stated such endeavors should be banned internationally as "crimes against the human persons" because they are against the very right to human life and true individuality. Wooden, *Human Cloning Would Be A Crime Against People*, CATHOLIC STANDARD, Aug. 14, 2003, at 3.
82. *Supra* note 51 at 45.
83. *Id.* at 44-46.
84. Smith, *Creation, Preservation and All The Blessings*, 81 ANGLICAN THEOL. REV. 567 (2001).
85. *Id.* at 568, 569.
See generally I. BARBOUR, *RELIGION IN AN AGE OF SCIENCE* (1990).
86. Stumpf, *Theology and Jurisprudence*, 10 VAND. L. REV. 885, 886 (1957).
87. Hall, *Religion, Law and Ethics—A Call for Dialogue*, 29 HASTINGS L.J. 1257, 1267 (1978).

88. St. Augustine, *THE CITY OF GOD*, book xix, c.1 at ps. 112-14 (J. Healey trans. 1931). One finds happiness—or attains the peace of a rational soul (defined, in turn, as an ordered harmony of knowing and doing)—only within society itself. The happy life, then, is social and is guided by love which is seen as service and acknowledged as the universal good. Ernest Barker makes these points eloquently in his introduction to this translation at xxv—xxvii, xxxiv, xliii.
See Marcin, *Justice and Love*, 33 CATH. U. L. REV. 363 (1984).
89. Hall *supra* note 87 at 1270.
90. *Id.*
See generally M. RHONHEIMER, *NATURAL LAW AND PRACTICAL REASON: A THOMIST VIEW OF MORAL AUTONOMY* (G. Malsbary trans. 2000).
91. H.J. BERMAN, *THE INTERACTION OF LAW AND RELIGION* 83 (1974).
92. *Id.* at 11. *See generally* Newton, ch. 3 *Divine Sanction and Legal Authority: Religion and The Infrastructure of Law*, RELIGION, MORALITY, AND THE LAW: NOMOS XX, (J.J. Pennock & J.W. Chapman eds. 1988).
93. BERMAN, *id.* at 25.
94. *Id.* at 79.
95. H.J. BERMAN, *FAITH AND ORDER: THE RECONCILIATION OF LAW AND RELIGION* 19 (1993).
96. *Id.* at 391.
97. *See* J. FLETCHER, *MEDICINE AND MORALS* (1954).
See also Smith, *Stop in the Name of Law!*, 19 ANGLO-AMERICAN L. REV. 55 (1990).
98. *See generally* Smith, *Setting Limits: Medical Technology and The Law*, 23 SYDNEY L. REV. 283 (2001).
99. M. NOVAK, *ON TWO WINGS: HUMBLE FAITH AND COMMON SENSE AT THE AMERICAN FOUNDING* 27 (2002).
See also REICHLEY, *supra* note 12 at ch. 3.
100. NOVAK, *id.* at 28-29.
101. *Id.* at 30.
102. *Id.* at 30, 33.
103. *Id.* at 70.
104. *Id.* at 77.
105. FROHOCK, *supra* note 13 at 140 (1992).
See generally Greenawalt, *Diverse Perspectives and The Religion Clauses: An Examination of Justifications and Qualifying Beliefs*, 74 NOTRE DAME L. REV. 1433 (1999).
106. *Id.*
See ARTICLES OF FAITH, ARTICLES OF PEACE: THE RELIGIOUS LIBERTY CLAUSES AND THE AMERICAN PHILOSOPHY (J. Hunter & O. Guinness eds. 1990).
107. *Supra* note 105.
See generally T. CURRY, *THE FIRST FREEDOMS: CHURCH AND STATE IN AMERICA TO THE PASSAGE OF THE FIRST AMENDMENT* (1986); H. HOVENKAMP, *SCIENCE AND RELIGION IN AMERICA 1800-1860* (1978).
108. *Id.*
See Symposium, Religiously Based Morality: Its Proper Place in American Law and Public Policy, 36 WAKE FOREST L. REV. 217 at 401 *passim* (2001).
See also Witte, *The Theology and Politics of The First Amendment Religion Clauses: A Bicentennial Essay*, 40 EMORY L. J. 489, 491-99 (1990) (presenting an excellent study of the bifurcated heritage of church-state theories and laws). He terms the early historical conflict as one between strict separatists and non-preferential accommodationists. *Id.* at 490-91.
109. Novak, *Law: Religious or Secular?*, 86 VA. L. REV. 569, 570 (2000).
See Greenawalt, *Religion as a Concept in Constitutional Law*, 72 CAL. L. REV. 753 (1984). *See generally*, A. J. REICHLEY, *supra* note 12; P. KURLAND, *RELIGION AND THE LAW* (1962).
110. Novak, *id.* at 371.
111. *See* C. RICE, *BEYOND ABORTION: THE THEORY AND PRACTICE OF THE SECULAR STATE* 135 (1979).

112. Reagan, *Politics and Morality are Inseparable*, 1 NOTRE DAME J. ETHICS & PUB. POL'Y 7 (1984).
113. Walzer, *Drawing the Line: Religion and Politics*, 1999 UTAH L. REV. 619.
See generally R. K. GREENAWALT, RELIGIOUS CONVICTIONS AND POLITICAL CHOICE (1988).
114. *Id.* at 623.
115. S. L. CARTER, THE CULTURE OF DISBELIEF: HOW AMERICAN LAW AND POLITICS TRIVIALIZE RELIGIOUS DEVOTION 9 (1993).
116. *Supra* note 113 at 624.
117. *Id.* at 630.
118. *Id.*
119. M. L. PERRY, LOVE AND POWER: THE ROLE OF RELIGION IN AMERICAN POLITICS 77 (1991).
See also CHAPMAN, *supra* note 51 at 17.
120. Perry, *id.* at 78.
See J.D. BLEICH, BIOETHICAL DILEMMAS: A JEWISH PERSPECTIVE (1998); F. ROSNER, BIOMEDICAL ETHICS AND JEWISH LAW (2001); V. RISPLER-CHAIM, ISLAMIC MEDICAL ETHICS IN THE TWENTIETH CENTURY (1993).
121. Perry, *id.* at 124, 125.
122. Novak, *supra* note 109 at 575, 576.
123. *Id.* at 576.
124. *Id.* at 576, 577.
125. *Id.* at 580.
See also J. W. GOUCH, THE SOCIAL CONTRACT: A CRITICAL STUDY OF ITS DEVELOPMENT (2d ed. 1957).
126. Novak, *supra* note 109 at 593.
127. *Id.* at 572.
128. *Id.*
129. *Id.* at 573.
See generally Schlag, *Law as the Continuation of God by Other Means*, 85 CAL. L. REV. 427 (1997).
130. Novak, *supra* note 109 at 574.
131. *Id.* at 575.
132. *Id.* at 595, 596.
133. *Id.* at 596.
See R. DWORKIN, LAW'S EMPIRE 407 (1986).
134. E.J. LARSON, SUMMER FOR THE GODS 14 (1997).
135. *Id.* at 16. The theory of evolution focuses on changes in life once begun rather than the origins of life.
136. *Id.* at 17.
See generally M.R. ROSE, DARWIN'S SPECTRE: EVOLUTIONARY BIOLOGY IN THE MODERN WORLD, chs. 7, 11 (1998).
137. CHAPMAN, *supra* note 51 at 169.
See also P. F. FORSTHOEFEL, RELIGIOUS FAITH MEETS SCIENCE ch. 13 (1994).
138. C.G. HUNTER, DARWIN'S GOD 145, 159 (2001).
139. *Id.* at 160.
140. *Id.* at 159.
141. S. J. GOULD, THE STRUCTURE OF EVOLUTIONARY THEORY chs. 2-7 (2002).
See generally J. B. CONANT, ON UNDERSTANDING SCIENCE: AN HISTORICAL APPROACH (1947).
142. *Id.* at 172 (citing P. HEFNER, THE HUMAN FACTOR: EVOLUTION, CULTURE AND RELIGION at 37 (1993)).
143. *Id.* at 173 (citing P. HEFNER, *id.* at 156).
144. CHAPMAN, *supra* note 51 at 175.

145. *Id.* at 178.
146. *Id.*
147. *Id.*
148. *Id.*
149. See J.M. GUSTAFSON, INTERSECTIONS: SCIENCE, THEOLOGY AND ETHICS (1996).
CHAPMAN, *supra* note 51 at 199—204.
150. CHAPMAN, *supra* note 51 at 15 (relying upon the philosophy of Daniel Callahan).
151. See generally R.L. SHINN, THE NEW GENETICS: CHALLENGES FOR SCIENCE, FAITH AND POLITICS (1996).
152. B.J. FICARA, EVOLUTION: FACT, FICTION OR FANCY ch. 21 (2001).
153. Tagliabue, *Pope Bolsters Church: Support for Scientific View of Evolution*, N.Y. TIMES, Oct. 25, 1996, at 1. See Russell, Stoeger & Coyne *infra* note 155.
154. *Id.* at A12.
155. *Supra* note 152 at 124.
See N. RUSE, THE RELATIONSHIP BETWEEN SCIENCE AND RELIGION (2001).
See also JOHN PAUL II, ON SCIENCE AND RELIGION (R.J. Russell, W.R. Stoeger & G.V. Coyne eds. 1990).
156. CHAPMAN, *supra* note 51 at 235.
157. P.E. JOHNSON, DARWIN ON TRIAL (1991).
158. See INTELLIGENT DESIGN CREATIONISM AND ITS CRITICS: PHILOSOPHICAL, THEOLOGICAL, AND SCIENTIFIC PERSPECTIVES (R.T. Pennock ed. 2001); Greenawalt, *Establishing Religious Ideas: Evolution, Creationism, and Intelligent Design*, 17 NOTRE DAME, J. L. ETHICS & PUB. POL'Y 321 (2003).
159. B.J. ALTERS & S. M. ALTERS, DEFENDING EVOLUTION IN THE CLASSROOM: A GUIDE TO THE CREATION/EVOLUTION CONTROVERSY (2001).
160. McMurtrie, *Darwinism Under Attack*, CHRON. HIGHER ED., Dec. 21, 2001, at A8.
See generally Beckwith, *Science and Religion Twenty Years After McLean v. Arkansas: Evolution, Public Education, and The New Challenge of Intelligent Design*, 26 HARV. J. L. & PUB. POL'Y 455 (2003).
161. Pennock, *supra* note 158.
162. J.C. WHITCOMB & H.M. MORRIS, THE GENESIS FLOOD (1965).
See D. NELKIN, THE CREATION CONTROVERSY: SCIENCE OR SCRIPTURE IN THE SCHOOLS (1982).
163. Villarreal, *God and Darwin in the Classroom* 64 CHIC.-KENT L. REV. 335, 345 (1988).
164. A. HOOVER, THE CASE FOR TEACHING CREATION (1981).
165. Villarreal, *supra* note 163 at 350.
166. *Id.* at 351.
See H. ROSS, THE GENESIS QUESTION: SCIENTIFIC ADVANCES AND THE ACCURACY OF GENESIS ch. 11 (1998).
See also R. COLE-TURNER, THE NEW GENESIS: THEOLOGY AND THE GENETIC REVOLUTION (1993).
167. GOLDBERG, *supra* note 50 at 33 (1999).
168. *Id.* at 35, 36.
169. *Id.* at 36.
170. *Id.* at 37.
171. *Id.* at 25.
See R.L. NUMBERS, THE CREATIONISTS (1992).
172. *Id.* at 38, 39.
173. *Id.* at 39.
See R.A. EVE & F.B. HARROLD, THE CREATIONIST MOVEMENT IN MODERN AMERICA (1991).
See generally FICARA, *supra* note 152 at ch. 18.
174. *Scopes v. State*, 154 Tenn. 105, 289 S.W. 363 (1927).

175. Merritt, *From the Scopes Trial to the Human Genome Project: Where is Biology Taking the Law?*, 67 U. CIN. L. REV. 365, 368 (1999).
176. Larson, *The Scopes Trial and The Evolving Concept of Freedom*, 85 VA. L. REV. 503, 519 (1999).
177. *Id.* at 508.
178. *Id.* at 512.
179. LARSON, *supra* note 134 at 239 (1997).
See generally E.A. WHITE, SCIENCE AND RELIGION IN AMERICAN THOUGHT: THE IMPACT OF NATURALISM (1952).
180. LARSON, *supra* note 134 at 227.
181. *Id.* at 265.
See generally J.H. BROOKE, SCIENCE AND RELIGION: SOME HISTORICAL PERSPECTIVES (1991).
182. *See e.g.*, Christensen, *Teachers Fight for Darwin's Place in U.S. Classrooms*, N. Y. TIMES, Nov. 24, 1998, at F3.
183. Villarreal, *supra* note 163 at 345; Sheid, *Evolution and Creationism in The Public Schools*, 9 J. CONTEMP. L. 81, 85-87 (1983).
184. 393 U.S. 97 (1968).
185. Larson, *supra* note 176 at 524.
186. *Id.* at 525.
187. 482 U.S. 578 (1987).
188. For an analysis of whether creation science is really science or merely the religious doctrine of divine creation repackaged in jargon, together with arguments for creationism from the Establishment Clause and the Free Exercise Clause of the Constitution, *see* Sheid, *supra* note 183 at 100 *passim*.
See also B. THOMPSON, THE SCIENTIFIC CASE FOR CREATION (1985).
189. Note, *Freedom of Religion and Science Instruction in Public Schools*, 87 YALE L. J. 515 (1978).
190. McGrath, *Redefining Science to Accommodate Religious Beliefs*, 45 N.Y. L. SCH. L. REV. 297, 303 (2001).
191. *Id.* at 303.
See ARK. CODE ANN. § 80-1663 (1981); 17 LA. REV. STAT. ANN. § 286 (1981); TENN. CODE ANN. § 49-2008 (1973).
192. McGrath, *supra* note 190 at 305-309.
See McLean v. Arkansas, 529 F. Supp. 1255 (E.D. Ark. 1982), often referred to as “Scopes II,” where state legislation mandating balanced treatment of creation science and evolution science in public school curricula was held unconstitutional thus thereby dealing a death blow to the teaching of creationism and, by implied reference, the teaching of Intelligent Design. Beckewith, *supra* note 160 at 458 *passim*.
193. Rosin, *Creationism Evolves: Kansas Board Targets Darwin*, WASH. POST, Aug. 8, 1999, at A1.
But see Witham, *49 States Mandate Teaching Evolution*, WASH. TIMES, April 8, 2000, at A3 (reporting, however, that Louisiana, Mississippi, Georgia, Alabama, Florida and Arkansas have very brief and restricted standards in regards to the teaching of evolution).
194. McGrath, *supra* note 190 at 319.
195. *Id.* at 328.
196. *Id.*
197. *Id.*
198. *See generally* NELKIN, *supra* note 162.
199. Applebome, *Pope Shows How Faith and Evolution Coexist*, N.Y. TIMES, Oct. 25, 1996, at A12.
200. Villarreal, *supra* note 163 at 374.
201. LARSON, *supra* note 176 at 261.
 The Religious Land Use and Institutionalized Persons Act of 2000 forbids the government from imposing or implementing a land use regulation that imposes a substantial burden on the religious exercise of a person or religious assembly. This protection also extends to schools run by religious groups. 42 U.S.C. § 2000cc (a)(1). *See* Adams, *The Constitutional Validity of The Religious Persons Act of 2000*, 70 FORDHAM L. REV. 2361 (2002).
See generally Greenawalt, *Hands Off! Civil Court Involvement in Conflicts Over Religious*

Property, 98 COLUM. L. REV. 1843 (1998).

202. Watanabe, *Faiths Social Reach: Academia Is Getting Religion*, WASH. POST, Nov. 9, 2000, at A18.

See Bryant, *Minding the Divine*, 64 IND. ALUMNI MAG. 32 (2002).

See also KOENIG *et al.*, *supra* note 3 at 58-59, 437-439 and 455-56 for the impact of religious/spiritual education within medical schools.

203. *Id.*

204. GOLDBERG, *supra* note 50 at 130.

See Tushnet, *The Limits of The Involvement of Religion in The Body Politic* in THE ROLE OF RELIGION IN THE MAKING OF PUBLIC POLICY, ch. 7 (J.E. Wood, Jr., & D. Davis eds. 1991).

205. Conf. Rpt. #107-334, No Child Left Behind Act of 2001, Dec. 12, 2001.

206. *No Child Left Behind Act of 2001*, (Pub. L. 107-110, 115 Stat. 1425), 20 U.S.C.A. § 6053 *et seq.* (2002).

207. Fletcher, *Teaching Alternative to Evolution Backed*, WASH. POST, May 29, 2002, at A3.

208. *Id.*

Interestingly, in a TIME/CNN poll taken in 2002, it was found that thirty-six percent of Americans believe, literally, that the Bible is the word of God and must be followed. Bower, Healy *et al.*, *Apocalypse Now*, TIME Mag., July 1, 2002, 43 at 44-45.

209. CONG. RECORD, June 13, 2001, at S 6417 *passim*.

The two sentences in the Santorium amendment state: "It is the sense of the Senate that (1) good science education should prepare students to distinguish the data or testable theories of science from philosophical or religious claims that are made in the name of science; and (2) where biological evolution is taught, the curriculum should help students to understand why this subject generates so much continuing controversy, and should prepare the students to be informed participants in public discussion regarding the subject." *Id.* at S 6148.

210. The House-Senate Conference Committee passed, in essence, in January, 2002, H.B. 1 (extending the Elementary and Secondary Education Act) without the Santorium amendment on the teaching of intelligent design theory. While the joint conference report includes the Santorium amendment, *supra* note 209, and serves as a rich source of legislative history, again, the actual legislation, does not include this amendment. *Supra* note 206.

211. C.P. SNOW, THE TWO CULTURES AND THE SCIENTIFIC REVOLUTION (1959).

212. *Id.*

But see Dulles, *Science and Theology*, in JOHN PAUL II ON SCIENCE AND RELIGION at 9, 10, *supra* note 155, (observing that the Pope disputes Snow's idea of a world divided into two cultures — humanistic and scientific — and, instead, urges interaction between religion and science; holding further that without this symbiotic relationship science becomes destructive and religion sterile).

213. C.P. SNOW, THE TWO CULTURES: AND A SECOND LOOK (1963).

See Sagan, *Describing the World As It Is, Not As It Would Be* in THE WRITING LIFE: WRITERS ON HOW THEY THINK AND WORK at 309-311 (M. Arana ed. 2003) (arguing for a concerted national effort to write clearly about science and popularize it through books so that every citizen can, in turn, understand it).

214. J. BROCKMAN, THE THIRD CULTURE at 18 (1995).

215. *Id.*

216. *Id.*

217. *Id.*; Sagan, *supra* note 213 at 311.

218. *Id.* at 28.

See Broad & Glanz, *Does Science Matter?*, N.Y. TIMES, Nov. 11, 2003, at F1 (commenting on the inability of most Americans to endorse scientific rationality).

219. D.W. KMIEC, CEASE-FIRE ON THE FAMILY: THE END OF THE CULTURE WAR 55 (1995).

220. P.L. BERGER, & R.J. NEUHAS, TO EMPOWER PEOPLE: FROM STATE TO CIVIL SOCIETY 148-49 (1996).

See generally G.P. SMITH, II, FAMILY VALUES AND THE NEW SOCIETY: DILEMMAS OF THE 21st CENTURY (1998).

See also G.P. Smith, II, *Monograph*, CHALLENGING FAMILY VALUES IN THE NEW

SOCIETY 18 (1996).

221. *Supra* note 219 at 97.

222. Kaveny, *Law, Morality and Common Ground*, AMERICA 7 (Dec. 9, 2000).

Indeed, Justice Antonin Scalia terms the fixation Americans have with the law as a “material obsession” A. SCALIA, *A MATTER OF INTERPRETATION: FEDERAL COURTS AND THE LAW* 3 (1997).

223. *Id.*

See generally Greenawalt, *The Use of Religious Convictions by Legislators and Judges*, 36 J. CHURCH & STATE 541 (1994).

224. *Id.*

225. Reagan, *supra* note 112.

See generally Jewett, *Science and The Promise of Democracy in America: Dilemmas and Possible Solutions*, 35 J. CHURCH & STATE 503 (1993).

226. *See* St. Augustine, *supra* note 88.

See generally Jewett, *Science and The Promise of Democracy in America*, 132 DAEDALUS 64 (2003); PELLEGRINO & THOMASMA, *supra* note 67 at ch. 5.

227. *See* Witte, *supra* note 108.

See generally GOLDBERG *supra* note 50 at ch. 8; R.K. GREENAWALT, *RELIGIOUS CONVICTIONS AND POLITICAL CHOICE* (1988).

But see Salmon, *Scalia Defends Public Expression of Faith*, WASH. POST, Jan. 13, 2003, at B1 (reporting on Justice Scalia’s concerns that too many court decisions have, in recent years, outlawed expressions of religious faith in public events).

228. SCALIA, *supra* note 222 at 46, 47.

229. C.R. SUNSTEIN, *THE PARTIAL CONSTITUTION* chs. 4-6 (1993).

230. SCALIA, *supra* note 222 at 44, 45.

231. *See id.*, *supra* note 222 at 44 *passim*.

See generally N. K. KOMESAR, *IMPERFECT ALTERNATIVES: CHOOSING INSTITUTIONS IN LAW, ECONOMICS AND PUBLIC POLICY* (2000).

232. GOLDBERG, *supra* note 50 at 18.

233. *Id.*

234. *Id.* at 135.

See generally GUSTAFSON, *supra* note 149.

235. Smith, *supra* note 97.

See also supra notes 87, 88.

236. SCHROEDER, *supra* note 64 at 18.

237. J. POLKINGHORNE, *BELIEF IN GOD IN AN AGE OF SCIENCE* 92 (1998).

See generally Carroll, *Why Religion Still Matters*, 132 DAEDALUS 9 (2003).

238. SCHROEDER, *supra* note 64 at 21, 141.

Science has already sought to close biblical ranks by recognizing there was not only a beginning to the universe but that life began on earth rapidly following water and not through millennia of random sets of reactions. *Id.* at 29.

See also A. PEACOCKE, *PATHS FROM SCIENCE TOWARD GOD*, chs. 1, 2 (2001).

239. *See* SCHROEDER, *supra* note 64; A. PEACOCKE, *THEOLOGY FOR A SCIENTIFIC AGE* (1993).

240. *HEALTH/MEDICINE AND THE FAITH TRADITIONS: AN INQUIRY INTO RELIGION AND MEDICINE* at 209, (M. E. Marty & K.L. Vaux eds. 1982).

241. Smith, *Distributive Justice and Health Care* 18 J. CONTEMP. HEALTH L. & POL’Y 421 (2002).

See generally G.P. SMITH, II, *GENETICS, ETHICS AND THE LAW*, 164-65 (1981).

242. NELSON, *supra* note 66 at 162.

See generally LAVASTIDA, *supra* note 69.

CHAPTER 3

PROCREATIONAL AUTONOMY OR THEOLOGICAL RESTRAINTS

Although the question of whether an ovum that has been fertilized is a baby or has the “moral certainty” of becoming one should not be viewed as a uniquely “Catholic” or religious question,¹ but rather as a question best answered by scientists,² the fact remains that ethicists and theologians have been grappling with this very question for quite some time.³ This question and its “answers,” together with their various permutations, structure the framework upon which today’s laws are interpreted and future ones enacted.

The official teaching of the Catholic Church is simple and direct: at *all* stages of life, from fertilization through adulthood, human life is to be accorded equal protection.⁴ Yet, prominent Church theologians continue to question this official magisterium by positing that, based on their studies of the advances of reproductive biology,⁵ “truly human life” cannot be recognized until two or three weeks after fertilization.⁶ Accepting this position would thus condone the right to perform tests on excess frozen embryos—undertaken as such to conduct genetic experiments—with the end result being the abortion (or death) of the embryo upon completion of the experiment. For some, this action is abhorrent; for others, it is recognized as a scientifically humane undertaking, grounded in utilitarianism, whose singular purpose is to explore the science of genetics with the hope of improving the genetic profile or genetic pool of mankind of ridding it of inheritable diseases.⁷

The issue of when individuality is established biologically and when the law should, accordingly, protect such individuals, was determined by the U.S. Supreme Court in *Roe v. Wade*,⁸ when it held, in essence, that the *full* protection of the laws could not be extended to a fetus until it was born.⁹ Interestingly, in March 1983, Mr. Chief Justice, Sir Harry Gibbs, of the Australian High Court, ruled “that a foetus has no right of its own until it is born and has a separate existence from its mother.”¹⁰ The common law tied the commencement of life to the time when an unborn first moved in the womb or, in other words, when it quickened.¹¹ Thus, it was only after the fetus quickened that its destruction could be classified as murder.¹²

The new reproductive biology, in all its complexity, promises untold opportunities for resolving heartbreaking problems of infertility and will expand clearly the meaning of the very term, *procreational autonomy*, as a reference to both unmarried and married women. Still, the new biology presents equally untold problems for the physician, lawyer, ethicist, theologian and, for that matter, the average person.¹³ This chapter considers, essentially, one major medical, legal, ethical and religious challenge of the new reproductive biology: *in vitro* fertilization

IVF). It will first survey the force of religion in shaping new attitudes and directions in this area and then summarize the ethical and philosophical concerns about the use and development of IVF procedures. Finally, the chapter probes the complications of complete utilization of IVF by unmarried women and its devastating effect on the sanctity of the family unit. It concludes that so long as procreation continues to remain the central driving force in a marital relationship and, indeed, in a progressive society, men will undertake new and sometimes controversial endeavors—with or without state or religious approval—in order to expand the period of fecundity and combat infertility. The state must begin to regulate the field now, rather than allow it to develop haphazardly.

Law and Religion: Partners or Antagonists?

That faith and religion have played a dynamic role in the political life of the United States is a given.¹⁴ Indeed, as seen in Chapter 2, some see religion as the very “bedrock of moral order.”¹⁵ Accordingly, under this view, politics and morality become inseparable.¹⁶ “And as morality’s foundation is religion, religion and politics are necessarily related. We need religion as a guide; we need it because we are imperfect.”¹⁷ Throughout history, religious, ethical and moral values have—to be sure—played a significant part in public policy debates.¹⁸ In fact, there is a growing acceptance that today’s democratic commitment to pluralism is not only nurtured, but sustained, as a consequence of this very insistence on recognizing the inviolability of individual conscience.¹⁹ To exclude societal values grounded in religious precepts from the public arena would pose a serious threat to the very principle of pluralism.²⁰

An obvious distinction must be made between moral and religious principles and the subsequent application of those principles in the public forum. Principles may be agreed upon, yet without sacrificing Roman Catholic integrity, disagreement may exist as to their political application.²¹ Indeed, *Dignitatis Humanae*, the Second Vatican Council’s Declaration on Religious Freedom, affirmed specifically the principle of religious freedom for Catholics and non-Catholics alike, and foreswore the use of coercion of any nature in forcing the exercise of a particular act of faith.²² From the time of Archbishop John Carroll to the present, the fundamental principle of the separation of church and state has always been accepted by the American hierarchy.²³ Yet, while all churches have tried to avoid political involvement with the state, they have refused steadfastly to limit their participation in the formation of national moral policies.²⁴

Basil Cardinal Hume, the late Archbishop of Westminster in England, observed that the crisis of modern society is to be found in “the abandonment of objective moral principles and the dogmatism of permissiveness.”²⁵ Perhaps this is but another way of observing that—as to Americans at least—emotions and prejudices commonly override reason.²⁶ There can be little doubt that the self-centered doctrine of “me” is important and all-consuming to many members of modern society. Perhaps in no greater area of concern than procreation do emotions rise to high and often uncontrolled levels for it appears that an inextricable concomitant

of procreation is abortion.

The depth of ferment and controversy within the Roman Catholic Church was displayed in early 1985, in the results of a private survey of Roman Catholic theologians and biblical scholars from three important Catholic organizations—the Catholic Theological Society, the Catholic Biblical Association and the College Theology Society. The survey revealed that 62 percent of those polled (almost 500 persons, including 325 priests and religious) refused to equate abortion with murder; 49 percent acknowledged that, on some occasions, abortion can be recognized as a moral choice; and 49 percent believed that there are times when an act of abortion should be left legally to the pregnant woman.²⁷ A 1993 Los Angeles Times poll of 2,000 American priests found 44 percent of those surveyed believe artificial birth control for married couples is seldom or never a sin, less than a third regarding divorce as a sin and a quarter not supporting prohibitions on homosexual behavior.²⁸

A poll conducted by the National Catholic Reporter in 1993 showed that American Catholics are loyal to the faith “as they perceive it” but are “increasingly at odds with institutional directives” yet—in spite of this situation—believe they still remain good Catholics.²⁹ More and more, the laity styles itself as “cafeteria Catholics”—picking and choosing, as such, those parts of the recognized Roman Catholic dogma to which they subscribe personally.³⁰ It is speculated that today this statistical profile is probably much the same.

Given this disparity of attitudes among the clergy and the ranking theologians, it is easy to understand how the laity are bewildered and empowered with a sense of independence as they consider the mysteries of IVF and how their fundamental attitudes and perceptions concerning abortion are being translated into similar problem areas of the new reproductive biology. Tragically, the percentage of Catholics supporting the legalization of abortion countenanced by *Roe v. Wade*³¹ has continued to rise since the decision in 1973.³²

The problem of abortion cannot truly be passed off as another government failure, for no administrative agency or department within government is *forcing* women to have abortions.³³ And, as observed, the statistics demonstrate clearly that Catholics support the “right” to abortion proportionately with the rest of the population and thus ignore the teaching of the Church that such acts are sinful.³⁴ What is evident in the efforts to criminalize abortion is perhaps little more than a plea to the government “to make criminal what we believe to be sinful because we ourselves cannot stop committing the sin.”³⁵ Accordingly, perhaps the better view here is to recognize that, “[t]he failure is not Caesar’s. This failure is our failure, the failure of the entire people of God.”³⁶

The goal set by the members of the pro-life movement has been nothing less than a total prohibition of abortion. Yet, the feasibility of obtaining this goal in a pluralistic society is doubtful, to say the least.³⁷ In answer to the question whether Catholics would choose to cooperate with other likeminded Americans of similar ethical persuasion in working for a more restrictive abortion law, one would hope that they would cooperate; for surely there would be no compromise of the fundamental belief in the sanctity of all human life.³⁸ “We should continue to hold

ourselves to a higher standard than we can persuade society at large to write into law.”³⁹

Additional Teachings from Rome

In 1987, the Vatican’s Congregation for The Doctrine of the Faith issued its “Instruction on Respect for Human Life in its Origins and on the Dignity of Procreation: Replies to Certain Questions of the Day” wherein, with full papal approval, it called on governments to enact laws against surrogate motherhood, embryo and sperm banks, donation of sperm or ovum between unmarried persons and embryo experimentation. Even with a husband’s sperm, a married woman may not utilize IVF or artificial insemination in order to become pregnant. The then United States Senator, Albert Gore, Jr., termed the Vatican’s position on effecting a total ban on technological conception to be “impractical and unwise.”⁴⁰

Veritas Splendor or, “The Splendor of Truth,” which was issued as a papal encyclical in 1992, declared certain acts, such as abortion, were simply morally wrong; and, furthermore, decisions to pursue such acts could not be justified morally according to standards of proportionality or balancing because the object of these actions make them intrinsically evil under all circumstances.⁴¹

The year 1992 also saw the issuance by Rome of a new universal catechism—the first in more than four centuries—designed to maintain the unity of faith and fidelity to Catholic doctrines. In particular, the document condemned artificial insemination by a donor as “gravely dishonest” and while categorizing homologous insemination “as less worthy of condemnation,” it nonetheless condemned such acts as “morally acceptable.” The catechism also declares, as to genetic engineering, that it “is immoral to produce human embryos destined to be exploited as though they were disposable biological matter.”⁴²

It remained for the pope’s most current encyclical, *Evangelium Vitae* or, “The Gospel of Life,” issued in 1995, to underscore with unmistakable clarity the Vatican’s position that the experimental use of human embryos or fetuses is a crime against their dignity. Addressing the three main areas of the life of the embryo in terms of medical research as IVF, abortion, and euthanasia, and linking them for the first time in such a document, the encyclical condemns embryo research and genetic manipulation which lead to fetal death. It does accept life-enhancing operations on a fetus within the womb, so long as the baby’s life is not threatened directly. IVF is permissible under certain very limited circumstances when, for example, the Gamete Interfallopian Transfer technique is following, allowing eggs, as such, to be mixed with a husband’s sperm and transferred immediately to the womb so that no embryo is grown outside the body.⁴³

To Be or Not to Be?

The issue of abortion, as it rises in the process of IVF, becomes topical during the laparoscopy (or procedure whereby eggs are removed from a woman’s reproductive tract). Following this procedure, eggs that may have been produced

in response to drug therapy for superovulation are stored for subsequent fertilization and implantation or experimentation.⁴⁴ If all the eggs are fertilized by the sperm from a married woman's husband and placed in her uterus, there is no problem. But when some eggs are stored for later efforts to impregnate—should the first attempt fail—or for the purpose of genetic experimentation, the contentious issue of abortion rises to the fore. Ethical complexities attend each of the many variations on the basic IVF theme. When, for example, artificial insemination is used to fertilize a married woman's egg with the sperm of a man other than her husband because her husband's sperm is defective, a serious ethical issue is posed.⁴⁵ The same is true when a third party surrogate carries an embryo to term for a genetic mother who is unable to do so for herself or when a single woman seeks to avail herself of IVF procedures.⁴⁶

By way of summarizing broadly, attention is now drawn to what might be termed as the “ethical morality” of IVF or the benefits and the harms of its use.⁴⁷ The most obvious benefit of the procedure is that it circumvents infertility and thereby allows those married couples with a strong desire to have children of their own to raise a family and to bring fulfillment and happiness to their marriage. Should it be determined conclusively that frozen embryos⁴⁸ can be used without damage to the resultant child, IVF will enable women who so wish to pursue careers and then have children by using embryos created some years earlier—thereby reducing the chance of producing a child with Down's syndrome. Outside the scope of family expansion, IVF could be used to provide embryos that could be used in scientific and medical experiments, not only in cancer research but also as a source of obtaining embryonic tissue used in the treatment of diseases such as diabetes and to harvest organs for transplantation.

There are several major objections to IVF. The first is tied to the concern that separating sex from procreation is inherently wrong. The practice of IVF followed by embryo transfer to the uterus of the married woman severs the very connection between sex and reproduction. The second major objection maintains that IVF is wrong morally because it involves the risk of harm to the individual who is subsequently brought into existence. The harm (although not documented factually) could be either in the nature of physical damage or abnormality resulting from the IVF process or from the subsequent process of transferring the embryo to the genetic mother's or birth mother's womb (in the case of a surrogate) or from psychological harm that might inure to the infant born of the total process.⁴⁹

The third objection holds that the use of IVF as a means to produce embryos to be used for experiments or as sources of tissue and organs—as opposed to being implanted—is wrong because it subjects the embryo to pain. This objection would have considerable merit where experiments were, in fact, to be conducted on substantially developed fetuses. When conducting such scientific interventions with embryos in the first several weeks of their development, such embryos probably do not experience pain, owing to the absence of a critical nervous system.⁵⁰

The fourth objection is that even though IVF may be viewed properly as neither wrong in itself nor wrong because of its effects upon those involved immediately, it may be wrong because of the “slippery slope” to which it is likely to lead. Thus,

IVF together with embryo transfer may lead to unimpeded use of surrogate mothers as substitutes for genetic mothers, the dissolution of the family unit by the use of the process by women who do not wish to marry or have sexual relations with a man, or even lead to the development of artificial wombs (ectogenesis) whereby women no longer need to have “contact” with their children until after they are, so to speak, born.⁵¹

Finally, as noted previously, the last objection to the IVF process is that it involves either the destruction or freezing of embryos not implanted.⁵² In the former situation, an action morally akin to abortion is committed, but in the case of freezing there may or may not be a comparable action, for such depends on whether it is possible to thaw the embryo successfully and on whether it is likely that the embryo will be implanted ultimately. The only apparent way to resolve these uncertainties would be to continue with limited experimentation in the field, using lower animal life forms.

Values in Conflict

Some would seek to abandon science and reason in favor of mysticism, hermeneutics and transcendental rapture. Sadly, they fail to comprehend that ignorance—not knowledge—assures misery and that the employment of science for inhumane reasons, not science in and of itself, threatens global survival. Reduced to its most fundamental level, then, what is seen is that the pivotal questions confronting the science of human experimentation are two in number: who will *control* its products, and what purposes will be employed to achieve this end.⁵³

The improvement of human well-being has been, for the most part, the single motivating force in the quest to ensure that all citizens, especially young children, will be safe from all forms of disease, not only genetic and congenital disorders, but uterine infections and a formidable host of other birth defects as well.⁵⁴ Since the 1930's, for example, human fetal tissue has been an invaluable research tool for molecular biologists as a source of human cell lines. In turn, these cell lines have been widely used in advanced research on viruses and in the preparation of vaccines (notably, the polio vaccine) against them. More recently, successful research has been conducted on fetal tissue transplants in living subjects for therapeutic purposes, and for developing treatments for Parkinson's disease, diabetes and radiation-induced anemia. What makes fetal tissue so particularly useful for transplantation is the fact that it not only grows rapidly and is very adaptable, but it also induces a limited immune response from the host.⁵⁵

The Federal Position

In 1978, the then Department of Health, Education and Welfare (HEW) (now the Department of Health and Human Services [HSS]) and its Ethics Advisory Board decided to study the complex ethical, legal, social and scientific issues raised by IVF procedures.⁵⁶ The final report of the department was ultimately “buried in the bureaucracy.”⁵⁷ Yet today, given the sometimes strident pro-life mood of a ocal

segment of society, there is pessimism that a strong positive movement will occur at the federal regulatory level.⁵⁸ Landmark hearings were conducted in August, 1984, on the issue of embryo transfers and the legal, ethical, and medical responses to such procedures.⁵⁹ Although no firm or conclusive steps were taken as a consequence of these hearings, they served to focus attention on the need for continuing dialogue in this area.

Because of a *de facto* moratorium set in 1975, no federally funded research was undertaken on IVF.⁶⁰ Even though the 1979 Report of the Ethics Advisory Board of HEW concluded that federal support of research on humans designed to establish the safety and the effectiveness of IVF procedures would be ethically permissible so long as certain conditions were met,⁶¹ the report was never accepted nor the moratorium ended⁶² until 1993 when President Clinton lifted the moratorium in January.⁶³ He determined subsequently that the National Institutes of Health (NIH) could not allocate any financial resources for the specific creation of human embryos for research purposes—this, in spite of an advisory committee's proposal to the contrary.⁶⁴ And, interestingly, the House Appropriations Committee voted in July, 1995, to ban the use of federal funds for human embryo research.⁶⁵ In the year following this 1993 presidential action, the federal government, through the National Institute of Neurological Disorders and States, approved the first grant for fetal tissue research in over fifteen years.⁶⁶

In making these two decisions, the president was guided by the work of two federal committees studying human embryo research. The first committee submitted its report on September 28, 1994, and concluded that fertilized human eggs could be used for federally financed research if the embryos were no older than fourteen days. The panel determined human embryos, in the every early stage of development, simply did not share the same moral status as infants and children.⁶⁷

This first committee report also concluded that research using human embryos should only be conducted when animal or unfertilized cells could *not* be used and, further, that the number of embryos used in the experiments be kept to a minimum. It was urged that a review panel be constituted to review requests for funding such embryo research. Payment of donors for embryos—as well as experimentation on embryos calling for the use of eggs harvested from aborted fetuses—were found unacceptable. The cloning of embryos for uterine implantation was also forbidden.

The committee maintained further researchers should be allowed to create embryos in test tubes solely for research purposes when no other method was available for obtaining results of “outstanding scientific and therapeutic value.”⁶⁸ Interestingly, over the years embryo research has gone on apace at private *in vitro* fertilization clinics, without government regulation, with the surplus embryos being deprived from infertility treatments that would have otherwise been discarded.⁶⁹

The second NIH advisory panel presented its report in December, 1994, and concurred with the previous committee's finding that human embryo research should go forward with federal funding. Under suggested committee guidelines, most of the research which should qualify for federal funding would involve surplus embryos created in test-tube pregnancy programs which have not been implanted

in wombs.⁷⁰ Strong congressional opposition was mounted by then Congressman Robert K. Dornan to curtail federal support of such research terming it nothing more than “bizarre experiments on living human embryos.”⁷¹

Among the guidelines proposed for embryo research by this committee—drawn, as such, from the work of the previous committee—were: an understanding that donors of eggs or sperm must give their informed consent to the research purpose; that most embryos should be obtained from IVF clinics which routinely create “spare” embryos; an allowance that eggs and embryos may be obtained for research from women undergoing pelvic surgery as well as dead women—again, if informed consent has been obtained; that parthenotes, or eggs “activated” without sperm through parthenogenesis, be used in research; and that any research plan hold the promise of conferring a significant scientific or clinical benefit.⁷²

It should be noted that the involvement of the federal government and HHS is structured presently by general regulations protecting human subjects which apply to any IVF research, development, or other related activities that might in the future be conducted by the department, or by the federal government outside the department.⁷³ To ensure additional protection in research projects that involve fetuses and/or pregnant women, the department’s Ethics Advisory Board has been required to review every such proposal for IVF “as to its acceptability from an ethical standpoint.”⁷⁴

Subsequent specific protections have been provided to fetuses who are the subject of proposed experimentation and IVF research.⁷⁵ Although limited to research efforts funded in whole or in part by the federal government,⁷⁶ these guidelines make a significant distinction with regard to potential legal rights of implanted embryos.⁷⁷ The distinction is apparent in the definition of a fetus as “the product of conception from the time of implantation (as evidenced by any of the presumptive signs of pregnancy, such as missed menses, or a medically acceptable pregnancy text. . .).”⁷⁸

As a consequence of this structured definition, research undertaken on fetuses *in utero* and *ex utero* has been prohibited unless the purpose of the activity is to either meet the particular health needs of the at-risk fetus, or there is minimal real or potential harm to the fetus by the research, and the purpose is to obtain biomedical knowledge not otherwise obtainable.⁷⁹ Research undertaken on non-viable fetuses *ex utero* has been prohibited unless either vital functions will not be maintained artificially, experimental activities that would terminate vital functions are not used, or the research purpose is to obtain otherwise unobtainable significant biomedical knowledge.⁸⁰ The obvious implication of these restrictions on embryonic and fetal research is that the scientific pursuit of mankind has been handicapped significantly. Private research into the mysteries and the opportunities of the new reproductive biology has continued over the years. But, without a balanced, regulated scheme and sources for federal research funding, the initiative and the momentum for scientific advancement is curtailed. With the reentry of the federal government into the field as a consequence of the lifting of the moratorium on fetal experimentation and the anticipated promulgation of new regulations for

research, however, the critical balance may well be achieved.

A Basic Right to Procreate—for Whom?

As modern society continues to evolve and change, so too do many of its values, including privacy.⁸¹ Autonomy, self-representation, personhood, identity intimacy and dignity are all essentials of privacy.⁸² The extent to which these essentials play a role in shaping a degree of sexual, procreational autonomy must surely remain largely fluid and flexible, for to attempt to define them with precision would challenge and erode any efficacy that they may enjoy.⁸³ The right of the state to control and shape the behavior of both individuals and groups regarding the birth of children is always an area of high emotion and legitimate concern.

The most widely held view is that private conduct between consenting adults or, for that matter, personal conduct of any nature, should be regulated only to the extent necessary to prevent harm to others.⁸⁴ Conformity is thus not a value of momentous concern and certainly not a value worth pursuing.⁸⁵ The counter or conservative view is that the business of law is to suppress vice and immorality simply because if violations of the very moral structure are indulged and promoted, such actions would surely undermine the whole basis of society itself.⁸⁶ Under the former view, the state would be justified—arguably—in acting to control personal decision making, if not for the need to prevent illegitimates from proliferating then to prevent the ultimate economic harm to society of having to help bear the expenses associated with the maintenance and education of a fatherless child born of artificial insemination. Similarly, the prevention of harm theory could be invoked in surrogation where the state, by preventing such acts, seeks to maintain the dignity and continuity of the family unit.

The Foundation

The first case to address tangentially what has now come to be regarded as a fundamental right to procreate was *Buck v. Bell*.⁸⁷ In *Bell*, the Supreme Court upheld a Virginia statute that permitted the sterilization of inmates in state institutions who suffered from a hereditary form of insanity or imbecility.⁸⁸ This opinion, authored by Justice Holmes, was written *before* the development of the fundamental right/compelling state interest standard.⁸⁹ Thus, it must be determined whether the Court's opinion recognized implicitly the existence of a compelling state interest, or whether the Court merely failed to perceive procreation as a fundamental right.⁹⁰ The latter appears to be the case; indeed, it has been suggested that the Court's pervasive emphasis on the state's right to promote the general welfare approximates a rational basis standard of judicial review.⁹¹

In *Skinner v. Oklahoma*,⁹² the Supreme Court again considered the validity of compulsory sterilization laws. Unlike the Court in *Bell*, which found no equal protection violation,⁹³ the *Skinner* Court struck down Oklahoma's Habitual Criminal Sterilization Act on equal protection grounds. The statute provided for the sterilization of habitual criminals—anyone convicted of three felonies—but did not

consider felonies which arose from the violation of the prohibitory laws, revenue acts, embezzlement, or political offenses.⁹⁴ The Court recognized initially that marriage and procreation are fundamental to both the existence and survival of mankind.⁹⁵ It then proceeded to observe, however, that a classification distinguishing larcenists from embezzlers, for purposes of criminal sterilization, represented a form of invidious discrimination. Consequently, the Court subjected the classification to strict scrutiny and found it violated the equal protection clause.⁹⁶

Although a number of Supreme Court decisions⁹⁷ have since cited the *Skinner* case as at least validating, if not in fact creating, a constitutional right to procreate,⁹⁸ it is important to recognize precisely the contours of that right. In both *Bell* and *Skinner*, the Court was confronted with sterilization statutes. Sterilization, unlike other methods of control over human reproduction, is irreversible.⁹⁹ Thus, in discussing the procreative “right” affected by Oklahoma’s Habitual Criminal Sterilization Act, the *Skinner* Court aptly observed that this “right [was] basic to the perpetuation of a race.”¹⁰⁰ Given this background, the procreative right recognized in *Skinner* was simply a right to remain fertile, *not* an uninhibited right to engage in potentially procreative conduct. Subsequent decisions which have focused on a fundamental right to privacy have further delineated the contours of this right.

Searching for a Fundamental Right to Sexual Privacy

Nowhere in the Constitution is there mention of a right to privacy. Nor is any right of sexual freedom found within the gambit of procreative rights recognized by the Supreme Court; nor for that matter has the Court fashioned a general right of personal privacy which is sufficiently broad based to permit sex outside marriage.¹⁰¹

In *Griswold v. Connecticut*,¹⁰² however, the Supreme Court, for the first time, recognized a constitutionally protected zone of privacy, and invalidated part of a Connecticut statute forbidding the use of contraceptives by married persons.¹⁰³ The protection of this aspect of procreative autonomy “was largely subsumed within a broad right of marital privacy”¹⁰⁴ which “stressed the unity and independence of the married couple and forbade undue inquiry into conjugal acts.”¹⁰⁵ From this, however, it cannot be argued that there must exist a corresponding fundamental right to reproduce or to use artificial reproductive technology.¹⁰⁶ For, as Justice Goldberg made clear in his concurring opinion, *Griswold* “in no way interfere[d] with a State’s proper regulation of sexual promiscuity or misconduct,” and thus the constitutionality of Connecticut’s statutes prohibiting adultery and fornication remained beyond dispute.¹⁰⁷

In *Eisenstadt v. Baird*,¹⁰⁸ the Supreme Court was confronted with construing a Massachusetts statute that prohibited the distribution of contraceptives to unmarried persons. In holding that the statute violated the Equal Protection Clause of the Fourteenth Amendment, the Court observed that, “If the right of privacy means anything, it is the right of the *individual*, married or single, to be free from unwarranted governmental intrusion into matters so fundamentally affecting a person as the decision whether to bear or beget a child.”¹⁰⁹ Accordingly, the

Eisenstadt Court fleshed out the procreative skeleton of *Griswold*, which initially appeared confined to the so-called “sacred” precincts of relations between married persons.¹¹⁰ This decision, however, did no more than refine a qualified right to procreative autonomy blurred by the *Griswold* Court's emphasis on the marital relation.¹¹¹

In *Roe v. Wade*,¹¹² the Court addressed squarely an integral part of the individual's right to procreative autonomy when an unmarried woman in a class action suit challenged the constitutionality of the Texas criminal abortion laws. The Court articulated a new source of privacy derived from the fourteenth amendment's standard of personal liberty and inherent restrictions on state action and held that this right was sufficiently broad to embrace a decision made by a woman whether or not to terminate her pregnancy.¹¹³ It, however, went further to state that it was *not* recognizing “an unlimited right to do with one's body as one pleases.”¹¹⁴

The final pertinent case of interest in this area is *Carey v. Population Services International*.¹¹⁵ In *Carey*, the Supreme Court invalidated a New York statute which regulated the sale and distribution of contraceptives to minors and stated that “at the very heart of [the] cluster of constitutionally protected choices,” recognized in the previous privacy cases,¹¹⁶ was “the decision whether or not to beget or bear a child.”¹¹⁷ This decision is particularly instructive on the question of the unmarried woman's right to artificial insemination or IVF procedures, for it examines the previous privacy cases and delineates the extent of the individual's right to procreative autonomy. It has been suggested that since a woman has a right to terminate her pregnancy and to use contraceptives, *a posteriori*, the conduct required to bring about those procreative choices must also be protected.¹¹⁸ The Court's opinion in *Carey* indicates, however, that this is simply not the case.

First, with regard to contraception and abortion, the Court made clear that it is “[the] individual's right to decide to *prevent conception or terminate pregnancy*” that is protected.¹¹⁹ Such unequivocal language, however, lends little or no support to the argument that a concomitant right to conceive is also protected. Second, the Court emphasized that its decision did not encompass any constitutional questions raised by state statutes regulating either sexual freedom or adult sexual relations.¹²⁰ This reading of *Carey* is supported by a later decision of the Court which stated that if “the right to procreate means anything at all, it must imply some right to enter the only relationship in which the [s]tate . . . allows sexual relations to legally take place.”¹²¹ Thus, the lesson from the Court's decisions in *Skinner*, *Griswold*, *Eisenstadt*, *Roe*, and *Carey* is plain: “procreative autonomy . . . includes both the right to remain fertile and the right to avoid conception,”¹²² but absolutely *nothing more*.

On June 28, 2000, the United States Supreme Court strengthened and affirmed its previous position in *Planned Parenthood of Southeastern Pennsylvania v. Casey*¹²³ and in *Roe v. Wade*¹²⁴ that any state regulation—here, a Nebraska statute making criminal the performance of a “partial birth abortion”—whose purpose or effect is to place a substantial burden on a woman's right to an abortion of a nonviable fetus, violates the Federal Constitution.¹²⁵ Writing for the 5-4 majority in *Sternberg v. Carhart*, Justice Stephen Breyer concluded that the challenged

Nebraska statute was unconstitutional not only because it lacked any exception for preservation of the mother's health, but also applied to the dilation and evacuation (D&E) procedure as well as to the dilation and extraction (D&X) procedure and, as such, imposed an undue burden on a woman's ability to choose a D&E abortion—thus burdening her right to choose an abortion in the first instance.¹²⁶ Predictably, in dissent, Justice Scalia termed both *Sternberg* and *Casey* as “hopelessly unworkable in practice” and “ultimately standardless.”¹²⁷ For him and others, the judiciary should defer “to the people and let them decide, State by State, whether this practice should be allowed.”¹²⁸

Today, twenty-eight states criminalize harm to a fetus and Congress a expected, followed suit and enacted the Unborn Victims of Violence Act which applies to federal crimes (*e.g.*, bank robberies or domestic violence on military bases) when “a child *in utero* is harmed or killed at any stage of development.”¹²⁹ Abortion rights activists warn that the new focus on the fetus is part of a broad strategy to undermine *Roe v. Wade*—for, if fetuses are seen as people in law,¹³⁰ with the same standing as men and women, then *Roe* will be moot.¹³¹

State Justification for Intervention

Since the unmarried woman's decision to be inseminated artificially or to participate in an IVF procedure does not fall within the gambit of any recognized fundamental right, state statutes limiting this procreative technology to married women “[may] be sustained under the less demanding test of rationality.”¹³² Under this test, the distinction drawn must be “rationally related” to a “constitutionally permissible” objective.¹³³ In employing this rather relaxed standard, courts must be sensitive to the fact “that the drawing of lines that create distinctions is peculiarly a legislative task and an unavoidable one.”¹³⁴

Absent a suspect classification or the infringement of a fundamental right, the Supreme Court has recognized that legislation “protecting legitimate family relationships” as well as both the regulation and protection of the family unit are “venerable concerns of the state.”¹³⁵ Statutes limiting the availability of artificial insemination to married women and those which might (indeed, should) be drafted to limit the use of IVF procedures to married women, fall squarely within this classification.

As early as 1888, the Court recognized marriage as “the foundation of the family and society, without which there would be neither civilization nor progress.”¹³⁶ Recently, the Court observed that “a decision to marry and raise a child in the traditional family setting must receive . . . protection.”¹³⁷ Thus, although certain aspects of an individual's right to procreative autonomy have been divorced correctly from the familial and marriage relationship, the Court has also implicitly recognized that, whenever possible, childbearing should take place within the traditional family unit.¹³⁸ An unmarried woman's decision to seek artificial insemination or to participate in an IVF procedure goes directly against the tide of these pronouncements.

An instructive analogy may be made to the law of adoption. Adoption statutes,

like the statutes regulating artificial insemination, have their genesis in state law.¹³⁹ Although all states currently allow adoption by unmarried adults,¹⁴⁰ it occurs infrequently. In *In re Adoption of Infant H.*,¹⁴¹ an unmarried middle-age woman sought to adopt a thirteen-month-old child, for whom parental care by a young couple was available. In rejecting her application, the court observed:

Adoption by a single person has generally and in this Court's experience been sought and approved only in exceptional circumstances, and in particular for the hard-to-place child for whom no desirable parental couple is available. In the universal view of both experts and laymen, while one parent may be better than none for the hard-to-place child, joint responsibility by a father and a mother contributes to the child's physical, financial and psychic security as well as his emotional growth. This view is more than a matter of present convention, anthropologists pointing out that the institution of marriage, which is a method of signifying commitment to such joint responsibility, evolved in response to the need for two-parent care of children.¹⁴²

This observation applies with equal force to artificial insemination for an unmarried woman as well as her participation in an IVF program.¹⁴³ Indeed, if a state may reasonably regulate unmarried adults in their quest to adopt children, it would be anomalous to suggest that it could not regulate the use of a procreative technology designed to bring children into the world.

More importantly, however, the unmarried woman's access to artificial insemination, IVF and, thus, surrogation, directly undermines not only the concept of marriage, but the family as well and hence the very foundation of society.¹⁴⁴ The courts have recognized repeatedly the desirability of having a child reared within a traditional family unit. Moreover, it is clear that the marital relationship serves as the very genesis of the family unit.¹⁴⁵ Accordingly, the inherent procreative potential of this union,¹⁴⁶ together with the stability that this provides to the social fabric,¹⁴⁷ would be dealt a mortal wound by permitting unmarried women to assert total procreational autonomy through the use of the new reproductive technologies.¹⁴⁸

Another argument made against state intervention is that action taken by the state in this area of procreational autonomy seeks to paint with too broad a brush when it limits artificial insemination to married couples or withholds approval or licensure of IVF procedures unless one is married. Although the Supreme Court has failed to formulate a concrete definition of the family, *Moore v. City of East Cleveland*¹⁴⁹ represents a clear extension of procreation that is afforded routinely to the "nuclear" family to one recognized as a "quasi-familial group."¹⁵⁰ In *Moore*, a zoning ordinance which limited an area to single family dwellings was challenged by a woman who shared her home with her two grandsons. The Court merely recognized that the extended family occupies a place in American tradition similar to that of the nuclear family and thus is to be guaranteed protection by the Constitution.¹⁵¹

As the procreation and privacy cases illustrate clearly by analogy, however, the

fact that a mother and her offspring may find protection within the nuclear family structure does not imply a right to freely bring about that condition, nor does it demonstrate that the limitations placed on artificial insemination, or on IVF for that matter, with respect to unmarried women are in any way irrational or unreasonable.

Thus, it assuredly demands an expanded definition of family in order to contend that statutes limiting artificial insemination or the new reproductive technologies to married women are not related rationally to a constitutionally permissible objective.

The line of demarcation may be drawn imprecisely, but the Constitution is not offended “simply because the classification is not made with mathematical nicety or because in practice it results in some inequality.”¹⁵²

Conclusions

The legal system, by protecting such relationships as kinship and formal marriage, promotes not only those interests of private parties, but the interests of society in those social and political structures which ensure a long-term individual view of liberty.¹⁵³ In judicial decisions affording familial and marital relationships a higher degree of constitutional protection, traditions have played a pivotal role. In the procreative field, the Supreme Court has carved out a limited degree of autonomy for the individual.

As this Chapter has demonstrated, a woman's fundamental right to privacy or procreation does not encompass a right to artificial insemination or use of new reproductive technologies, such as IVF, or surrogation. Accordingly, statutes limiting the use of these new reproductive technologies need only be related rationally to the promotion of a constitutionally permissible state interest. A state's desire to promote the raising of children in the *traditional* family setting while at the same time promoting the institution of marriage and the family is an unquestionably permissible, if not laudable, objective.

Thirty years ago, Justice Felix Frankfurter cautioned: “Children have a very special place in life which the law should reflect. Legal theories and their phrasing in cases readily lead to fallacious reasoning if uncritically transferred.”¹⁵⁴ The legislature, in limiting the practices and use of the new biological technologies to married women, have taken—and should continue to take—this admonition seriously. The extended use and application of these procedures primarily through artificial insemination and surrogation must be controlled strictly by legislative design. Surrogation should only be tolerated by a married woman, with her husband's actual consent, and then only under proper medically supervised standards. As a medical aid to infertility, IVF and surrogation should then be allowed by as last relief adjuncts to medical treatment of this impediment and *not* as a popular or novel experience to be championed on street corners and at political gatherings.

A legislative program designed to validate, and thereby license, the IVF process and its inextricable use and reliance on surrogation for married women, as well as the married surrogates participating therein, would not only seek to protect the health and well-being of the issue born but also would assure the safety of the

surrogate. Such a legislative program would include ideally provisions shaping the rights and determining the extent of the liabilities of the contracting parents in the IVF-surrogate compact *vis-à-vis* the infant and also give due consideration to shaping the sphere of responsibility for various types of errors that intermediaries—such as doctors and lawyers—might commit in facilitating the whole process. Again, ideally, the specific policy matters coincident with the administration of an IVF-surrogation program, once structured, would be implemented by an administrative body or licensing board, where the policies and standards for evaluating and processing her requests for surrogate mothering would be both comprehensive and equitable in their design and utilization.¹⁵⁵

The new reproductive biological techniques for parenthood portend an enormous opportunity of untold significance for humanity and demand the need for a searching inquiry into the parameters for future development.¹⁵⁶ The legislative branch of government is far better equipped to deal with this inquiry than is the executive or judicial, and is potentially a more responsive forum for posturing and advocacy by the various religions which must assume their roles as stalwart guides in the search for insightful, yet humane, lawmaking responses.¹⁵⁷ Thoughtful study and a cautious plan of action are needed now, before advancing complexities become genuine crises that overwhelm, confuse, and confound the role of the rule of law in meeting the challenges of the brave and pluralistic new world of tomorrow which, in actuality, are here already.

ENDNOTES

1. Blum, *Moral Foundations of American Democracy*, 1 NOTRE DAME J.L. ETHICS & PUB. POL'Y 65, 67 (1984).
2. M. TOOLEY, ABORTION AND INFANTICIDE chs. 5-7 (1983).
3. Tauer, *The Tradition of Probabilism and the Moral Status of the Early Embryo*, 45 THEOLOGICAL STUD. 3 (1984).
4. SACRED CONGREGATION FOR THE DOCTRINE OF FAITH, DECLARATION ON ABORTION (1975). See Noonan, *Abortion and the Catholic Church: A Summary History*, 12 NAT. L.F. 85 (1968).
5. Diamond, *Abortion, Animation and Biological Hominization*, 36 THEOLOGICAL STUD. 305 (1975). See TOOLEY, *supra* note 2, chs. 5-7.
6. See the writings of McCormick, Curran, Di Ianni and Rahner, as cited in Tauer, *supra* note 3, at 3 ns. 1-4.
7. See generally OFFICE OF TECHNOLOGY ASSESSMENT, IMPACTS OF APPLIED GENETICS: MICROORGANISMS, PLANTS AND ANIMALS (1981).
8. 410 U.S. 113 (1973).
9. It is only when the fetus reaches a "compelling" point of viability or that time when it "presumably has the capability of meaningful life outside the mother's womb" that the state's interest in protecting fetal existence will be asserted. *Id.* at 163-4. It is at the third trimester of development that the state's interest becomes controlling.
For a chart presenting the stages at which the life of a person could begin see B.R. FURROW, *et al.*, BIOETHICS: HEALTH CARE AND ETHICS 44 (1991).
10. Attorney General for Queensland *ex rel. Kerr v. T.*, 57 A.L.J.R. 285 (Austl. 1983).
And in Canada, Mr. Justice Matheson of the Saskatchewan Court of Queen's Bench held that a fetus was not to be regarded as a person within the meaning of the law and thus not within the scope of the term *everyone* as used in the Canadian Charter of Rights and Freedoms. The charter provides, in pertinent part, that "[e]veryone has the right to life . . . and the right not to be deprived thereof except in accordance with the principles of fundamental justice." *Borowski v. Attorney-General of Canada*, 4 D.L.R. 4th 112, 121 (1983) (quoting CAN. CHARTER OF RIGHTS AND FREEDOMS § 7).
11. Gavigan, *The Criminal Sanction as it Relates to Human Reproduction: The Genesis of the Statutory Prohibition of Abortion*, 5 J. LEGAL HIST. 20 (1984).
Over the past fifteen years, some states have expanded the common law rights of the fetus by recognizing it can be an independent victim for purposes of criminal law. FURROW, *et al.*, *supra* note 9 at 45.
12. Gavigan, *id.* at 21. The present position is summarized:
A child is not considered in law to be in being, so as to be the subject of a charge of murder or manslaughter, until the whole body of the child is extruded from the womb and has an existence independent of the mother. Whether the child has an independent existence turns upon whether it has an independent circulation, and has breathed or has a capacity for independent breathing. A child may have an independent existence, however, even though it has not drawn breath and even though the umbilical cord is not severed. In relation to the law of homicide a person continues in being until his being is extinguished by death.
11 (1) HALSBURY'S LAWS OF ENGLAND para. 427 (4th rev'd ed. 1990).
But see D. HEYD, GENETHICS: MORAL ISSUES IN THE CREATION OF PEOPLE (1992); Naffine, *Who Are Law's Persons?*, 66 MOD. L. REV. 346 (2003).
13. See Smith, *Intrusions of a Parvenu: Science, Religion and the New Biology*, 3 PACE U. L. REV. 63 (1982).
14. Reagan, *Policy and Morality Are Inseparable*, 1 NOTRE DAME J.L. ETHICS & PUB. POL'Y 7 (1984).
15. *Id.* See Ch. 2, fn's 109-113.
16. *Supra* note 14 at 10. Indeed, it has been stated that, "The state must be subject to the higher law of God." C. RICE, BEYOND ABORTION: THE THEORY AND PRACTICE OF THE SECULAR STATE 135 (1979).

17. *Id.* See J. ELLIS, AMERICAN CATHOLICISM 156 (2d ed. 1969); R. NEUHAS, THE NAKED PUBLIC SQUARE: RELIGION AND DEMOCRACY IN AMERICA (1984).
18. Hyde, *Keeping God in the Closet: Some Thoughts on the Exorcism of Religious Values from Public Life*, 1 NOTRE DAME J.L. ETHICS & PUB. POL'Y 33, 36 (1984).
19. *Id.* at 43.
20. *Id.*
See generally RELIGION RETURNS TO THE PUBLIC SQUARE: FAITH AND POLICY IN AMERICA (H. Hecho & W. M. McClay 2003).
21. McBrien, *The Church and Politics*, 1 NOTRE DAME J.L. ETHICS & PUB. POL'Y 57, 64 (1984).
22. *Id.* at 59.
23. ELLIS, *supra* note 17, at 157.
24. R. Drinan, *Religion and Politics in the United States in the Next Fifteen Years 20* (paper delivered at the Conference on Religion and Politics at Kenyon College, April 18-21, 1985).
25. LONDON TIMES, June 6, 1985, at 12. As Joseph Cardinal Ratzinger has observed, "Economic liberalism creates its exact counterpart, *permissivism*, on the moral plane." J. RATZINGER, THE RATZINGER REPORT 83 (1985). He continued by stating that, "Separated from motherhood, sex has remained without a locus and has lost its point of reference." *Id.* at 84.
26. ELLIS, *supra* note 17, at 159.
27. Anderson, *Catholic Scholars Express Varied Abortion Views*, WASH. POST, Feb. 9, 1985, at B6.
See The Freedom of Access to Clinics Entrance Act, where criminal sanctions are imposed for actions by individuals which threaten, intimidate or interfere with those individuals obtaining or providing reproductive health services (e.g., abortion) relating to the termination of a pregnancy whether these services be provided in a hospital, clinic or physician's office. 18 U.S.C.A. §248(a)(e) (1994).
28. Blackbird, *Catholics Bend the Rules in Growing Numbers*, CHI. SUN-TIMES, July 31, 1994, at 18.
See J. BOWMAN, BENDING THE RULES: WHAT AMERICAN PRIESTS TELL AMERICAN CATHOLICS (1994).
29. Blackbird, *id.*
30. Owens, *Many Catholics Disagree with Vatican Views on Birth Control*, ORLANDO SENTINEL, Mar. 31, 1995, at A16.
See also Spencer-Molloy, *Poll Says Women Oppose Catholic Hospitals' Curbs on Abortion*, HARTFORD COURANT, Mar. 10, 1995, at A3 (reporting on a national survey commissioned by Catholics for Free Choice finding nearly 9 out of 10 women opposed to curbs on reproductive healthcare by Roman Catholic hospitals).
31. 410 U.S. 113 (1973).
32. Hyer, *U.S. Bishops Rebuke Dissenters on Abortion*, WASH. POST, Nov. 17, 1984, at D10. From ten to twelve percent of Catholics agree with the official church teaching that abortion is always wrong. *Id.* *See also supra* notes 28, 30.
33. Cuomo, *Religious Belief and Public Morality: A Catholic Governor's Perspective*, 1 NOTRE DAME J.L. ETHICS & PUB. POL'Y 13, 26 (1984).
34. Hyer, *supra* note 32.
35. Cuomo, *supra* note 33, at 26.
36. *Id.*
37. Hesburgh, *Reflections on Cuomo: The Secret Consensus*, 1 NOTRE DAME J.L. ETHICS & PUB. POL'Y 53, 56 (1984).
38. *Id.*
39. *Id.*
40. Hyer, *Vatican Basis Many Birth Technologies: Test Tube, Surrogate Fertilization Banned* WASH. POST, Mar. 11, 1987, at A1.
41. McCormick, *Veritas Splendor and Moral Theology*, 169 AMERICA 8 (Oct. 30, 1992).
42. Riding, *New Catholicism for Catholics Define Sins of Modern World*, N.Y. TIMES, Nov. 17, 1992, at A1.

43. Gledhill & Laurance, *Pope Sets Limits on Treatment for Fertility*, N.Y. TIMES, Mar. 18, 1995, at A1. See 24 ORIGINS, Documentary Service 690-727 (April 6, 1995); Coughlin, *Pope John Paul II and The Dignity of The Human Being*, 27 HARV. J. L. Y POL'Y 65 (2003).
44. See generally *The New Origins of Life*, TIME Mag., Sept. 10, 1984, at 46 *passim*.
45. Smith, *Great Expectations or Convoluted Realities: Artificial Insemination in Flux*, 3 FAM. L. REV. 37 (1980).
See generally Smith, *For Unto Us A Child is Born Legally!*, 56 A.B.A. J. 43 (1970).
46. See, e.g., Smith, *A Close Encounter of The Kind: Artificial Insemination and an Enlightened Judiciary*, 17 J. FAM. L. 41 (1978) (where an unmarried woman inseminated herself).
47. See generally R. McCORMICK, *HOW BRAVE A NEW WORLD?* chs. 1, 16 (1981); TEST-TUBE BABIES: A GUIDE TO MORAL QUESTIONS, PRESENT TECHNIQUES AND FUTURE POSSIBILITIES (W. Walters & P. Singer eds. 1982) [hereinafter cited as TEST-TUBE BABIES].
The United Kingdom was in the vanguard of policy making in this contentious area when Parliament set up a special committee to investigate complex issues of human fertilization. See M. WARNOCK, *A QUESTION OF LIFE: THE WARNOCK REPORT ON HUMAN FERTILIZATION AND EMBRYOLOGY* (1985). Subsequently, this report led to the passage of The Human Fertilization and Embryology Act which, in turn, established a statutory authority to license and set standards for organizations offering reproductive technology services.
See Foxcroft, *Surrogacy—Warnock and After*, 2 MEDICAL L. INT'L 337 (1997); Priest, *The Report of The Warnock Committee on Human Fertilization and Embryology*, 48 MOD. L. REV. 73 (1985).
See also Lee, *Lessons Learned from Great Britain's Human Fertilization and Embryology Act: Should the United States Regulate the Fate of Unused Frozen Embryos*, 19 LOY. L.A. INT'L & COMP. L. J. 1027 (1997); Sparks, *Human Embryo Cryopreservation: Benefits and Adverse Consequences*, in STORED TISSUE SAMPLES: ETHICAL, LEGAL, AND PUBLIC POLICY IMPLICATIONS at 166 (R. F. Weir ed. 1998).
48. Smith, *Australia's Frozen 'Orphan' Embryos: A Medical, Legal and Ethical Dilemma*, 24 J. FAM. L. 27 (1985).
See *Davis v. Davis*, 842 S.W. 2d 588 (Tenn. 1992) for one of two landmark cases involving the disposition of frozen embryos by a divorcing couple. The wife wished to donate the embryos to a childless couple and the husband wanted them destroyed. The Supreme Court of Tennessee concluded that the husband's interest in avoiding genetic parenthood outweighed the interest of the wife in becoming a genetic parent—especially since the wife chose not to use the embryos herself.
The other landmark case is *Kass v. Kass*, 696 N.E.2d 174 (N.Y. 1998) where the highest court in the state, the Court of Appeals, held a consent form signed by a couple freezing embryos before a present divorce was commenced, would control—thus dictating any excess embryos were, contrary to the wife's argument, to be used for research purposes.
One of the few states enacting legislation regulating frozen embryos use and disposition is Florida. See FLA. STAT. ANN. §742.17 (West 1998).
See generally Robertson, *Precommitment Strategies for Disposition of Frozen Embryos*, 50 EMORY L. J. 989 (2001); Comment, *Disposition of Cryopreserved Pre-embryos After Divorce*, 88 IOWA L. REV. 1001 (2003); Comment, *Cryogenically Preserved Embryos in Dispositionally Disputes and The Supreme Court: Breaking Impossible Ties*, 68 U. CIN. L. REV. 921 (2000).
49. Some recent studies have shown infants born from IVF and other assisted reproduction procedures have twice as high a risk of a major birth defect as naturally conceived or spontaneous gestations. Hansen, Kurinczuk *et al.*, *The Risk of Major Birth Defects after Intracytoplasmic Sperm Injection and In Vitro Fertilization*, 346 NEW ENG. J. MED. 725 (2003); Gosden, Trassler *et al.*, *Rare Congenital Disorders, Imprinted Genes, and Assisted Reproductive Technology* 361 THE LANCET 1975 (2003).
50. TOOLEY, *supra* note 2, chs. 5-7.
51. TEST-TUBE BABIES, *supra* note 47, chs. 8, 11. See generally D. KELLY, *THE EMERGENCE OF ROMAN CATHOLIC MEDICAL ETHICS IN NORTH AMERICA* (1979).
52. Coleman, *Procreational Liberty and Contemporaneous Choice: An Inalienable Rights Approach to Frozen Embryos*, 84 MINN. L. REV. 55 (1999).
The American Fertility Society has concluded that while embryos are not properly viewed as persons, they should be treated with special respect because they are unique—genetically—and living

human entities that might become persons. Ethics Committee of The American Fertility Society, *Ethical Considerations of Assisted Reproductive Technology*, 62 FERTILITY & STERILITY 785, (Supp. 1994). See generally Gunsburg, *Frozen Life's Dominion: Extending Reproductive Autonomy Rights to In Vitro Fertilization*, 65 FORDHAM L. REV. 2205 (1997).

53. J. F. FLETCHER, HUMANHOOD: ESSAYS IN BIOMEDICAL ETHICS 93 (1979).

54. *Id.* See also Eisenberg, *The Social Imperatives of Medical Research*, 198 SCIENCE 105 (1977).

55. Greely, *et al.*, *The Ethical Use of Human Fetal Tissue in Medicine*, 320 NEW ENG. J. MED. 1093 (1989). It is between the sixth and eleventh weeks of gestation that nearly eighty percent of all individual abortions are performed. Thus, neural and other tissue are at a sufficiently developed state that it may, with success, be retrieved and transplanted. For those abortions performed between fourteen and sixteen weeks, pancreatic tissue is of particular value in diabetes research. Robertson, *Rights, Symbolism and Public Policy in Fetal Tissue Transplants*, 18 HASTINGS CENTER RPT. 5 (Dec. 1988).

See also Wakayama, Tabor *et al.*, *Differentiation of Embryonic Stem Cell Lines Generated from Adult Somatic Cell by Nuclear Transfer*, 292 SCIENCE 740 (April 27, 2001); Weiss, *New Potential for Stem Cells Suggested*, WASH. POST, April 27, 2001, at A2 (reporting positive successes in human embryo cell research to treat Alzheimer's disease, Parkinson's and Diabetes).

56. Ethics Advisory Board of the Department of Health, Education and Welfare, *Report and Conclusions: HEW Support of Research Involving Human In Vitro Fertilization and Embryo Transfer*, 44 Fed. Reg. 35,033 (1979). See McCormick, *Who or What is the Preembryo?* 1 KENNEDY INST., ETHICS J. 1 (Mar. 1991).

57. Krause, *Artificial Conception: Legal Approaches*, 19 FAM. L.Q. 185, 190 (1985).

58. This pessimistic, although realistic, view is tied to a perception that it would be far better to hold in abeyance any strong movement at this time for fear of its possible linkage with the right-to-life controversies and would thus give rise to the real possibility that it would never be allowed to be evaluated in a calmer atmosphere. Abramowitz, *A Stalemate on Test-Tube Baby Research*, 14 HASTINGS CENTER RPT. 5 (Feb. 1984).

59. See *Hearings On Human Embryo Transfer, Subcommittee on Investigations and Oversight, U.S. House of Representatives' Committee on Science and Technology*, 98th Cong., 2nd Sess. 142 (1984). See generally R.G. LEE & D. MORGAN, HUMAN FERTILISATION AND EMBRYOLOGY: REGULATING THE REVOLUTION (2001).

60. Abramowitz, *supra* note 58.

61. Ethics Advisory Board, *supra* note 55 at 35,057. Among these conditions were that the embryo be sustained *in vitro* beyond the implantation stage and that IVF, followed by embryo transfer, be used only by married couples who donated their sperm and ova. Abramowitz, *supra* note 58.

62. Abramowitz, *supra* note 58 at 6. See Fletcher & Ryan, *Federal Regulations for Fetal Research: A Case for Reform*, 15 L. MED. & HEALTH CARE 126 (1987).

63. Weekly Comp. Pres. Doc., Jan. 2, 1993, at 87.

64. Weekly Comp. Pres. Doc. Dec. 2, 1994, at 2459.

See Schwartz & Devroy, *Clinton to Ban U.S. Funds for Some Embryo Studies*, WASH. POST, Dec. 3, 1994, at A1; Marshall, *Human Embryo Research: Clinton Rules out Some Studies*, 266 SCIENCE 1634 (Dec. 9, 1994).

65. N.Y. TIMES, July 22, 1995, at A8.

66. *Fetal Tissue Research Grant Awarded*, WASH. POST, Jan. 5, 1994, at A3.

Interestingly, under the National Institutes of Health Revitalization Act of 1993, it is a criminal offense for any person to solicit or otherwise acquire human fetal tissue for purposes of transplantation affecting interstate commerce if it is obtained from an induced abortion, as a consequence of a promise to donate tissue to a specified individuals (or relative of the donating individual), or obtained for a valuable consideration as part of the costs associated with performing an abortion. 42 U.S.C. §289g-2 (1993). See Maroney, *Bioethical Catch-22: The Moratorium on Federal Funding of Fetal Tissue Transplantation Research and the NIH Revitalization Amendments*, 9 J. CONTEMP. HEALTH L. & POL'Y 483 (1993).

67. *Federal Panel Urges U.S. to Drop Its Ban on Financing of Human Embryo Research*, N.Y. TIMES, Sept. 28, 1994, at B7.

See also Angier, *Rules Due on Disputed Embryo Research*, N.Y. TIMES, Sept. 6, 1994, at C1;

LEE & MORGAN, *supra* note 59.

68. *Medicine and Health: Committee Backs Embryo Testing*, FACTS ON FILE WORLD NEWS DIGEST, Nov. 3, 1994, at A3.

69. *Id.*

See Milch, *In Vitro Fertilization and Embryo Transfer: Medical Technology plus Social Values equals Legislative Solutions*, 30 J. FAM. L. 875 (1991-92).

70. Wetzstein & Price, *Panel OKs Research on Human Embryos: Clinton Rejects Creating Them for Labs*, WASH. TIMES, Dec. 3, 1994, at A2.

71. *Id.* See also *supra* note 68.

72. *Id.* See generally Caplan, *Bioethics: Is Biomedical Research Too Dangerous to Pursue?* 303 SCIENCE 1142 (Feb. 20, 2004); *Symposium: What Research? Which Embryos?*, 25 HASTINGS CENTER RPT. 36 (Jan.-Feb. 1995).

73. 45 C.F.R. §§ 45.101-124, 46.301-306(g), 46.401-409 (1991).

74. 45 C.F.R. § 46.204(d) (1991). See also 45 C.F.R. § 46.205 (1991).

75. 45 C.F.R. §§ 46.102-206 (1985). *In vitro* fertilization is defined as “any fertilization of human ova which occurs outside of the body of a female, either through admixture of donor human sperm and ova or by any other means.” Section 46.203(g) (1991).

See Weiss, *New Status for Embryos In Research*, WASH. POST, Oct. 30, 2002, at A1 (discussing the charter of the Secretary of Health and Human Services “new” Advisory Committee on Human Research Protections formed October 1, 2002, requiring the consideration—for the first time ever—of embryos as human subjects which, in turn, is causing some to predict that this is but the next step in according embryos full legal rights as persons under the law and, indeed, the ultimate restriction on embryonic medical experimentation because proposed research must promise a direct benefit to the embryo for it to be undertaken).

See generally Jost, *Rights of Embryo(s) in Private Law*, 50 AM. J. COMP. L. 633 (2002).

76. 45 C.F.R. § 46.101(a) (1991).

77. Blumberg, *Legal Issue on Nonsurgical Human Ovum Transfer* 251, J.A.M.A. 1178 (1984).

78. 45 C.F.R. § 46.203(c) (1991).

79. 45 C.F.R. §§ 46.208(a) (1)-(2) (1991).

80. 45 C.F.R. §§ 46.209(b) (1)-(3) (1991).

81. L. TRIBE, *AMERICAN CONSTITUTIONAL LAW* § 15-2 *passim* (2d ed. 1988).

See generally Warren, *Does Distributive Justice Require Universal Access to Assisted Reproduction?* in *MEDICINE AND SOCIAL JUSTICE* ch. 32 (R. Rhodes, M.R. Battin & A. Silvers eds. 2002).

82. TRIBE, *id.*

83. *Id.*

84. H.L.A. HART, *LAW, LIBERTY AND MORALITY* 57 (1963).

85. *Id.*

86. P. DEVLIN, *THE ENFORCEMENT OF MORALS* 25 (1965). See Dworkin, *Lord Devlin and the Enforcement of Morals*, 75 YALE L.J. 986 (1966).

87. 274 U.S. 200 (1927).

88. *Id.* at 207.

89. Comment, *Artificial Human Reproduction: Legal Problems Presented by the Test-Tube Baby*, 20 EMORY L.J. 1045, 1054 (1979).

90. *Id.*

91. Note, *Legislative Naiveté in Involuntary Sterilization Laws*, 12 WAKE FOREST L. REV. 1064, 1071 (1976).

Writing for the Court in *Bell*, Justice Holmes stated:

We have seen more than once that the public welfare may call upon the best citizens for their lives. It would be strange if it could not call on those who already sap the strength of the State for these lesser sacrifices, often not felt to be such by those concerned, in order to prevent our being swamped with incompetence. It is better for all the world, if instead of waiting to execute degenerate offspring for crime, or to let them starve for their imbecility, society can prevent those who are manifestly unfit from continuing their kind.

Buck v. Bell, 274 U.S. at 207.

92. 316 U.S. 535 (1942).

93. The *Bell* Court has used a revolving door rationale in rejecting the claim of equal protection: [T]he law does all that is needed when it does all that it can, indicates a policy, applies it to all within the lines, and seeks to bring within the lines all similarly situated so far and so fast as its means allow. Of course so far as the operations enable those who otherwise must be kept confined to be returned to the world, and thus open the asylum to others, the equality aimed at will be more nearly reached. 274 U.S. at 208.

94. *Skinner v. Oklahoma*, 316 U.S. at 537.

95. *Id.* at 541.

96. *Id.*

97. See e.g., *Cleveland Bd. of Educ. v. LaFleur*, 414 U.S. 632, 640 (1974).

98. Comment, *supra* note 85, at 1056. Indeed, it has been suggested that this case has been incorrectly interpreted since “the *Skinner* Court neither denied the state’s right to sterilize nor established a constitutional right to procreate. Rather, the Court expressly declared that the scope of the states’ police power was unaffected by its holding.” *Id.*

99. See *Relf v. Weinberger*, 372 F. Supp. 1196, 1199 (D.D.C. 1974).

100. *Skinner v. Oklahoma*, 316 U.S. at 536.

101. Hafen, *The Constitutional Status of Marriage, Kinship, and Sexual Privacy—Balancing the Individual and Social Interests*, 81 MICH. L. REV. 463, 538 (1983).

102. 381 U.S. 479 (1965).

103. The Court observed that “specific guarantees in the Bill of Rights have penumbras, formed by emanations from the guarantees that help give them life and substance.” *Id.* at 484. Thus, it is those “[v]arious guarantees [which] create zones of privacy.” *Id.*

104. Note, *Eugenic Artificial Insemination: A Cure for Mediocrity?*, 94 HARV. L. REV. 1850, 1867 (1981).

105. Comment, *Developments in the Law—The Constitution and the Family*, 93 HARV. L. REV. 1156, 1183 (1980).

106. Comment, *supra* note 89, at 1058.

107. *Griswold v. Connecticut*, 381 U.S. at 498-99. But, Professor Laurence Tribe has observed that since *Griswold* recognized as valid individual decisions not to bear a child, read as such and considered with *Skinner*, it forces the conclusion that whether in fact one’s body is to be the source of new life must be regarded as a personal decision for the concerned individual *alone*. L. TRIBE, *supra* note 81, at 923.

108. 405 U.S. 438 (1972).

109. *Id.* at 453 (emphasis in original).

110. *Id.*

111. “It has been suggested that the Court’s opinion was lacking in candor, for it stated in broad dictum a major extension of the ‘privacy right’ which could have justified its decision, while purporting to rest on a strained conclusion that the statute involved failed even the minimal rationality test.” Comment, *supra* note 105, at 1184.

Under an expansive liberal interpretation, *Eisenstadt* has been held to extend the right of privacy to all sexual activities. E.g., *Miller v. Rumsfeld*, 647 F.2d 80, 85 (9th Cir.) (Norris, J., dissenting), *cert. denied*, 454 U.S. 855 (1981).

112. 410 U.S. 113 (1973).

113. *Id.* at 153. This right, however, was not absolute and the degree of involvement allowed would be continued on the length of the pregnancy. “[P]rior to approximately the end of the first trimester, the abortion decision and its effectuation must be left to the medical judgement of the pregnant woman’s attending physician.” *Id.* at 164. After this stage, the “State may . . . regulate the abortion procedure to the extent that the regulation reasonably relates to the preservation and protection of maternal health.” *Id.* Finally, after viability, the state may protect fetal life and “may go so far as to proscribe abortion during that period, except when it is necessary to preserve the life or health of the mother.” *Id.* at 163—64.

Unless scientists develop an artificial womb, no dramatic changes of survival rates for infants before the twenty-fourth week of pregnancy will be recorded. Russell, *Lawyers Question Letting Fetus Viability Shape Abortion Law*, WASH. POST, May 29, 1985, at A4.

114. *Id.* at 154. In support of this proposition, the Court cited *Buck v. Bell*, which led one commentator to observe: “As it is difficult to imagine a more substantial interference with procreation than compulsory sterilization, the limited nature of the recognized procreative ‘right’ is apparent.” Note, *supra* note 101, at 1868.

115. 431 U.S. 678 (1977) (plurality opinion).

116. In addition to the privacy cases already analyzed in this Chapter, the Court cited *Cleveland Bd. of Educ. v. LaFleur*, 414 U.S. 632 (1974); *Loving v. Virginia*, 388 U.S. 1 (1967); *Prince v. Massachusetts*, 321 U.S. 158 (1944); *Pierce v. Society of Sisters*, 268 U.S. 510 (1925).

117. *Carey*, 431 U.S. at 685.

118. Kritchevsky, *The Unmarried Woman's Right to Artificial Insemination: A Call for an Expanded Definition of Family*, 4 HARV. WOMEN'S L.J. 26, 27-28 (1981).

119. *Carey v. Population Services Int'l*, 431 U.S. at 688 (emphasis added).

120. *Id.* at 688 n.5. See *Paris Adult Theatre I v. Slaton*, 413 U.S. 49, 68 n.15 (1973) (implication that state fornication statutes do not violate the federal constitution). *But see State v. Saunders*, 75 N.J. 200, 381 A.2d 333 (1977) (holding that fornication statute involves by its very nature a personal choice and that it infringes upon the right of privacy).

121. *Zablocki v. Redhail*, 434 U.S. 374, 386 (1977). See *Doe v. Commonwealth Attorney*, 403 F. Supp. 1199 (E.D. Va. 1975), *aff'd*, 425 U.S. 901 (1976) (summary affirmance of three-judge district court decision holding that the state of Virginia could constitutionally apply its sodomy statute to private sexual conduct between consenting male adults).

122. Comment, *supra* note 105, at 1185.

One commentator has suggested the use of non coital and collaborative techniques (*e.g.*, *in vitro* fertilization) does not follow directly from *Roe v. Wade*—since *Roe* deals with bodily integrity and the right to avoid procreation. Nevertheless, *Roe* is still a valid precedent for the Court in defining basic procreative liberties. The source of this liberty interest is, however, to be found in *Skinner v. Oklahoma*. Robertson, *Gestational Burdens and Fetal Status: Justifying Roe v. Wade*, 13 AM. J. L. & MED. 189, 209-210 (1987).

123. 505 U.S. 833 (1992).

124. 410 U.S. 113 (1973).

125. *Sternberg v. Carhart*, 120 S. Ct. 2597 (2000).

126. *Id.*

127. 120 S. Ct. 2597 (Scalia, J., dissenting) at 2621.

128. *Id.* at 2623.

See Alvarè, *High Court Approves Infanticide*, CRISIS, Sept. 2000, at 11.

See also Fagan, *House GOP Again Eyes Partial-birth Abortion Stoppage*, WASH. TIMES, June 20, 2002, at A6, (reporting on the efforts of Rep. Steve Chabot, Chairman of the House Judiciary Committee, to craft new legislation which bans partial-birth abortion yet addresses the concerns of the Supreme Court in *Sternberg*); Allen, *President Signs Bill on Abortion Procedures*, WASH. POST, Aug. 6, 2002, at A3 (reporting on the Born-Alive Infants Protection Act which requires that if a fetus survives an abortion procedure, it must be considered a person under federal law). 1 U.S.C. § 8 (2002).

See Milbank, *Bush Signs Ban on Late-Term Abortions Into Effect*, WASH. POST, Nov. 6, 2003, at A4 (noting the symbolic shift by the federal government in the Partial Birth Abortion Ban Act against abortion after an eight year legislative struggle and two vetoes by President Clinton and the immediate judicial challenges to the constitutionality of the Act in federal courts in Nebraska and New York). See also Saulncy, *Court Blocks New Statute That Limits Abortions*, N.Y. TIMES, Nov. 7, 2003, at A12. The new law forbids physicians from an “overt act”—such as puncturing the skull, to kill a partially delivered fetus. The ban has an exception to protect a woman’s life, but not her health. 18 U.S.C.A. §1531 (2003). See also W. SALETAN, HOW CONSERVATIVES WON THE ABORTION WAR(2003).

129. Rosenber, *The War Over Fetal Rights*, NEWSWEEK, June 9, 2003, at 41.

See S 1019, 108th Congress, Unborn, Victims of Violence Act of 2003; Holzapfel, *The Right to Choose, and The Unborn Victims of Violence Act*, 18J. CONTEMP. HEALTH L. & POL’Y 431 (2000).

See Goldstein, *Bush Signs Unborn Victims Act: Federal Law Establishes 2 Crimes Against Pregnant Women*, WASH. POST, April 2, 2004, at A4.

See also Unborn Victims of Violence Act of 2004 or, Laci and Conner's Law, 18 U.S.C. § 1841 (2004).

130. Rosenberg, *id.* at 42.

131. *Id.*

See also Hulse, Senate Outlaws Injury to Fetus During a Crime, N.Y. TIMES, Mar. 26, 2004, at A1 (noting Senator Diane Feinstein's concern that, ultimately, embryonic stem cell research may be determined to be murder and, thus, abortion in the first trimester as well).

132. Maher v. Roe, 432 U.S. 464, 478 (1976).

133. Lindsey v. Normet, 405 U.S. 56, 74 (1972).

134. Massachusetts Bd. of Retirement v. Murgia, 427 U.S. 307, 314 (1975).

135. Weber v. Aetna Casualty & Sur. Co., 406 U.S. 164, 173 (1972).

136. Maynard v. Hill, 125 U.S. 190, 211 (1888).

137. Zablocki v. Redhail, 434 U.S. 374, 386 (1977).

138. *See generally* Parham v. J.R., 442 U.S. 584 (1979); Wisconsin v. Yoder, 405 U.S. 205 (1972).

139. *See, e.g.*, Ferguson v. Finch, 310 F.Supp. 1251 (D.S.C. 1970); *In re Jarboe's Estate*, 235 F. Supp. 505 (D.D.C. 1964).

140. Kritchevsky, *supra* note 118, at 31.

141. 69 Misc. 2d 304, 330 N.Y.S.2d 235 (1972).

142. *Id.* at 314, 330 N.Y.S.2d at 245. *Cf.* Smith v. Organization of Foster Families for Equality & Reform, 431 U.S. 816 (1977). In upholding the statutory and regulatory procedures for the removal of foster children from foster homes, the Court stated in Smith that: "Whatever liberty interest might otherwise exist in the foster family as an institution, that interest must be substantially attenuated where the proposed removal from the foster family is to return the child to the natural parents." *Id.* at 947.

143. Kritchevsky, *supra* note 118, at 29.

144. Smith v. Organization of Foster Families for Equality & Reform, 431 U.S. at 843.

See generally Alvarè, *The Case for Regulating Collaborative Reproduction: A Children's Rights Perspective*, 40 HARV. J. LEGIS. 1 (2003).

145. Comment, *supra* note 105, at 1270.

146. If approved and encouraged by the state, artificial insemination tends to upset the traditional, totally private, monogamous method of human reproduction. By sanctioning the intervention of a third party (the donor) into the process, the state is approving a trend toward treating reproduction as a social, as opposed to a private, act. Artificial insemination also creates a potential for direct state intervention into the reproductive process. Kindregan, *State Power Over Human Fertility and Individual Liberty*, 23 HASTINGS L.J. 1401, 1409 (1972).

147. Griswold v. Connecticut, 381 U.S. 479, 486 (1965).

148. *See* Karst, *The Freedom of Intimate Association*, 89 YALE L.J. 624 (1980), where it is maintained that procreation is considered fundamental because it "strongly implicates the values of intimate association, particularly the values of caring and commitment, intimacy, and self-identification." *Id.* at 640. These values may not be found in the unmarried woman's desire to engage in artificial insemination—thus lending further credence and support to a state's interest in limiting the use to married women. *Id.*

149. 431 U.S. 494 (1977).

150. Comment, *supra* note 105, at 1272.

151. *Id.* at 1271.

152. Dandridge v. Williams, 397 U.S. 471, 485 (1969) (quoting Lindsey v. Natural Carbonic Gas Co., 220 U.S. 61, 78 (1910)). *But see* M. GLENDON, *THE NEW FAMILY AND THE NEW PROPERTY* (1981).

153. Hafen, *supra* note 101, at 559; Alvarè *supra* note 144.

154. May v. Anderson, 345 U.S. 528, 536 (1952) (Frankfurter, J., concurring).

155. Smith, *The Razor's Edge of Human Bonding: Artificial Fathers and Surrogate Mothers*, 5 WES. NEW ENG. L. REV. 639 (1983). *See also* Brophy, *A Surrogate Mother Contract to Bear Child*, 20 J. FAM. L. 263 (1981).

156. R. SCOTT, THE BODY AS PROPERTY 221 (1981).

See generally Annas & Elias, *In Vitro Fertilization and Embryo Transfer: Medio-Legal Aspects of a New Technique to Create a Family*, 17 FAM. L. Q. 199 (1983).

157. *See supra* notes 15-20. *See also* Culliton, *Science's Restive Public*, 107 DAEDALUS 147 (1978). *See generally* Marcin, *Justice and Love*, 33 CATH. U. L. REV. 363 (1984).

CHAPTER 4

Freedom of Scientific Investigation

Modern scientific work is less a basic expression of the “ancient aristocratic ethos of the love of knowledge” than a mere job to be done by entrepreneurs, employees, or others who have independent funding.¹ In 1980, Genentech, a San Francisco based biotechnology company, issued shares of its stock on the over-the-counter market. Among its products are a hormone capable of stimulating human growth, mass produced human insulin which would allow a substantial reduction in cost of the treatment of diabetes, and interferon which may prove to be the long awaited “miracle” drug to combat cancer. The price of Genentech stock increased dramatically during the first day of trading, and some brokers even suggested that Genentech may in time be the next Polaroid or Xerox.²

Twenty years later, in June 2000, Celera Genomics Corporation—a Maryland biotechnology company—announced that it had formed an association with a California business, Geron, to discover and master the genetics of human stem cell cultures and their pluripotent transformations into specialized tissues with the real possibility for them—in turn—to grow to replace diseased hearts, lungs, livers and other human organs. The anticipated result of this combined business venture will be to produce, in effect, the genetic blueprint for building the human body, cell by cell, tissue by tissue. The ultimate work product of this work will not only be the production of drugs to combat disease but diagnostic tests to predict disease etiologies as well as enhanced data bases of invaluable genetic information—all, of course, accessible for a fee.³ The spirit of entrepreneurial biotechnology is obviously flourishing.

It has been asserted that patenting new forms of life, as sanctioned by the United States Supreme Court,⁴ will be guided by short term profit motives rather than sound philosophical principles.⁵ However, scientific knowledge is not, in and of itself, an absolute end. The thrust and purpose of patenting new life forms are basically technological and are essentially political. Because the etiology of new life forms is political, both its costs and its benefits are, of necessity, of public interest and concern.

Pure scientific inquiry does not produce an economic exploitation of nature; only man’s use of the truths of scientific inquiry does. With the methodological style of nature, science seeks to demonstrate causal relations among events. Thus, the laws of science state that whenever X occurs or varies in a particular way, Y will occur similarly or vary in a particular way. This phenomenon has been aptly termed “a formula for action.” Its practical application awaits only an individual’s decision that it might be advantageous economically to try to mobilize X’s to produce Y’s.⁶

Science promises truth, not peace of mind.⁷ Yet liberty to extend knowledge is never to be regarded as absolute—but rather as has been seen, undergoes limitation when it conflicts with other values.⁸

The spirit of inquiry and analysis must focus as well on the additional parameters of the scientific imperative to explore truth; with the reality of this inquiry being shaped in turn largely by the United States patent laws and administrative interpretations and, more specifically, by the United States Supreme Court in its holding allowing new forms of life created in a laboratory to be patented. The ultimate purpose of this Chapter is to refute the arrogance of power theory expressed as being implicit in the current studies of the vast potential for the positive achievement of good through harnessing the “New Biology.” Thus, it will be demonstrated that what has been dismissed as but a magnificent obsession for power, profits and immortality has, in truth, a far more intrinsic potential for good and reward for the scientific community and the greater world community.

Improvement of man’s genetic endowment by striving for positive propagation of those with a superior genetic make-up or, conversely, delimitation of those with negative genetic inheritance, has always been a primary concern in the field of genetics.⁹ If the quality of life in some way may be improved or advanced by use of law as it relates to genetics, then such must be undertaken. No longer does the Dostoevskian quest to give life meaning through suffering become an inescapable given. By and through new scientific advances in the field of genetics and successes with *in vitro* fertilization, the real potential exists to prevent, in large measure, much human suffering *before* it manifests itself in or through life.

Altering Human Evolution

Today, man is in a position not only to alter the social and environmental conditions of the universe, but also to change his very essence.¹⁰ The mythology of the Minotaur and the Centaur, half man and half animal, may well become the reality of the twenty-first century. Indeed, not only is modern medicine attempting to create man-animal combinations, but also man-machine combinations or cyborgs.¹¹ Plastic arteries, artificial limbs, and pacemakers highlight the efforts of modern science to replace diseased or worn out parts of the human body.¹²

Efforts to construct or engineer biologically functional bacterial plasmids *in vitro* exemplify the relatively new technology of recombinant DNA. Regarded as the most significant step in the field of genetics since 1953, research in this technology will facilitate identification of every one of the 100,000 genes in the human cell. Armed with this information, efforts could be directed toward replacing defective genes with healthy ones. Thus, the hope is that by making such replacements, genetic diseases such as hemophilia and sickle-cell anemia could be conquered.¹³ Indeed, the plentitude of new products of nature that could improve substantially the human condition is staggering to the imagination.

The National Institute of Health (NIH) has taken a conservative view of the limit of safety review required by those institutions receiving federal grant monies to experiment in DNA. In 1980, two hundred representatives from the scientific

community called upon NIH to loosen the restriction on gene-splitting experiments conducted in the United States. The scientists expressed the growing agreement that DNA research carries fewer risks than had once been thought.¹⁴

The central question which arises in relation to the current scientific advances is whether genetic engineering should be promoted and encouraged as a basic recognition of the freedom of scientific inquiry and right of privacy. Significant potential dangers are present in conjunction with the almost limitless opportunity for scientific advancement within the technology of recombinant DNA, commonly referred to as genetic engineering. The fear that the proverbial "mad scientist," working independently or with an enemy foreign power, could isolate and then proceed to duplicate a cancer organism and possibly place it in public water supplies is not easily dismissed. Acts of thoughtless negligence in a laboratory could result in the "escape" of a deadly microbe, which in turn could give rise to a "parade of horrors." Chance occurrences are always inherent in any scientific intervention.¹⁵ When the chance of harmful accident is calculated, the primary consideration is whether the merit of the intervention justifies beginning or continuing the experiment.¹⁶

Genetic engineering, viewed as an instrument to revolutionize, limits the effect of natural selection and replaces it with programmed decision making. Programmed decision making facilitates, rather than impedes, rational thinking. Is it shameful to acknowledge that man has the capability to be in control of himself? The lack of control over the years has spawned a type of "evolutionary wisdom" which, in turn, resulted in the bubonic plague, smallpox, yellow fever, typhoid, diabetes and cancer. Today, the quest for maximum efficient utilization of biological and medical knowledge represents one of the tenets of the so-called "evolutionary wisdom."¹⁷

A number of Post-Darwinians in the specific community assert that there is no wisdom in evolution, only chance occurrence. Few, if any, would be willing to accept unconditionally all that nature bestows, particularly disease. Consequently, science finds itself in the position of trying to both influence and, in many cases, control the process of evolution. Some would go so far as to suggest that dangerous knowledge is never half as dangerous as dangerous ignorance.¹⁸

The sanctity of creation and the fundamental right of privacy in procreation, which is an acknowledged basic or fundamental freedom, may be altered by compelling state interests.¹⁹ Is there a more compelling state interest than the desire to stop a "chromosomal lottery" which saddles the economy each year with four million Americans born with diabetes or fifty thousand born with discernible genetic diseases?²⁰ State interests in minimizing human suffering and maximizing the social good should be properly validated.²¹

Opponents of unrestricted genetic research attack specifically its proponents as being both scientifically and socially irresponsible, and the ultimate promoters of a serious environmental disaster.²² They suggest that nature has developed strong barriers against genetic interchanges between species, and that extreme caution ought to be used during experimentation in this area.²³ Others argue that mankind's genetic inheritance is its greatest and most indispensable treasure which must be

protected and guaranteed at any cost. These opponents submit that the evolutionary wisdom of the ages must not be threatened irreversibly or abridged in order to satisfy the ambition and professional curiosity of some members of the scientific community.

Autonomy, self-determination, and a basic sense of freedom must be tempered by logic, objectivity, and a disinterested search for knowledge; a search that may result in the minimizing of human suffering and maximizing of social good.²⁴ But what is the social good in this question? It is suggested that the social good, within this context, could be equated with an economic policy that lessens the financial burden on citizens to support and maintain genetically defective citizens. The wisest policy is, by consensus, that which promotes a good—social, economic or otherwise—for the greatest number. Thus, human need and well-being shape the degree of positive good resulting from one policy as opposed to another.²⁵ Alternatively, a determination could be made in order to structure what is right or wrong, good or evil, according to whether the consequences of an act or public policy add to, or detract from, the aggregate human well-being.²⁶

Ultimately, the decision for or against a policy is going to be tied to development and maintenance of an *a priori* standard of ethics (where, in theory, a balancing occurred before the standard was set), or to a situation ethic by which the consequences, *pro* and *con*, equities or inequities, of each proposed action will be weighed carefully and a conclusion with an ethical posture or structure of a standard of *modus operandi*²⁷ will be reached.

Encouraging Experimentation

Recognizing that a sustained level of progress for society would depend upon a continuing standard of technological evolution as well as individual technological contributions of exceptional merit and benefit, the Founding Fathers endeavored to codify this attitude within the United States Constitution. By structuring a system of checks and balances within the Constitution which would promote both perspectives, contributions which were truly exceptional could be promoted by grant of a limited monopolization as authorized by the Patent Clause.²⁸ However, the grant of limited monopolization was intended to be consistent with the guarantees of the fifth and the fourteenth amendments, that recognize the right of all citizens to develop their individual skills in pursuit of a trade or calling, and thus establish this right as an inalienable property right.²⁹

There is a long history of efforts to legitimize monopolies for patents of unworthy inventions. To its credit, the United States Supreme Court has thwarted these efforts and has thus recognized and enforced the Constitutional mandate to allow the unfettered growth and natural evolution of technology.³⁰

On June 16, 1980, by a 5-4 vote, the United States Supreme Court decided that new forms of laboratory life were eligible for patents.³¹ The decision may be regarded as ratification of some of the accomplishments of the “biological revolution” which has allowed a broader understanding of life and promoted a greater ability to manipulate various forms. However, both the majority opinion

and the dissent stressed that they address only the question of whether the current patent laws evinced a congressional intent to deny patents to those inventions determined to be alive.³² More particularly, the Court chose to tie itself to the United States Code section which provides: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."³³ Out of this statute emerged the issue of whether a manufactured microorganism constituted "a 'manufacture' or 'composition of matter'" within the meaning of the statute.³⁴

Dr. Ananda M. Chakrabarty, a micro-biologist employed by the General Electric Corporation, engaged in research in which he succeeded in manufacturing a new microorganism, not found in nature, which is effective in breaking up oil spills.

This genetically engineered strain of *pseudomonas* is made by combining (or cross-breeding) four strains of oil eating bacteria into one man-made scavenging microorganism which combines the beneficial properties of each of its four parent bacteria. Each of the four strains digest particular hydrocarbons in mixture of oil and water, such as is found in petroleum spills. Useful by-products of water, carbon dioxide and bacterial protein which are nutritious to inhabitants of the ocean, remain. Dr. Chakrabarty demonstrated that this manufactured "superstrain" is much more efficient in digesting oil than a mixture of the four individual bacteria. Another advantage is that this microorganism, if it "escaped," would not be able to thrive in gas tanks or in the oil fields of the earth and wreak uncontrolled environmental havoc on the ecosystem.³⁵ The Chakrabarty bacterium had already been granted a patent in Britain, which had followed several European nations in recognizing both plants and animals as patentable.³⁶

The patent application of Chakrabarty and General Electric was for a manufactured microorganism product not found in nature as well as a process of using the microorganism, on a carrier, to digest oil spilled in water. The United States Patent Office rejected the product claim, but allowed a portion of the process claim. The rationale for rejection of the product claim was that a living organism naturally occurring product of nature as this was determined to be, was not within the classes of subject matter which are patentable. The patent office reached this conclusion because there was no mention of such a class in the controlling statute or in the statute's legislative history. This decision was upheld by the Patent Office Board of Appeals, but the United States Court of Customs and Patent Appeals reversed, and the Patent and Trademark Office appealed to the United States Supreme Court.³⁷

In the past, the Patent Office has included living things within the statutory subject matter. For example, in 1873, United States Patent No. 141,072 was issued to Louis Pasteur. Claim two of the patent application reads: "Yeast, free from organic germs of disease, as an article of manufacture."³⁸ There are other examples, in other patents, of claims having been granted for viruses and cultures.³⁹

Today, there are more than one hundred patent applications related to products of genetic engineering.⁴⁰ *Chakrabarty* sets the pace for a wide variety of new "man-made" organisms which can facilitate socially desirable processes such as growing

wheat in arid lands, leeching ores to assist mining companies in reaching remote part of the earth, and producing a “bug” that will ferment corn starch or corn syrup into ethanol, an alcohol used in both whiskey and gasohol. There is also a patent application for a bacterium that metabolizes ethylene into ethylene glycol (antifreeze).⁴¹

As noted previously, the major thrust of the decision of the United States Supreme Court in *Chakrabarty* is tied to the interpretation of the term “manufacture” as it appears in the federal patent code. Observing that Thomas Jefferson’s Patent Act of 1793 stressed its coverage to “any new and useful art, machine, manufacture, or composition of matter, or any new or useful improvement (thereof),” Chief Justice Burger, writing for the majority, defined manufacture as “the production of articles for use from raw materials prepared by giving to these new materials new forms, qualities, properties, or combinations whether by hand labor or by machinery.”⁴² Citing approving precedent defining “composition of matter” as including “all compositions of two or more substances . . . all composite articles, whether they be the results of chemical union, or of mechanical mixture, or whether they be gases, fluids, powders or solids,” the Chief Justice concluded that the *Chakrabarty* microorganism qualifies as being within patentable subject matter.⁴³ The claim is particularly forceful since it is for a product of human ingenuity which is non-natural in its occurrence.⁴⁴

In response to the argument that microorganisms cannot be patentable without express congressional authorization, The Chief Justice declared that Congress had already defined what was patentable subject matter in Section 101 of the Act, and that it was for the courts to define that provision. Finding no ambiguity in the statutory provisions and stressing the broad constitutional and statutory goal of promoting “the Progress of Science and the useful Arts,” he adhered to his position that the definition the Court gives to section 101 is consistent with the goals of the Act.⁴⁵

The Court declined to acknowledge the “grave risks” or the “gruesome parade of horrors” which the Patent Office argued that the Court should weigh in deciding whether the *Chakrabarty* invention is patentable.⁴⁶ Although acknowledging that “genetic” research and related technological developments may spread pollution and disease, that it may result in a loss of genetic diversity, and that its practice may tend to depreciate the value of “life,” the Court concluded that neither the grant nor the denial of patents on microorganisms will end advance in genetic research nor “deter the scientific mind from probing into the unknown any more than Canute could command the tides.”⁴⁷ The Court stated unequivocally that scientific arguments against advancements in this field are matters of “high policy” which should be considered by the legislative process which balances and places in proper perspective the various competing values and interests of all parties.⁴⁸ The Chief Justice concluded by noting that if the Court had misconstrued the provisions of Section 101, all that Congress needed to do was to amend the statute to exclude organisms which are produced by genetic engineering from the protection of the patent laws.⁴⁹

Despite the Court’s disclaimer that its action was purely constructive in nature

and merely an interpretation of a statutory mandate, it did attempt nevertheless to validate a new national policy. While invoking the Jeffersonian concept of ingenuity in patent creativeness, it came down four-square on a policy encouraging experimentation into the “New Biology” despite the possible risk to mankind. Thus, while disclaiming the application of a balancing test, it, in effect, performed one. It decided correctly that the utility of the good that will flow from research and experimentation into the varied fields of the “New Biology” far outweighs the potential harm accruing as a consequence of such undertaking. This is an eminently fair and reasonable position.

A Further Innovative Application

In May, 1987, the United States Patent and Trademark Office announced that it “considers non-naturally occurring nonhuman multi-cellular living organisms, including animals, to be patentable subject matter.”⁵⁰ This policy was viewed by the Patent Office as an effort to keep pace with the startling new advances in biotechnology, and thereby encourage innovation and not determine its ethical implications. Others, such as animal rights advocates, were concerned that animals were being considered as products and not sentient beings.⁵¹ Some feared that the new policy would enable a select number of biotechnology companies to dominate the livestock industry, thereby eliminating small independent breeders and threatening to eliminate genetic diversity among farm animals,⁵² since with the patents the central issue becomes who either owns, or is in control of breeding livestock.⁵³

Theologians quarreled with the Patent Office policy because it not only equated heavenly made creatures with manufactured goods of the market place, but took a giant step on the slippery slope that would lead to the patenting of genetically altered human beings and man’s full assumption of God-like powers. The clear specification of the policy that its application was only for “nonhuman life” was of no assurance here.⁵⁴ Informed members of the scientific community, however, saw the Patent Office as merely continuing the reasonable exploitation of nature.⁵⁵

The Transgenic Animal Patent Reform Act was passed in 1988.⁵⁶ The Act excludes human beings from patentable subject matter, provides immunity for patent infringement to farmers who purchase patented farm animals and seek to reproduce them, and also seeks to clarify the Patent and Trademarks Office’s authority to require biological material deposits from patented animals.⁵⁷ The most serious defect of this law is that it fails to define the term, “human being.” Thus, the extent to which genetic material constitutes a human being is an open question.

Should an animal that contains one-half of a human code be considered human? How about one-quarter human genetic material? Should genetically altered fetuses be considered patentable subject matter under current patent law? Although such animals are not being patented, . . . such technology will exist in the near future.⁵⁸

A cellular biologist at the New York Medical College announced in 1998 that

he has applied for a patent on a method for making creatures that are part human and part animal, or chimeras. While never having created such a creature—and with no present to undertake the task—his goal is to force a national debate on the commercialization of life with the U.S. Patent and Trademark Office to re-examine the country's current position on this issue. Indeed, patent law experts suggest that there is nothing in the U.S. patent code precluding someone being awarded a patent on a partially human creature. The patent office has awarded previously several patents on animals with minor human components including laboratory mice engineered with human cancer genes or human immune system cells. While not empowered to take ethical criteria into account when considering a patent application, the patent office will hold this application to a high standard of proof of feasibility. Ultimately, it is for Congress and the courts to determine how questions of this nature regarding the ownership of life forms is determined.⁵⁹

It is expected as well that the near future of biotechnology will give rise to work in laboratories in the United States where virus and bacteria genes will be transferred to plants in an effort to enable them to produce their own particular insecticides or fertilizers. After field testing, these “transgenic” plants will be used by farmers in the place of conventional crop varieties.⁶⁰ Further successful research will be undertaken that manipulates the primordial cells producing sperm and eggs to enable breeders to determine the sex and other preferred characteristics of their animals; and routine gene transplants from one species to another will be accomplished routinely.⁶¹

As discussed previously,⁶² these and similar concerns over patenting life were raised initially with the *Chakrabarty* decision.⁶³ Since no catastrophic events have followed in the aftermath of *Chakrabarty*, and none are expected from this new policy of the United States Patent and Trademark Office, the on-going debates over the long range effects of genetic engineering and its ethical constraints will be of little value in halting the momentum of scientific inquiry, experimentation and advancement of biotechnology.

A part of this continuing debate was seen rather dramatically in 1995, when leaders from more than eighty religious denominations—including Protestant, Catholic, Jewish, Buddhist, Muslim and Hindu groups—formed a Joint Appeal Against Human and Animal Patenting.⁶⁴ The appeal grew from concerns over the long term consequences of *Chakrabarty* and the U.S. Patent and Trademark's Office positions on non-human multi-cellular organisms and sought, essentially, to advance the prominence of the idea that human genes are integral to the maintenance of sanctity in God's creations. Thus, patenting of life forms fails to recognize the soundness of life itself.⁶⁵ Interestingly, this action is seen as but a codification of the decades-old controversy concerning whether risks associated with new technologies outweigh their benefits.⁶⁶ At the same time, it serves as a reminder of the force of religious values and ethics in the public arena is ongoing.⁶⁷

Values in Conflict

Some would seek to abandon science and reason in favor of mysticism, hermeneutics and transcendental rapture. Sadly they fail to comprehend that ignorance, not knowledge assures misery; and that the employment of science for inhumane reasons, not science in and of itself, threatens global survival. Reduced to its most fundamental level, then, what is seen is that the pivotal questions confronting the science of human experimentation are two in number: who will *control* its products and what purposes will be employed to achieve this end.⁶⁸

The improvement of human well-being has been, for the most part, the single motivating force in the quest to ensure that all citizens, especially the young children, will be safe from all forms of disease; not only genetic and congenital disorders, but uterine infections and a formidable host of other birth defects.⁶⁹ Since the 1930s, for example, human fetal tissue has been an invaluable research tool for molecular biologists as a source of human cell lines. In turn, these cell lines have been used widely in advanced research on viruses, and in the preparation of vaccines (notably, the polio vaccine) against them. More recently, successful research has been conducted on fetal tissue transplants in living subjects for therapeutic purposes, and for developing treatments for Parkinson's disease, diabetes and radiation-induced anemia. What makes fetal tissue so particularly useful for transplantation is the fact that it not only grows rapidly and is very adaptable, but induces a limited immune response from the host.⁷⁰

The Federal Position

Both as a response to Louise Brown's extracorporeal birth in 1978, and to a grant application for *in vitro* fertilization (IVF) research, the then Department of Health, Education and Welfare (now the Department of Health and Human Services) and its Ethics Advisory Board decided to study the complex ethical, legal, social and scientific issues raised by the IVF process.⁷¹ The final report of the Department was ultimately "buried in the bureaucracy."⁷² Yet today, given the sometimes strident pro-life mood of a vocal segment of society, there is pessimism that a strong positive movement will occur at the federal regulatory level.⁷³ Due largely to the leadership of former Congressman (then Senator) Albert Gore of Tennessee, hearings were conducted in August, 1984, on the issue of embryo transfers and the legal, ethical and medical responses to such procedures.⁷⁴ Although no firm or conclusive steps were taken as a consequence of these hearings, they served to focus attention on the need for continuing dialogue in this area.

Because of a *de facto* moratorium set in 1975, no federally funded research was undertaken on IVF.⁷⁵ Even though the 1979 Report of the Ethics Advisory Board of HEW concluded that federal support of research on humans designed to establish the safety and the effectiveness of IVF procedures would be ethically permissible so long as certain conditions were met,⁷⁶ the Report has never been accepted nor the moratorium ended; there is no real likelihood such action will be taken soon.⁷⁷

It should be noted carefully that the involvement by the federal government and its Department of Health and Human Services is structured presently by general regulations protecting human subjects which apply to any IVF research, development, or other related activities that might in the future be conducted by the Department, or by the federal government outside the Department.⁷⁸ To ensure additional protection in research projects that involve fetuses and/or pregnant women, the Ethics Advisory Board of the Department will be required to review every such proposal for IVF “as to its acceptability from an ethical standpoint.”⁷⁹

Subsequent specific protections have been provided fetuses who are the subject of proposed experimentation and IVF research.⁸⁰ Although limited to research efforts funded in whole or in part by the federal government,⁸¹ these guidelines make a significant distinction with regard to potential legal rights of implanted embryos.⁸² The distinction is apparent in the definition of a fetus as “the product of conception from the time of implantation (as evidenced by any of the presumptive signs of pregnancy, such as missed menses, or a medically acceptable pregnancy test). . . .”⁸³

As a consequence of this structured definition, research undertaken on fetuses *in utero* and *ex utero* is prohibited unless the purpose of the activity is to either meet the particular health needs of the at-risk fetus or there is minimal real or potential harm to the fetus by the research, and the purpose is to obtain biomedical knowledge not otherwise obtainable.⁸⁴ Research undertaken on non-viable fetuses *ex utero* is prohibited unless either vital functions will not be maintained artificially, experimental activities that would terminate vital functions are not used, or the research purpose is to obtain otherwise unobtainable significant biomedical knowledge.⁸⁵ The obvious implication of these restrictions on embryonic and fetal research is that the scientific pursuit of mankind is handicapped significantly. Private research into the mysteries and the opportunities of the new reproductive biology continues. But, without a balanced regulated scheme and sources for federal research funding, the initiative and the momentum for scientific advancement is curtailed.

The Bush Administration Extension

On November 13, 1989, the Bush Administration, through Dr. Louis W. Sullivan, Secretary of Health and Human Services, advised the National Institutes of Health that, because of a belief that allowing federal scientists to conduct research using fetal tissue transplants would actually increase the incidence of abortion across the country, the ban on fetal-tissue research would be extended.⁸⁶ The Secretary stated that his department “should not be funding activities which encourage or promote abortion.”⁸⁷ Even though limited in application to federal scientists, many members of the medical research community are of the opinion that extension of the fetal tissue research ban will produce a “chilling-effect” on this exciting field of research even for privately funded undertakings.⁸⁸ What is seen very clearly here is the inextricable relationship between abortion, fetal research⁸⁹

and experimentation and, even more importantly, a similar inextricability between politics and morality.⁹⁰

The Clinton Action

On January 22, 1993, President William Clinton lifted the moratorium on federal funding of research involving transplantation of fetal tissue from induced abortions.⁹¹ With the execution of this Presidential Memorandum, untold opportunities are now created for developing effective treatments for such diseases as Parkinson's and Alzheimer's as well as disorders of the nature of diabetes and leukemia.

A British Response

A more sophisticated and enlightened position has been taken consistently by the British Government. In response to the findings of a national committee set up in 1988 to review guidelines for research use of fetuses and fetal material, the British Health Minister announced that the Government had accepted the central recommendations of the Committee which were issued July 26, 1989.⁹² Separating abortion from the issue of how tissue from a dead fetus should be used, the Committee recommended that separate maternal consent be obtained for any act of abortion, and for the use of tissue from an aborted fetus. No direct contact would be permitted either between the abortion clinics or the institutions utilizing the tissue for research.⁹³ In an effort to safeguard against a possibility of "personality transfer" between a fetus and the recipient of fetal brain tissue, the recommendation was that in particular cases of nervous tissue, "only isolated neurons or fragments of tissue should be used for transplantation[s]."⁹⁴ The British Medical Association endorsed promptly the recommendations and the government posture, observing that this policy was totally compatible with what the members of the Association had freely "adopted covering physicians responsible for carrying out abortions, as well as those using fetal tissue to develop new therapies."⁹⁵

Since abortion is legal, is it not a simple deduction that it is acceptable ethically to then use tissue from abortuses for research?⁹⁶ Rational, simple deductions are not the order of the day, however, when dealing with issues that are so emotionally charged. Inexplicable "feelings" and beliefs assume a mantle of sanctity not countenanced in other logical areas of discourse. It is nevertheless a legitimate act of faith to postulate that fetuses are persons.⁹⁷ The only difficulty with such a position is that there is no absolute way to prove or establish its validity. It can neither be verified nor falsified.⁹⁸

Toward a Standard of Reasonableness

The Supreme Court's actions in *Chakrabarty* and the recent Patent and Trademark policy on the patentability of nonhuman life, give private corporations the incentive to invest in further research into the fields of bio-chemistry, genetics,

and eugenics. This incentive, and the anticipated result therefrom, satisfy the constitutional objective of early disclosure which expands the public domain of knowledge in these fields. There can be little doubt that patentability of microorganisms and nonhuman life forms is "Progress of the Useful Arts."

Man's dehumanization and depersonalization will not be fostered as a consequence of the continued quest for mastery of the genetic code and the study and use of non-coital reproduction processes. Attendant to the freedom to undertake research into the exciting and fertile frontiers of the New Biology is a coexistent responsibility to pursue the work in a reasonable, rational manner. Pursuing the New Biology in such a manner requires adequate attention to the safety factor in all aspects of the experimentation.⁹⁹ The undesirable events of a Brave New World can be tempered only when knowledge is pursued with the purpose of establishing the truth and integrity of the question, issue, or process.¹⁰⁰ The vast potentials for advancing society and ridding it of a verisimilitude of its present ills is an obvious good which must be steadily pursued. Little sustaining harm can result from a reasonable pursuit of truth and knowledge; for, indeed, truth and knowledge are the basic intersectices in any balancing test.¹⁰¹ If actions are undertaken and performed with the goal of minimizing human suffering and maximizing the social good, then the noble integrity of evolution and genetic progress will be preserved.

So long as procreation continues to remain the central driving force in a marital relationship and the family the very core of a progressive society, efforts will be undertaken to expand the period of fecundity and combat infertility, itself. Genetic planning and eugenic programming are more rational and humane alternatives to population regulation than death by famine and war.

Man must endeavor to execute his investigatory and manipulative or creative powers within the scientific laboratory with a rational purpose and in a spirit of humanism. He should seek to minimize human suffering thereby continuing to the social goal of allowing each member of society an equal opportunity to achieve their maximum output within the economic market place, and to maintain personal integrity and seek spiritual tranquility. Genetic engineering that contributes to the social good should be utilized fully. There can be no real doubt that genetic manipulation provides a perilous opportunity that may either threaten freedom or enhance it—all depending upon the balance struck between its use for individual need satisfaction and societal good.¹⁰²

Restraining scientific inquiry should be limited only to action taken considered to be unreasonable. Accordingly, an undertaking would be regarded as unreasonable when the long and short term costs of its effects would outweigh the enduring benefits that would derive from its study and implementation. Viewed, then, as being not only an aid to the tragedy of infertility in family planning, but as a tool for enhancing the health of a nation's citizens, vital scientific research must continue in the new, non-coital reproductive technologies and in efforts to engineer man's genetic weaknesses out of the line of inheritance. Healthier and genetically sound individuals have a much better opportunity for pursuing and achieving the "good life" and making a significant contribution to society's greater well being.

Complexities in Collaborative Reproduction

An estimated two hundred conception clinics around the United States serve currently two million couples seeking assistance in combating infertility.¹⁰³ These couples expend nearly one billion dollars to arrest their condition. Tragically, the national “take home baby rate” from these clinics is between eleven and fourteen percent.¹⁰⁴ From this, the question that becomes uppermost in the hearts and minds of many is whether there is a fundamental or international human right to health assistance in biological reproduction? In recognizing or structuring such a right, would the state be obligated to spend any and all reasonable amounts of money in order to validate the procreative rights of all women—regardless of marital status? Consistent with the fundamental constitutional right to life, liberty and the pursuit of happiness, should the state enforce its procreative powers *vis-à-vis* infants at the moment of conception or at some point later in their embryonic development?

In 1983, Sir Harry Gibbs, the then Chief Justice of Australian High Court, ruled “that a foetus has no right of its own until it is born and has a separate existence from its mother.”¹⁰⁵ The common law tied the commencement of life to the time when an unborn fetus first moved in the womb—or, in other words, when it quickened.¹⁰⁶ Thus, only after the fetus quickened could its destruction be classified as murder.¹⁰⁷ In the United States, the issue of when individuality is established biologically and when the law should, accordingly, protect such individuals, was determined by the Supreme Court in *Roe v. Wade*.¹⁰⁸ In *Roe*, the Court held essentially that a fetus does not receive the full protection of the law until it is born.¹⁰⁹

In September, 1989, a judge of the Circuit Court for the Fifth Judicial District of Tennessee ruled that life begins at the moment of conception.¹¹⁰ The court held that seven cryogenically preserved *in vitro* embryos were children, and not personal property. Accordingly, the court placed the embryos in the custodial care of the woman who, during marriage, produced the eggs fertilized subsequently by her then-husband.¹¹¹ The only support the court provided for its momentous decision was a reference to the definition of “conception” in Webster’s New Collegiate Dictionary.¹¹² Apparently, the court was unpersuaded by the authoritative texts and treatises relevant to the field. Instead, it relied primarily on the testimony of eight witnesses, particularly that of Dr. Jerome Lajeune, a member of the Faculty of Medicine of the University of Paris and the Pontifical Academy of Science at the Vatican.¹¹³

On September 13, 1990, however, the Tennessee Court of Appeals ruled that awarding the seven fertilized ova to the woman would constitute “impermissible state action” by violating the former husband’s “constitutionally protected right not to beget a child where no pregnancy has taken place.”¹¹⁴ The court based its opinion on the U.S. Supreme Court recognition that the decision to “bear or beget a child” is one of protected choice by the Constitution.¹¹⁵

Consistent also with state law which recognizes legal protections extending only to viable fetuses, the court remanded the case to the trial court directing a new judgment to reflect the Appeals Court decision, granting both parties joint control

and an equal voice in the disposition of the ova. The Court thus held that just as it would be repugnant constitutionally to order the woman to implant the fertilized ova against her will, it would be equally repugnant to order her former husband to bear the psychological, if not legal, burdens of forced paternity.¹¹⁶

The Supreme Court of Tennessee affirmed, subsequently, this ruling observing that the wishes of the progenitors of the pre-embryos (or eggs penetrated by sperm but not yet joined by genetic material) should be ascertained and followed. Where the wishes are neither discernible nor indisputable, and no prior agreement exists directing the disposition, the relative interests of the parties in making use or not making use of the pre-embryos should be balanced—with ordinary preference being given to the party wishing to avoid procreation where, that is, “the other party has a reasonable possibility of achieving parenthood by means other than use of the pre-embryos in question.”¹¹⁷ In those cases where no other reasonable alternative exists, “the argument in favor of using the pre-embryos to achieve pregnancy should be considered.”¹¹⁸ Yet, where “the party seeking control of the pre-embryos intends merely to donate them to another couple, the objecting party obviously has the greater interest and should prevail.”¹¹⁹

Interestingly, in 1995, the New York Court of Appeals held in *Kass v. Kass*, under similar acts, that pre-embryos were to be donated to a clinic for research—all according to an agreement made between a then husband and wife before their divorce and prior to the cryo-preservation of the couples embryos. In order for Mrs. Kass to have made a compelling showing for sole custody of the fertilized eggs to be implanted in herself after divorce, she would have had to show she had not other reasonable means to achieve parenthood and this, then, was her last chance to achieve motherhood. The court suggested in cases of this nature, adoption should be considered as a real alternative to biological parenting.¹²⁰

The dilemma of frozen embryos presents no clear course of action for easy resolution.¹²¹ Yet, in the state of Victoria, Australia, alone there are said to be some two thousand embryos cryogenically preserved.¹²² Throughout Australia, as many as ten thousand such frozen embryos may exist.¹²³ The Deputy Director of Legal Affairs of the Council of Europe has suggested that upwards of twenty thousand embryos are frozen throughout Europe.¹²⁴

The fact that no clear consensus is evolving on even how to begin a dialogue about frozen embryos let alone develop a legal response-mechanism to deal with the situation, does not bode well for clarity and direction in this area. Indeed, “the ethical debate is even less focused than the unending rhetorical battle over abortion.”¹²⁵ Before legislatures and courts are called upon to develop a definitive framework for principled decision making, objective “hard thinking” is required of the major cross-disciplinary participants in this unfolding drama.¹²⁶

The new reproductive biology promises untold opportunities for resolving heart-breaking problems of infertility and will expand the meaning of “procreational autonomy” for women. It also presents difficult problems for the physician, lawyer, ethicist, theologian and, for that matter, the average person.¹²⁷

The Ethics of In Vitro Fertilization

Typically, the *in vitro* fertilization (IVF) and embryo transfer processes begin with drug therapy to produce super-ovulation in a woman. Through a procedure called laparoscopy, the resulting eggs are removed from the woman's reproductive tract and then fertilized. An embryo is then implanted in the woman's uterus and, if the implantation is successful, carried to term. The remaining embryos are stored, either for future implantation should the first attempt fail, or for use in scientific or medical experiments. Alternatively, IVF may be used without embryo transfer to produce embryos solely for experimental purposes.

Attention is now drawn to what might be termed as the "ethical morality" of *in vitro* fertilization, a discussion which explores the benefits and the harms of IVF use.¹²⁸ Ethical complexities attend each of the many variations on the basic IVF theme. For example, when artificial insemination is used to fertilize a married woman's egg with the sperm of a man other than her husband because her husband's sperm is defective, a serious ethical issue is posed. Similarly, ethical issues arise when a third party surrogate carries an embryo to term for a genetic mother or when a single woman seeks to avail herself of IVF procedures. This Chapter will not probe *all* of the ethical issues raised by IVF, but will instead proceed selectively.

The most obvious benefit of IVF is that it circumvents infertility and allows persons with a strong desire to have children to rear a family. If it is determined conclusively that frozen embryos can be used without damage to resultant children, IVF could enable women who wish to pursue careers to bear children using embryos created some years earlier, thereby reducing their chance of producing a Down's syndrome child. Beyond family expansion, IVF could be used to provide embryos for scientific and medical experiments. Embryos could be used in infertility, genetic and cancer research; as a source of obtaining embryonic tissue used in the treatment of diseases such as diabetes; and to harvest organs for transplant.

There are several major objections to IVF. The first is that separating sex from procreation is inherently wrong. IVF, followed by embryo transfer to the uterus of the married woman, severs the connection between sex and reproduction. The second objection is that IVF is wrong morally because it involves an abnormal risk of harm to the individual subsequently brought into existence. Physical damage or abnormality (although not documented factually) could result from IVF or from the subsequent transfer of the embryo to the woman's womb. Furthermore, psychological harm might inure to an infant born of the total process.

The third objection is that using IVF as a means to produce embryos for experiments or as sources of tissues and organs subjects the embryo to pain. This objection would have considerable merit where experiments were conducted on substantially developed fetuses. When conducting such scientific interventions with embryos in the first several weeks of their development, however, such embryos probably do not experience pain—this owing to the absence of a critical nervous system.¹²⁹

The fourth objection is that although IVF may not be wrong inherently or wrong because of its effects upon those involved immediately, it may be wrong because of the “slippery slope” to which it is likely to lead. IVF together with embryo transfer may lead to unimpeded use of surrogate mothers as substitutes for genetic mothers; cause the dissolution of the family unit when women who do not wish to marry or have sexual relations with a man use this technique; or even lead to the development of artificial wombs, serving the mother-child connection.¹³⁰

The strongest objection to the IVF process is that the unimplanted embryos will be destroyed eventually, an action morally akin to abortion. When embryos are not implanted in the woman’s uterus, they must be used for scientific experimentation, frozen, or destroyed. Generally, anti-abortionists view all scientific experimentation using embryos as morally wrong since it leads necessarily to the embryo’s destruction. However, at a 1989 meeting of The American Society of Human Genetics, a new procedure was revealed which might ease the high tension associated with prenatal genetic testing.¹³¹ This procedure is designed to discover genetic defects in the human egg *before* fertilization. Although considered promising, this procedure must itself undergo further testing. Once validated, and accepted clinically, this could well take the “sting” out of some moral objections to experimentation and use of IVF and embryo implants as assaults on the right to life. Indeed, the General Counsel for the National Right to Life expressed his opinion that the test was proper since it did not involve “the taking of innocent human life.”¹³²

The freezing of embryos also poses difficult moral dilemmas. If frozen embryos cannot be thawed successfully, a decision to thaw would lead to the destruction of the embryos. Moreover, even if successful thawing can be accomplished, the decision to experiment, implant, or destroy arises again. Quite clearly, the ethical dilemma involves very real problems. For example, would a woman whose first implantation was successful be required to keep the remaining embryos frozen in perpetuity to avoid their destruction? The only apparent way to resolve the uncertainty about freezing techniques would be to continue with limited experimentation in the field, using lower animal life forms.

Great Britain Provides Leadership

In 1982, four years after the birth of Louise Brown, the world’s first test-tube baby,¹³³ the British government constituted a Committee of Inquiry into Human Fertilization and Embryology. The Committee, chaired by Dame Mary Warnock, was directed to examine the social, ethical, and legal implications of the new reproductive biology. The Committee submitted its report in July 1984, and great debate and discussion followed for six years until parliamentary action.¹³⁴

In essence, the Warnock Committee approved the cryo-preservation of embryos but only under strict constraints and subject to review by a statutory licensing authority.¹³⁵ The Committee recognized that even though embryos enjoyed an ethical or moral (“special”) status, embryonic research could continue, subject to careful monitoring, for a fourteen day period after fertilization.¹³⁶ Moreover, excess

embryos could be proper subjects for research within this time period if informed consent to such actions is obtained from the couple generating the embryo.¹³⁷ The Committee also recommended that legislation be enacted to allow research on any embryonic life derived from IVF whether or not the embryo was developed intentionally for research.¹³⁸ The report does not detail the extent to which experiments on embryos may be undertaken. If they involve inserting sharp instruments into the embryo, itself, stronger opposition would obviously be voiced than if mere microscopic observation of embryonic development were charted.¹³⁹ The Committee suggested that ten years be the maximum allowable time for storage (with the right of disposal passing to the storage authority after that time period).¹⁴⁰

Regarding rights of inheritance, the Committee proposed legislation to eliminate the dilemma of Australia's "orphan" embryos. The proposed legislation provided that any child born of an IVF procedure that had used an embryo either frozen or stored, "who was not *in utero* at the death of the father shall be disregarded for the purposes of succession to the inheritance from the latter."¹⁴¹ Concerning the use of surrogate mothers, the Committee proposed legislation that would impose a criminal sanction for the maintenance of surrogate mother agencies, but the Committee suggested simultaneously that those individuals entering into private surrogation arrangements, in connection with IVF and embryo transfer procedures, be exempted from criminal prosecution.¹⁴²

The Human Fertilization and Embryology Act

The work of the Warnock Committee provided the framework for enactment of The Human Fertilization and Embryology Act of 1990.¹⁴³ The purpose of the Act, itself, is to control the use of donated gametes (eggs or sperm) and the creation of embryos outside the body by requiring these two activities be licensed by a Licensing Authority. Thus, it is apparent that this legislation does not seek to regulate all infertility treatments. For example, the use of gamete intra-fallopian transfer, or GIFT, where eggs and sperm are placed into a woman's fallopian tube to fertilize there instead of *in vitro*, is not within the coverage of this legislation—unless, that is, donated gametes are used. Provision was made, however, for controlling GIFT, as well as other related techniques, by subsequent regulations if their use continues to present problems.¹⁴⁴

Under the Act, the woman who carries the child conceived artificially is recognized as the mother. Thus, the legal mother is the gestational—rather than the genetic mother. Accordingly, a woman unable to produce eggs of her own who receives IVF or GIFT treatments with the use of donated eggs or embryos carried to term is seen as the legal mother.¹⁴⁵

While the Act does not specify embryos as forms of personal property or as persons, it treats embryos, effectively, as property—this as a consequence of its provision that allows the donor to consent to their being used for others, for experimentation or even destruction. Consent may be varied or withdrawn up to the time the gametes or embryos are used. Although the Act does not deal with a

situation as seen in *Davis v. Davis* before the Tennessee Supreme Court, it is suggested that in such an actual case of this type, “the embryo must be allowed to perish since there would no longer be the requisite consent to storage by each person.”¹⁴⁶

On January 31, 2001, Britain relaxed the rules under the 1990 Act limiting research on human embryos and thereby became the first country to effectively legalize creation of cloned human embryos. The actual creation of cloned babies remains outlawed. Yet, the regulations allow clonal experimentation to proceed for a period of fourteen days, after which time it must stop and the putative clones destroyed. Embryonic stem cell research will follow inevitably since stem-cell research, itself, involves embryo cloning—this because physicians want to treat ill patients with cells cloned from their own bodies.¹⁴⁷ Those cells would, accordingly, be altered, cloned and returned to the patient to replace damaged or dead cells causing the medical problem. The nucleus of a donor egg would be removed and replaced with a cell from a sick patient. The egg would be induced to divide and start growing in an embryo. Since the cloned cells would be identical—from a genetic basis—to the patient’s, they could overcome theoretically the expected problems of transplant rejection.¹⁴⁸

Embryonic Stem Cell Research — an Uncharted Venture

As part of a broader effort to grant federal researchers access to human embryonic stem cells, the Director of the National Institutes of Health has asked the Department of Health and Human Services to develop regulations which would allow these scientists to conduct research into this field—a field which may yield ultimately, as seen, untold opportunities for cells to grow replacement parts for people with various degenerative disease.¹⁴⁹

Following President Clinton’s four year old executive order forbidding federal scientists from developing human embryos solely for research, the tenor of the new rules would insist use of the stem cells be limited to those retrieved from leftover embryos discarded, as such, by couples who had made them during infertility treatments. The reasoning behind this developing position is that the present ban on human embryonic research does not preclude federal scientists from conducting studies on already isolated stem cells—or, for that matter, the progeny of those cells—so long as someone else retrieved the original cells under private funding. It was under private funding that human embryonic stem cells was discovered in 1998.¹⁵⁰

Taken from the innermost cell mass of a human embryo, embryonic stem cells possess “pluripotency” which allows them to grow into and become any of the tissues in the body. Thus isolated, to the extent stem cells can be coaxed to develop into brain, liver, heart or finger cells, they can be used to regenerate or replace such damaged organs anywhere in the body. While current reports do not suggest cures based on embryo cells or cloning as imminent, they underscore the soundness of the argument advanced for support by human embryo cell research.¹⁵¹

Cloning Pre-Embryos

On November 25, 2001, scientists at Advanced Cell Technology (a private company in Worcester, Massachusetts) announced that it had cloned three human pre-embryos for a few hours, long enough to form microscopic balls containing just four to six cells and thereupon they died.¹⁵²

The Chief Executive of Advanced Cell disclaimed any grand purpose to clone human babies. Rather, he stressed the need of regenerative medicine to advance therapeutic cloning where the purpose of cloned embryos is to isolate from them their embryonic stem cells which in turn have the inherent capacity to grow into all kinds of human tissues.¹⁵³

Some scientists argue the best way to make stem cells for transplantation into patients is to grow them from embryos that are clones of those patients. In this way the stem cells, and the tissues made from those stem cells, are identical genetically to the patients and—in theory—less likely to be rejected by the patients immune system.¹⁵⁴ As will be seen, the George Bush policy enunciated in August, 2001, precludes federally funded stem cell research involving cloned embryos.¹⁵⁵

This new advance demonstrates that a single cell taken from a human adult can be coaxed to turn into what appears to be a healthy young embryo—a feat until now accomplished only in farm animals and mice. It breaks new ethical ground by creating the beginnings of a human being from a single parent—step that many people have said is, at a minimum, morally precarious.¹⁵⁶

Further Options: Parthenogenesis

New research points to another novel source for embryonic stem cells: namely, unfertilized eggs that can be harvested from ovaries.¹⁵⁷ The achievement of parthenogenetic (non-sperm) development in human oocytes has taken a bold step forward as a consequence of continuing research by Advanced Cell Technology, Inc. where unfertilized monkey eggs were exposed to chemicals that, in turn, induced them to divide into embryos. The stem cells harvested from the embryos were then coaxed into several forms of mature cells such as brain, muscle, and intestinal cells.¹⁵⁸ Advanced Cell announced in November, 2001, that it had induced successfully parthenogenetic development in three human pre-embryos.¹⁵⁹

If this scientific process is perfected ultimately for humans, it could well prove to be the moral “salvation” for Roman Catholic ethicists who have yet to form a consensus on whether such embryonic stem cells deprived from eggs which are unfertilized can be accepted morally as valid products of scientific research.¹⁶⁰ Speaking for the National Conference of Bishops, Dr. Richard Doerflinger observed that since the Roman Catholic Church favored equal embryonic protection for damaged and healthy embryos, parthenogenetic ones—even though they could not get to term—would be irrelevant because, in effect, they would still be “short-lived human beings.”¹⁶¹ There is essentially no real distinction between reproductive human cloning and therapeutic cloning he argues, because both procedures commence with the cloning of a human embryo.¹⁶² Yet, he continued, observing

that if parthenogenetic embryos are in fact established as *not* being human beings, “the moral problem is much reduced.”¹⁶³

Federal Guidelines

Drawing upon positive recommendations made by the National Bioethics Advisory Commission in September, 1999, the National Institutes of Health issued Guidelines for Research Using Human Pluripotent Stem Cells on August 25, 2000, and thus lifted effectively the moratorium on embryonic stem-cell research in the United States.¹⁶⁴ These guidelines allow for the federal funding of human embryo cell research but forbid use of federal funds to destroy human embryos directly—yet, they permit federal research on stem cells taken from embryos by privately financed researchers. The guidelines provide, additionally, that all cells be derived from embryos that have, first, been frozen—this being designed as such to discourage women from creating fresh embryos expressly for research purposes.¹⁶⁵

Presently in the United States, early stage embryonic stem cells are obtained— as a practical matter—from the donated or purchased embryos produced in private laboratories such as fertility clinics. These clinics are an excellent source for the acquisition of stem cells—inasmuch as they produce an oversupply of embryos for *in vitro* fertilization, and destroy ultimately the unused ones.¹⁶⁶ Interestingly, as a matter of current concern, it has been estimated that it would take 280 human eggs to produce a single line of embryonic stem cells. Human eggs are in short supply and difficult enough to obtain for routine IVF purposes let alone to meet the additional demands of therapeutic cloning.¹⁶⁷

Adult stem cells, skin, nerve tissues and even cadavers and human fat can produce stem cells.¹⁶⁸ These sources have not, however, shown the same range of potential as embryos and fetal cells.¹⁶⁹ Indeed, a recent report from The National Institutes of Health—requested by the Secretary of Health and Human Services—concludes by affirming the previously stated scientific consensus that research on stem cells derived from both human embryos (derived typically from five day old embryos or discarded ones from fertility clinics) and adult tissue holds great scientific promise. Inasmuch as adult stem cells are rare and do not proliferate as readily as embryonic cells, they are less advantageous to successful stem-cell research, however, the report concluded.¹⁷⁰

A Political Dilemma

In the early Spring and Summer of 2001, President Bush—together with the National Conference of Catholic Bishops—began to stress the need for more scientific work to be undertaken on the utilization of adult stem cells for ultimate transplant purposes.¹⁷¹ There was a real worry the President would, in fact, block all federal funds for research on embryonic stem cells.¹⁷² One major reason for this concern was the expectation by some that allowing the remains of individual abortions as a viable research source might encourage women to terminate their

pregnancies because of their knowledge that the discarded fetal tissues could not only be used to help desperate patients and advance medical research, but even be a source of financial reward.¹⁷³

Another more direct political reason for President Bush to have concerns over the federal support for biomedical research using cells derived from human embryos is White House uneasiness fears that any federal subsidy will have the effect of infuriating conservative voters, anti-abortion groups and especially the Roman Catholics—all considered important to any re-election bid sought by the President.¹⁷⁴ The challenge was to craft a compromise which would recognize the Catholic views regarding their moral objections to research of this nature yet not forfeit totally the significant potential for scientific benefits from this scientific study. For Roman Catholics, frozen embryos are seen as life—and not a mere potential for life, and for them, this is the fundamental issue concerning embryo research.¹⁷⁵

Early in the debate, it was suggested that the White House could cease federal support of embryonic stem cell research with donated embryos after a certain date or, alternatively, pay for research only on stem cell lines already derived from human embryos. The first proposal appeared very feasible—this because there were already enough frozen embryos in fertility clinics presently to produce embryonic stem cell lines for research and therapeutic purposes if scientists are given direct access to them. Once cell lines are made, they—in effect—become immortal and may be propagated forever.¹⁷⁶ The second proposal was more complicated. Inasmuch as only perhaps a dozen human embryonic stem cell lines were thought to be in existence, scientific needs for efficacious research mandated from 100 to 1,000 such cell lines be made. Thus, a severe shortage in the stem cell “marketplace” would be encountered at the very outset.¹⁷⁷

The Bush Compromise

On August 9, 2001, President George W. Bush announced his long-awaited decision on embryonic stem cell research which limits, essentially, scientific research to cells already extracted and disallows government support of the destruction of new embryos. Federal funding will be allowed, however, for research to be conducted on more than 60 genetically diverse stem cell lines in existence presently throughout the world.¹⁷⁸

As noted, stem cell lines are colonies of continually dividing cells created from embryos. Embryonic stem cells are extracted from microscopic embryos no bigger than 200 to 300 cells. These stem cells are then grown atop embryonic mouse cells known as “feeder” cells. Because they have been in close contact with mouse cells, the human cells pose a small but real risk of transferring deadly animal viruses to people. Thus, under Food and Drug Administration guidelines for xenotransplants it would be difficult—though not impossible—to use the feeder cells in human clinical tests.¹⁷⁹

Under the Bush guidelines, federal dollars may be used to study these very versatile and medically promising cells only if they came from donated fertility

clinic embryos that were already destroyed by August 9, 2001. Much scientific skepticism abounds however about the existing stocks of stem cells available and, as noted, their purity.¹⁸⁰ While Congress banned federal financing of human embryo experimentation in August, 2000, the Clinton Administration sought to carve out an exception to the congressional ban by allowing federal funding for stem cell research undertaken from the privately financed sources that obtained embryos. Interestingly, this policy was never enforced.¹⁸¹

Regulating Reproduction in the United States

The extent to which U.S. states may regulate validly IVF procedures and embryo transfers depends upon whether these acts are viewed as fundamental rights. Thus, the threshold question is whether they are “rights” guaranteed by the Constitution as part of the “right to marital privacy.”¹⁸²

Various Supreme Court decisions seem to grant “the right . . . ‘to marry, establish a home and bring up children’ as among those liberties granted by the fourteenth amendment.”¹⁸³ Based upon these cases, it could be argued that any state regulation on IVF and embryo transfers would be an intrusion upon the fundamental right to marital privacy.¹⁸⁴ “[I]f the decision to beget a child is a protected area of privacy, presumably the actual method of begetting also would be protected. Thus, any statute affecting this delicate area would have to serve a compelling state interest and must do so by the least restrictive means.”¹⁸⁵

A more conservative analysis of the Supreme Court decisions in this area recognizes, at the threshold, that the right to privacy is not mentioned explicitly in the United States Constitution. No right of sexual freedom is found within the gambit of procreative rights recognized by the Supreme Court nor has the Court fashioned a general right of personal privacy which is sufficiently broad-based to encompass sex outside marriage.¹⁸⁶

Legislative Positions Among the States

It is doubtful that Congress could ever enact effective legislation on the legal status of an embryo because society is not of a singular mind; nor is there a consensus as to when “life” should be protected legally. Judicial interpretation of this issue has aroused national debate with the decision in *Roe v. Wade*.¹⁸⁷ Despite the lack of agreement regarding when life begins, those children born of an IVF procedure using either a donor ova or donor sperm should be recognized as children of the family in which they are born. No issue of illegitimacy should be raised nor should the donors be held to any level of financial support of the child. Similarly, the child should have no right of inheritance against the donors. The best interests of the IVF child are served, and more importantly, the strength of the family unit is enhanced and its stability assured.¹⁸⁸

After *Roe*, some twenty-five states enacted fetal research laws¹⁸⁹ designed primarily to control research on aborted fetuses.¹⁹⁰ Several statutes extend their protective coverage to research on embryos.¹⁹¹ If cumbersome safeguards effecting

excess embryo preservation are required, the initiation of medical-scientific programs utilizing IVF procedures could be discouraged.¹⁹² Moreover, in a number of these states, the very legality of IVF as a medical procedure to overcome infertility is in question.¹⁹³

Pennsylvania¹⁹⁴ and Louisiana¹⁹⁵ have interesting statutes regarding IVF. Pennsylvania's law monitors IVF by requiring anyone conducting the procedure to file quarterly reports with the state Department of Health fully describing the process involved.¹⁹⁶

First in 1986, and subsequently in 1993 and 1998, the Louisiana state legislature declared "a viable *in vitro* fertilized ovum is a juridical person"¹⁹⁷ and that an unborn child is a natural person at the moment of conception.¹⁹⁸ Furthermore, a human embryo—as an *in vitro* fertilized human ovum—cannot be "farmed" or cultured for research or other purposes.¹⁹⁹ It is not the property of the physician acting as an agent of fertilization but he may serve as temporary guardian of the ovum when the IVF patients "fail to express their identity" until adoptive implantation occurs.²⁰⁰ Without a doubt, Louisiana appears to have the strongest statutory provisions among the states for embryonic research and experimentation.

Illinois had a statute which prohibited selling or experimenting upon a "fetus produced by the fertilization of a human ovum by a human sperm unless such experimentation is therapeutic to the fetus thereby produced."²⁰¹ However, the statute was struck down recently as unconstitutionally vague and restrictive of women's fundamental right to privacy.²⁰²

The Impact and the Promise of *Webster v. Reproductive Health Services*

In tackling "the most politically divisive domestic legal issue of our time,"²⁰³ the Supreme Court, on July 3, 1989, upheld the validity of a Missouri statute which restricts significantly a woman's right to obtain an abortion.²⁰⁴ The preamble to the challenged statute declares human life to begin at conception.²⁰⁵ and defined conception as "the fertilization of the ovum of a female by a sperm of a male—in disregard of standard medical tests which equate conception with uterine implantation occurring about six days after fertilization."²⁰⁶ Thus the statement not only sought impliedly to regulate pre-viable abortions, but common forms of contraception such as the IUD and the morning-after-pill as well.²⁰⁷ Yet, a majority of the Court held the preamble did not actually regulate abortion and therefore the scope of its application would have to await testing until a concrete example restricting the appellees' activities was shown.²⁰⁸ The majority of the court refused "[t]o decide . . . abstract propositions. . . ."²⁰⁹

It is beyond the purpose of this Chapter to probe the permutations and interstices of *Webster*. Suffice it to note that *Webster* indicates strongly that a clear majority of the Justices are willing to depart from *Roe v. Wade* and thereby curb, if not abolish, the constitutional right of a woman to have an abortion.

What is relevant to the present analysis is Justice Stevens' opinion in *Webster* concurring in part and dissenting part.²¹⁰ Stevens would find the Missouri statute violated the establishment clause because of the legislative ("theological") finding in the statute's preamble that endorses the state interest in preserving the life of an embryo during the first forty or eighty days of pregnancy to be at the same level of protection and scrutiny as after viability.²¹¹ Justice Stevens would also invalidate the statute because it violates the right of contraceptive privacy set forth in *Griswold v. Connecticut*.²¹² Before reaching this conclusion, however, he develops a thoughtful inquiry into the issue of male versus female ensoulment articulated in the early writings of St. Thomas Aquinas which have been accepted by the Roman Catholic Church. Justice Stevens quotes extensively from a *Report on Catholic Teaching on Abortion* prepared by the Congressional Research Service of the Library of Congress.

The disagreement over the status of the unformed as against the formed fetus was crucial for the Christian teaching on the soul. It was widely held that the soul was not present until the formation of the fetus 40 or 80 days after conception, for males and females respectively. Thus, abortion of the 'unformed' or 'inanimate' fetus (from *anima* soul) was something less than true homicide, rather a form of anticipatory or quasi-homicide. This view received its definitive treatment in St. Thomas Aquinas and became for a time the dominant interpretation in the Latin Church. For St. Thomas, as for the medieval Christendom generally, there is a lapse of time—approximately 40 to 80 days—after conception and before the soul's infusion. . . . For St. Thomas, 'seed and what is not seed is determined by sensation and movement.' What is destroyed in abortion of the unformed fetus is seed, not man. This distinction received its most careful analysis in St. Thomas. It was the general belief of Christendom, reflected, for example, in the Council of Trent (1545-1563), which restricted penalties for homicide to abortion of an animated fetus only.²¹³

What Justice Stevens concludes after analyzing the Aquinas position is most important to a sophisticated understanding of the complex medico-legal-ethical issue of the scope of protection the state should or may extend to research and experimentation of extracorporeal embryos. He states eloquently:

As a secular matter, there is an obvious difference between the state interest in protecting the freshly fertilized egg and the state interest in protecting a 9-month-gestated, fully sentient fetus on the eve of birth. *There can be no interest in protecting the newly fertilized egg from physical pain or mental anguish, because the capacity for such suffering does not yet exist, respecting a developed fetus, however, that interest is valid.* In fact, if one rescinds the theological concept of ensoulment—or one accepts St. Thomas Aquinas' view that ensoulment does not occur for at least 40 days, *a State has no greater secular interest in protecting the potential life of a sperm or an unfertilized ovum.*²¹⁴

The logic of this position is quite compelling and provides much weight to the position that while the embryo does not theologically have an independent moral status, it is regarded by some as worthy of respect as a “symbol of life.”²¹⁵ While the embryo might well be treated as “an object of respect,” it arguably does not—consistent with this position—gain any type of moral status or recognition until transferred to a uterus.²¹⁶ Accordingly, when no transfer occurs, vexatious decisions concerning unused or stored embryos “become occasions to use embryos as a symbol of life or persons generally” are presented.²¹⁷ What then must be evaluated is whether the need for preserving such symbols outweighs “the costs to autonomy or future knowledge that symbol-making necessarily involves.”²¹⁸

Justice O’Connor, in concurring in part and concurring in the judgment, addressed the concern that the preamble to the challenged statute might prohibit the development and use of IVF by dismissing them as “imitations of unconstitutionality” that were “simply too hypothetical” to address.²¹⁹ Regarding the challenge that the statute is violative of *Griswold*, she found nothing in the preamble that would affect a woman’s right to practice acts of contraception.²²⁰

Justice O’Connor stressed that, as to the state’s interest in protecting potential life, the point of viability was the crucial determination when such interest could be focused by the enactment of regulations designed to achieve that end.²²¹ “No decision of this Court has held that the State may not directly promote its interest in potential life when viability may differ with each pregnancy.”²²² Its “possibility” can thus be determined within a period of testing—as for example here with Missouri’s twenty week period (that was essentially a presumption of viability at twenty weeks—subject to medical rebuttal).²²³ As more advanced medical technologies develop, the testing period may commence earlier. Yet, even with an earlier time frame for testing viability, it is well known that fetal lungs do not mature until some thirty-three to thirty-four weeks of gestation.²²⁴ The physician is also aided in the determination of viability by ultra sound examinations that determine gestational age and fetal weight, as well as fetal lung maturity.²²⁵

The full court chose not to address the validity of the statute’s preamble that recognized life as beginning with human conception. However, the arguments made by Justices Stevens and O’Connor regarding viability and the tone of the other opinions in the case show persuasively that legal protection of personhood under present accepted biological and medical knowledge ought *not* be extended to unimplanted, extracorporeal embryos. When implanted, as with normal conception, the embryo must develop into a *viable* fetus before full state protections will be accorded to it.²²⁶

Preserving Genetic Integrity

The publication of Aldous Huxley’s *BRAVE NEW WORLD* in 1946 predated the discovery by James Watson and Francis Crick of deoxyribonucleic acid (DNA)²²⁷ by seven years. Commentators to this day continue to view the significance of advances in recombinant rDNA technology through the lens of Huxley’s totalitarian society,²²⁸ a genetic caste system made possible by genetic

technology.²²⁹ The alternative characterization of such technology as a grail to treat or heal inherited diseases is perhaps less alarming but fails similarly to describe adequately the current state of technology both from the perspective of identifying specific genetic traits and developing therapy.²³⁰ In 1993 for example, on the fortieth anniversary of the discovery of DNA,²³¹ the Human Genome Project attained new levels of success in its mapping of the human genome.²³² The accelerated pace of mapping that began in the early 1970's²³³ is expected to continue due to innovations in genome mapping and sequencing. The first draft was completed in June, 2000.²³⁴

The salutary effect of this technology, the ability to catalog and analyze the genotype of a particular individual, creates the potential for abuse of such information. Indeed, for some, the eugenics movement²³⁵ to this day casts a shadow over the Human Genome Project. The risks of abuse engendered by the mapping of the human genome and emergent rDNA technology do not extend to social engineering and development of a "superior" human, a process necessitating germ-line modification. Rather, the potential abuse may result from discrimination based on the dissemination of key information about the genotype of an individual—information which reveals the risk factors inherent in that individual.²³⁶ Genetic data is particularly sensitive category of health care information.²³⁷ Unlike information about a specific transient condition or illness, data pointing to a genetic disorder will affect, and may stigmatize, a person throughout his or her entire life.²³⁸

The handling of genetic information by the state or its agents, therefore, implicates individual liberty interests deriving from fundamental constitutional rights to equality and privacy.²³⁹

In this context, genetic discrimination has been defined as "discrimination against an individual or against members of that individual's family solely because of real or perceived differences from the 'normal' genome in the genetic constitution of that individual."²⁴⁰ Individuals identified at risk are:

- (1) those . . . who are asymptomatic but carry a gene(s) that increases the probability that they will develop some disease, (2) individuals who are heterozygotes (carriers) for some recessive or X-linked genetic condition but who are and will remain asymptomatic, (3) individuals who have one or more genetic polymorphisms that are not known to cause any medical condition, and (4) immediate relatives of individuals with known or presumed genetic conditions.²⁴¹

Because the individuals set forth above are asymptomatic or presymptomatic and are, therefore, not readily identified, genetic discrimination is most likely limited to two contexts: employment and insurance.²⁴² Both employers and insurers may believe such discrimination is warranted for the profitable conduct of business.²⁴³ Furthermore, both employers and insurers normally have access to detailed medical records of employees and customers.²⁴⁴

An employer, for example, may reject a job applicant based on information obtained through genetic testing for several reasons: increased medical and

insurance premiums, absenteeism, lowered productivity, increased risk in the line of duty and increased liability for workers compensation.²⁴⁵ In the area of insurance, genetic testing undermines potentially the principle that both the insurer and the insured ought to possess equal knowledge of a particular insured's risk of becoming ill.²⁴⁶ The availability of the genotype of a particular individual either to the insurer or to that individual alone presents the possibility of adverse selection.²⁴⁷ For example, an individual who knows he is at risk for developing Huntington's chorea will buy a greater amount of life or health insurance, knowing that he or she is at greater risk of death or serious illness.²⁴⁸ Conversely, insurers will either refuse to offer coverage or drop those individuals in a genetic high-risk category.²⁴⁹

Although arguably fair when an individual chooses to engage in high risk activity such as smoking or sky-diving, the prospect of refusing to provide insurance to individuals because of a genetic trait is inequitable and contrary to public policy.²⁵⁰ First, carriers of defective genes may never develop full symptoms that affect their ability to function.²⁵¹ More importantly, however such disparate treatment and resulting risk minimization vitiates the purpose of traditional private insurance as a risk-spreading mechanism.²⁵²

While there are, to be sure, risks associated with the pursuit and development of the new genetics, man's dehumanization and depersonalization will not be fostered as a consequence of the Human Genome Initiative. Rather, so long as science pursues its basic quest for knowledge with the purpose of establishing truth and integrity and with promoting the goal of minimizing human suffering and maximizing social good, then, the noble integrity of evolution and genetic progress will be preserved and irrational fears of eugenic supremacy advanced through programs of genetic screening dispelled. Restraining scientific inquiry and the application of its results should be limited only to actions considered unreasonable.

The Human Genome Initiative

The human genome refers simply to the chromosomal collection of twenty-three pairs of chromosomes that all humans carry within which all human genes reside—and more specifically those genes that contribute so directly to traits such as height, eye color, and the shape of body parts as well as human behavior. Diseases develop when alterations of the genes, known as mutations, occur.²⁵³ In all, more than twelve thousand disease conditions have been found to have their origins in single gene defects.²⁵⁴

The Human Genome Initiative is an undertaking co-ordinated by the United States Department of Energy and the National Institutes of Health and funded by the U.S. Congress that will complete “mapping” all 50,000 to 100,000 human genes within fifteen years. Although not fully funded at the \$3 billion set originally, Congress has funded the project sufficiently for there to be every reason to conclude the project will meet its deadline within fifteen years.²⁵⁵ Interestingly, there is no single human genome project in the United States. Rather, three major organizations—the National Institutes of Health (NIH), the Department of Energy

(DOE) and the Howard Hughes Medical Institute—are about the business of funding specific aspects of an overall “initiative” on genome mapping; with simultaneous work efforts being undertaken in other countries as well as a private organization denominated the Human Genome Organization (HUGO).²⁵⁶

As early as March, 1993, some 2,736 of the targeted genes had been in fact “mapped” or, in other words, located precisely on one of the twenty-three chromosomes. Of these, 682—when they occur in mutant form—have been found to be associated with human disease. And, researchers have decoded in 321, part of the “sequence” (or precise chemical structure) which thus allows the first step to have been taken in determining how a gene works actually.²⁵⁷

On April 14, 2003, marking the fiftieth anniversary of the discovery of the DNA double helix by James Watson and Francis Crick, the Human Genome Project was declared “officially complete.”²⁵⁸ Much improved from the working draft issued in 2000, and completed in thirteen, instead of, fifteen years,²⁵⁹ the final phase of the project is still not finished totally—this, because about one percent of the genome has proven impossible to sequence and will remain as such until new technologies are developed to meet this task.²⁶⁰ While the Code has been deciphered, the research is just beginning and will tackle projects, among others, to develop a map of common human genetic variations that will pinpoint specific genes linked to asthma, cancer, diabetes and heart disease and—furthermore—catalogue all of the genome’s working parts which in turn could be the birthplace of genes.²⁶¹

The driving motive behind the Human Gene Initiative is, then, quite simple and direct: the identification and eradication of all genetically based disease. With more than 12,000 conditions being recognized as having their origins in single gene defects,²⁶² the ultimate success of the Initiative holds awesome opportunities for improving the health of all world citizens and minimizing their human suffering from disease.²⁶³ Yet, the secrets of the genome—when revealed—will generate a whole array of what-if fears: from the unbridled use of genetic information to advance a program of positive eugenics²⁶⁴ to concerns that disclosure of an individual’s genetic profile and his susceptibility to illness (even alcoholism)—will, in turn, form the basis for discriminatory action or stigmatization resulting in a possible refusal by an insurer to refuse to pay medical costs if one elects not to undergo a recommended treatment or if a child with a prenatally identified genetic defect were to be born.²⁶⁵

Equally worrisome is the fear that the widespread delineation of genetic profiles will result in the centralization of that genetic information—much as today credit information is centralized.²⁶⁶ Since DNA sequence data bases are prone to error, there is also concern that even in the event gene mapping were to become routine, “comparison of an individual’s genetic profile to an error-ridden prototype could have the same stigmatizing effect as do false positives on drug tests and tests for the HIV antibody.”²⁶⁷

Genetic Knowledge

Once a “disease gene” is discovered, the new release of it normally incorporates a suggestion that treatments to arrest it are forthcoming. Yet, discovering the mechanism of a disease is not the same as knowing how to change that mechanism. With genetic information of this type, however, at least a chance is created for developing an effective therapy to combat the genetic disease.²⁶⁸

The “heuristics of fear” all too often blot out rational analysis of emerging genetic knowledge²⁶⁹ and add little to the need to promote medically and ethically informed public discussion²⁷⁰ within “communities of moral discourse” where scientific, as well as medical, ethical and political issues can be engaged in “by informed and intelligent persons who represent different interests and different perspectives on the nature of humanness and well-being.”²⁷¹ Caution should always be the watch-word, however, in examining genetic assumptions; and oversimplification of genetic findings should be avoided.²⁷²

As much as law should seek to avoid ambiguity, it should not rely on science for definitive answers; for science—within its own sphere—simply does not offer unambiguous resolutions.²⁷³ Two forms of uncertainty are inherent in any scientific undertaking: one is conceptual and derives from fundamental changes in those concepts engendered by the new biotechnologies and the other is termed occurrence and applies to select issues that cannot be addressed readily.²⁷⁴

The image of neutrality that science has sought to cultivate or “sell,” is largely a myth created in an attempt to maintain autonomy and thus blunt increasing pressures from both church and state for intervention and control.²⁷⁵ Indeed, the history of science is replete with cases where not only the choice of research topics but the nature of scientific theories as well as the representation of results from research have been socially constructed and shaped by cultural forces to reflect various societal assumptions of the times.²⁷⁶

In 1990, the federal government's Center for Biologics, Evaluation and Research at The Food and Drug Administration approved efforts to undertake human gene therapy.²⁷⁷ Recognized as a radical and unproven method of fighting disease, the therapy involves the transfer of genetic information contained in deoxyribonucleic acid (DNA) into specific cells to replace absent or deficiently functioning genes within these cells.²⁷⁸ Initial experimentation trials will focus on the treatment of two different diseases: adenosine deaminase (ADA)—a rare and congenital immune system defect—and metastatic melanoma, an advanced malignant cancer virtually untreatable once it invades secondary organs.²⁷⁹

Genetic Engineering Forms

Applications of genetic engineering are of four types: somatic cell gene therapy (SCGT), germ line therapy (GLGT), enhancement genetic engineering (EGE) and eugenic engineering.²⁸⁰ Each of these applications raise complex ethical and scientific issues.²⁸¹ The most amenable approach to solving the effects of a broad spectrum of inherited diseases is to be found with somatic cell gene

therapy—yet, it is the only one of four that is yet to be justified through scientific verification and ethical acceptance.

Somatic cell gene therapy involves the gene transfer into the somatic (body) cells of a human to correct a genetic defect.²⁸² If the therapy is developed fully, it would result—when used—in replacing defective or absent enzymes or proteins (the product of genes) that are necessary to a cell's proper functioning. Already in 1992, within the National Institutes of Health and its Recombinant DNA Advisory Committee, some eleven gene therapy trials had been approved and seven more were under consideration. It is expected that within the immediate future, applications will quadruple.²⁸³ Still in its infancy, germ line therapy seeks to insert a gene into the reproductive cells of germ cells of an afflicted patient.²⁸⁴ In addition to combating genetic disease, others such as cancer as well as heart and vascular disease could be treated by this type of gene therapy. While germ-line changes have been accomplished successfully in mice, it has yet to be performed in humans.²⁸⁵

In January, 1992, medical history continued to be made; for in Memphis, Tennessee, a two-year-old child who was suffering from a neuroblastoma tumor was treated with bone marrow cells that had been altered genetically.²⁸⁶ History was made previously in September, 1990, when a four-year-old child received the world's first gene therapy.²⁸⁷ Termed gene therapy, or the alteration of the genetic material of a patient in order to combat disease at its cellular source, this medical procedure or a variation of it called gene marking has been performed thus far on twenty-two patients and—as such—has become a viable strategy for uncovering new approaches to fighting incurable diseases. This therapy is being tested, developed and applied not only in America, but notably in Canada, China, Italy, France and Japan.²⁸⁸

Enhancement engineering is effected by the insertion of a gene into a patient's reproductive tissue thus assuring that the disorder in the offspring would in turn be corrected. For example, in order to “enhance” a known characteristic, an additional growth hormone gene could be inserted into a normal child. While the enhancement of somatic cells is technically feasible and has, as observed, been validated with animal experiments, the enhancement of germ-line cells has yet to be shown to be technically feasible.

The fourth level of engineering—recognized as eugenic in focus—seeks, by definition, to “improve” complex human traits coded by a large number of genes (*e.g.*, personality, intelligence) and is not thought to be feasible for the foreseeable future. Indeed, the processes associated with it may be so complex that it may never prove feasible.²⁸⁹

Toward a Principle of Biological Determinism

In today's society, a new and discernible pre-occupation with biological determinism is seen. Spurred by successes in developing genetic tests that have found the markers indicating predispositions to certain single gene disorders such as Huntington's disease and the hopes that complex conditions such as cancer, drug

dependency and mental illness will be—with the successes of the Genome Project—predictable. Building upon the limited successes with Huntington's chorea, number of states now mandate new-born infant genetic testing for conditions such as phenylketonuria (PKU).²⁹⁰

Biological determinism evolves from the principle of genetic essentialism that posits personal traits—such as mental illness, homosexuality, aggressive personality, exhibitionism, dangerousness, shyness, stress—have a genetic or biological disposition and, indeed, are predictable and determinable at conception; thus the social context in which the traits are manifested is minimized under this principle.²⁹¹ In a word, biological determinism recognizes essentially that one's fate is determined by his or her genetic inheritance.²⁹²

Contemporary Perspectives

A 1992 survey conducted by Louis Harris and Associates for The March of Dimes of one thousand people in the United States regarding their views of genetic testing and gene therapy, while not in fact understanding totally what the two issues were all about, seventy-nine percent of those polled expressed their willingness to undergo gene therapy if necessary and eighty-eight percent allowed that they would have their children undergo such therapy in order to prevent or cure a genetic disease that would usually be fatal if not found through testing. Approximately three quarters of those in the poll expressed their concerns that gene therapy be undertaken only according to “strict regulations.” And, interestingly, more than half in the survey stated their belief that when a genetic disease is discovered—someone needs to be appraised of this fact. Only about a third thought an employer should be advised of the genetic disease, however, yet ninety-eight percent concluded one's spouse or fiancé should be told and fifty-eight percent concluded insurers should be informed. Finally, forty-seven percent of those surveyed favored experimental gene therapy if its goal was to improve therapeutically ultimate physical characteristics, while forty-two percent would allow it when its goal was to improve a child's intelligence.²⁹³

Ethical and Philosophical Conundrums

The new genetics raises no new ethical problems in the sense of unique dilemmas not heretofore seen. The core-issues of present ethical problems in this field were indeed recognized in the late 1960's with the introduction and widespread use of amniocentesis and carrier screening. The new genetics will—most assuredly—magnify both the range, complexity and frequency of these problems. Behind the eight problems here is a national and international failure by medical geneticists to form and thereby validate agreements, protocols or compacts in writing relative to these ethical problems. Instead, a blind adherence to oral traditions is pursued. Clearly, without ethical standards agreed to as such by the scientific community, the power-brokers in human genetics are less accountable to the public for their actions.²⁹⁴

Conflicts and Compatibilities

The fundamental concern or perhaps central ethical conflict here is: which has more significant analytical value—quality or sanctity of life?²⁹⁵ Theologian Bernard Ramm suggests “both Christian and non-Christian are slowly coming to the conviction that the supreme norm in ethics is the quality of life and not the sheer fact of life.”²⁹⁶ To be sure, this issue is not confined solely to ethical and theological theories. Living wills and legislation to ensure “death with dignity” have captured public attention and sensitized many to ultimate quality of life considerations.²⁹⁷

It has been seen that the most likely objective of selective genetic screening is the improvement of the quality of life by identifying carriers and victims of genetic disease and the, through counseling, abortion and genetic engineering techniques, reducing the incidence of these illnesses and the suffering they cause.²⁹⁸ Although admittedly the ethical issues are complex, they are reducible ultimately to the most elemental questions of who is to live and who is to die and who, further, will determine the reasons to justify these decisions? Thus, even though the central dilemma is fairly well structured, the solution is far from settled.

For the late Joseph Fletcher, the evolution from the “old vitalistic indiscriminating sanctity or quality of life ethics . . . to a responsible, decisional quality of life ethics”²⁹⁹ injects desirable elements of control and choice. It thus becomes a moral responsibility to control reproduction through sex selection or abortion.³⁰⁰ Fletcher underscores his argument for the necessity for genetic screening with a graphic example:

To go right ahead with coital reproduction in many couples' cases is like walking down a line of children blindfolded and maiming every fourth child. It is cruel and insane to deprive normal but disadvantaged children of the care we could give them with the \$1,500,000 we spend in public costs for preventable retardates.³⁰¹

He adds what may be the credo of situation ethicists: “Ethics is not loftily independent of economics and utilitarian or distributive justice.”³⁰² And, if the populace fails to make responsible reproductive choices voluntarily? “Sometimes it is more compassionate to force (the moral thing) to be done than to sacrifice the well-being of the many to the egocentric ‘rights’ of the few. This, obviously, is the ethics of a sane society.”³⁰³

Others suggest the fundamental question to be addressed is: simply because some things CAN be done, SHOULD they be undertaken?³⁰⁴ For the late Paul Ramsey, there was a definite answer.

The *sine qua non* of any morality at all, of any future for humanism, must be the premise that there may be a number of things that we can do that ought not to be done. Our common inquiry must be to fix upon those things that are worthy of man. . . . Any other premise amounts to a total abdication of human moral reasoning and judgment and the total abasement of man before the relentless

advancement of biological and medical technology.³⁰⁵

While the Father of Situation Ethics, Professor Joseph Fletcher, remained forever optimistic that there was no real threat to the concept of sanctity of life or the individual form genetic knowledge and its application, others have continued to express a real fear that with the new advances in technology procreative decisions will become increasingly dehumanized.³⁰⁶ Professor Leon Kass frames his concern thusly: “At what price—in greater complexity of society or in our beliefs about what it means to be human—do we seek a technological fix for the human condition?”³⁰⁷ The Roman Catholic Church—historically, the staunch defender of the principles of the sanctity of life—has cautioned that society must always seek to secure justice through recognition of the inviolability of every person's life.³⁰⁸

A major counter-argument to that of the sanctity of human life recognizes that, in the abstract, this principle has never been truly implemented. Rather, it has been violated on innumerable occasions for the purposes of war “by the hangman's rope and by local abundance in a world always pocked by famine.”³⁰⁹ Indeed, if man becomes the true master of his genetic fate, he can then rise to the challenge of expanding the meaning of life itself by devising stronger species that do not succumb as easily to the ravages of the race.³¹⁰

For some, visions of a new, eugenically sound species resurrects the spectre of the Nazi atrocities and it is within this context that Professor Paul Ramsey delivers his fillip to the quality of life argument:

Still, no one should forget the judgment of the leading scholar of the Nazi medical cases: ‘Whatever proportion these crimes finally assumed, it became evident to all who investigated them that they had started from small beginnings It started with the acceptance of the attitude . . . that there is such a thing as a life not worthy to be lived.’³¹¹

Quality of life arguments most assuredly do not lead all to the same conclusions. Accordingly,

Quality of life should be sought by the cautious improvement of our cultural and environmental resource pools, and not by an impulsive over-emphasis upon manipulations of a gene pool whose dynamics and long-term mechanisms still elude us. We should improve the environment of our handicapped brethren, we should research means to elevate the intellectual capability of our Down's infants, we should seek means to cure phenotypic anomalies instead of alleviating their owners.³¹²

The existence of so many diverse viewpoints held so strongly suggests a basic question: how does a society arrive at ethical norms? In a pluralistic society this is difficult, perhaps impossible, to answer. For some, religion dictates the construction of the ethical fabric. For others, a higher moral law directs ethical choices. But society is reactionary.³¹³ Amoeba-like, it shapes itself around

controversial issues, changing and adapting to their impact according to an elusive norm. “The touchstone of man’s . . . ethical choices is simply his judgment of whether it is right and good for man. Man is the measure of all things.”³¹⁴ This emphatically humanistic approach is echoed by Joseph Fletcher who maintains that needs are, in actuality, moral stabilizers. “If human rights conflict with human needs, let needs prevail.”³¹⁵ Even Father Richard McCormick, who argues it is necessary to “blow the whistle”³¹⁶ on Fletcher’s type of reasoning, worries that Christian arguments “are not going to be very persuasive to a culture which, it can be argued, is comfort-bent, goal-oriented, technologically sophisticated, sexually trivialized and deeply secularized.”³¹⁷

Yet, despite these concerns expressed by Fr. McCormick, and, despite the slippery nature of the ethical decision-making process, the debate continues to rage. One author has attempted to define the quality of life by a mathematical formula, the unspoken assumption being that quality of life is a proper consideration.³¹⁸ Another questions whether it is moral even to “speculate on social policy based on presumptive genetic differences between groups of individuals” when measures for genetic inheritance are still flawed.³¹⁹ The notion of calculating cost-benefit analysis when the stakes are human lives is as shocking to some as it is logical to others. Daniel Callahan holds the view that such analyses are one-directional. He charges that they ignore the intangible benefits to a society that is willing to bear the costs of humane care of defectives.³²⁰

More than one ethicist is concerned that genetic screening will lead to a national intolerance of anyone “abnormal.” Paul Ramsey sees this as a consequence of screening “upgrading the concept of normality.”³²¹ Undoubtedly, screening will not detect all defects. Leon Kass wonders if those who manage to “escape the net of detection and abortion” will be regarded as unfit to be alive.³²² Both Ramsey and Kass fear the inevitable corollary is that aversion to abnormalities will lead to mandatory elimination of abnormalities,³²³ and ultimately the same justifications for aborting defective fetuses may “simultaneously justify the killing of defective infants, children and adults.”³²⁴

The lines have been drawn, but they delineate a spectrum of spectacular diversity. The philosophical rationale for genetic screening may well rest on quality of life considerations; the rejoinder may well remain an insistent concern for the sanctity of life and a warning against ehumanization in the face of inexorable technology. Between these two positions the search continues for areas of compromise and accommodation.

Privacy and Scarlet Letters of Genetic Dissimilarity

The genetic marker, a common characteristic from which an individual cannot escape, necessitates strict judicial scrutiny not only because it is immutable but because it results in social stigma. Again, the genetic material of an individual—to the extent it is public information—results in a figurative scarlet letter signifying genetic dissimilarity or variation and ensuring discriminatory treatment. Although equal protection theory and resulting antidiscrimination measures provide one

method of alleviating the stigma associated with public disclosure of genetic information, another option for protecting individuals with genetic abnormalities lies in limiting the disclosure of such information from the outset. It is asserted that the constitutional and legal support for such a policy may be derived from the individual's fundamental right to privacy.

Judicially Derived Privacy Interests

The public dissemination of genetic information and resulting stigma attached thereto implicates another constitutional interest, the individual's stake in maintaining the privacy of such information. Conceivably, discrimination could be avoided if no information were available upon which distinctions could be made between those individuals with "normal" genotypes and those with abnormal genetic characteristics. In contrast to equal protection, this area has been more fully charted by commentators.³²⁵ Unfortunately, there appears to be little protection in the area of employment or insurance apart from theoretical constitutional restraints upon public employers, and scattered state constitutional³²⁶ and statutory privacy provisions.³²⁷ These federal constitutional restraints, however, reveal several bases upon which courts might discern a fundamental privacy interest applicable to the genetic material of a particular individual. They also provide support for legislative measures to protect the privacy of genetic material.

Privacy has been identified in a number of Supreme Court cases as a fundamental value of the provisions of the Bill of Rights.³²⁸ However, it was not until *Griswold v. Connecticut* that the Court derived an independent right to privacy from the confluence of several provisions of the Bill of Rights.³²⁹ This "penumbral" zone of privacy has been held to include a woman's right to terminate a pregnancy,³³⁰ but has not extended protection to private consensual sodomy,³³¹ a depositor's interest in not disclosing bank records,³³² or a taxpayer's interest in not disclosing tax records.³³³ Nor has a privacy right been recognized for the otherwise proper acquisition and use of non-testimonial evidence.³³⁴

The Court has, however, recognized a privacy interest in a case much analogous to the problem of disclosure of genetic information. In *Whalen v. Roe*, the Court scrutinized a New York State statute which required that the State record in a centralized computer file the names and addresses of all persons who had obtained, pursuant to a doctor's prescription, drugs for which there was both a lawful and unlawful market.³³⁵ The statutory scheme was attacked as an invasion of an individual's privacy interest against disclosure of personal matters.³³⁶ The Court recognized this interest as falling within the "zone of privacy" but because of the extensive security measures protecting the identity of patients from disclosure, concluded that the New York program did not pose a sufficiently "grievous" threat to establish a constitutional violation.³³⁷

The Court in *Whalen* did not explicitly articulate the standard of review applied to the New York statute in its analysis. However, the extensive analysis of the statutory provisions for maintaining patient confidentiality suggests that the Court strictly scrutinized the statutory framework in light of the important privacy

interests at issue.³³⁸ Indeed, the court went so far as to include in the record the independent investigation of similar California and Illinois reporting systems both of which failed to reveal a single case of invasion of a patient's privacy.³³⁹ Although not clear totally, the Supreme Court's holding in *Whalen* confirms the weight accorded to an individual's constitutional interest in not disclosing personal information and the concomitant importance of protecting such an individual from the stigma of public scrutiny and reputational damage.

Legislative Efforts to Resolve Conflicts

In 1990, the U.S. House of Representatives considered The Humane Genome Privacy Act which was designed to resolve the significant problems of maintaining confidentiality of genetic information in the workplace. More specifically, the purpose of the Bill was “to safeguard individual privacy of genetic information from the misuse of records maintained by agencies or their contractors or grantees for the purpose of research, diagnosis, treatment, or identification of genetic orders.”³⁴⁰ This Bill was not enacted into legislation.

The Genetic Privacy and Nondiscrimination Act of 1995 was introduced by the then Senator Mark O’Hatfield of Oregon but died in committee.³⁴¹ Developed essentially from a draft Genetic Privacy Act prepared by Professor George J. Annas and his associates at the Boston University School of Public Health, this proposal aimed to place legal safeguards on the collection, analysis, and storage of DNA and genetic information. It is from analysis and storage of DNA sampled (*e.g.*, blood, saliva, hair and other tissue) that genetic information is derived—for these samples contain an individual’s private genetic information. Thus, any custodian of such samples has complete power to analyze and re-analyze them in an effort to derive new genetic information as more advanced tests are, in fact, developed.

The central tenet of the original Genetic Privacy Act, as proposed by Professor Annas, was to forbid the acquisition of DNA samples or genetic information about another individual unless, “that individual specifically authorizes the collection of DNA samples for the purpose of genetic analysis, authorizes the creation of that private information, and has access to and control over the dissemination of that information.”³⁴²

On March 11, 1997, Senator Pete V. Domenici introduced Senate Bill 422 entitled, “The Genetic Confidentiality and Nondiscrimination Act of 1997,” and in the House of Representatives, a version of the Annas Act was introduced entitled The Genetic Privacy Nondiscrimination Act of 1997.³⁴³ Both of these legislative proposals died in committee.

First in 1996 with The Genetic Information Nondiscrimination in Health Insurance Act of 1996,³⁴⁴ and then in 1997, a similar bill with the same title³⁴⁵—both of which again died in committee—efforts were made to prevent group health insurance coverage from being denied, cancelled or refused renewal or from varying the premiums, terms or conditions on the basis of information or because a participant or beneficiary either requested or received genetic services. Group health plans were forbidden, under these legislative proposals, from

requesting or requiring either a participant or a beneficiary to disclose genetic information about a participant, beneficiary or applicant.

The Health Insurance Portability and Accountability Act of 1996³⁴⁶ provides important protections for people who wish to undergo genetic testing but fear discrimination by health insurers if their test result indicate and increased risk for developing a serious disease. This law curtails sharply the right of group health insurers to limit coverage of new employees because of “pre-existing” conditions. Such conditions are considered pre-existing if their diagnosis or treatment occurs six months before enrollment.³⁴⁷

Redefining Genetic Information

Within the Patients’ Bill of Rights Plus Act, as introduced in the U.S. Senate on January 22, 1999,³⁴⁸ were sections dealing with genetic information and services entitled, The Genetic Information Nondiscrimination in Health Insurance Act of 1999.³⁴⁹ The provisions within this Act sought—among other things—to forbid discrimination in group health insurance premiums based on predictive genetic information but make allowance for requests by a group health plan or health insurance issuer for the authorization, “collection or disclosure of predictive genetic information for purposes of diagnosis, treatment or payment.”³⁵⁰ These requests were but requests—not requirements. Confidentiality practices and safeguards as to this genetic information were required as well.

Predictive genetic information was defined as not only “information about an individual’s genetic tests which are associated with a statistically significant increased risk of developing a disease or disorder” but information obtained from genetic tests among family members of an individual as well as information relevant to the statistically significant increased risk of either a disease or disorder in an individual because of the occurrence of a family disease or disorder.³⁵¹ Information regarding the sex or age of an individual obtained from routine physical tests (such as chemical, blood or urine analyses) or deriving from individual physical examinations “relevant to determining the current health status of the individual” is *not* within the protective definition of predictive genetic information.³⁵²

Further Efforts and Delays

Adopting, essentially, the major provisions of past legislative proposals in this area of concern, the Genetic Nondiscrimination in Health Insurance and Employment Act of 2001 sought to make it an unlawful employment practice for an employer, employment agency, labor organization, or training program, to discriminate because of protected genetic information, including making it unlawful to request, require, collect or purchase such information.³⁵³

Senator Olympia J. Snowe introduced the Genetic Information Nondiscrimination in Health Insurance Act of 2001 which sought to amend the Employee Retirement Income Security Act of 1974 by prohibiting a health care plan or health insurance issuer from restricting enrollment or adjusting premium or

contribution amounts for a group on the basis of predictive genetic information concerning an individual in the group or a family member of the individual. The proposed legislation would prohibit—additionally—a plan or issuer from requesting or requiring predictive genetic information concerning an individual or a family member of the individual. It does permit a plan or issuer to request—but not require—such information for diagnosis, treatment or payment purposes only.³⁵⁴

Within the provisions of Senator Thomas A. Daschle's Protecting Civil Rights for All Americans Act,³⁵⁵ is Title IV which prohibits health insurance discrimination on the basis of predictive genetic information. Submitted as amendments to the Employee Retirement Income Security Act of 1974, the proposed legislation has a specific proviso stating that nothing within the amendment will be construed to either limit or restrict the disclosure of predictive genetic information from a health care provider to another health care provider for the purpose of providing health care treatment to the individual involved.³⁵⁶

ADA Accommodations

The Americans with Disabilities Act of 1990 (ADA) was enacted to require equal opportunity in employment, public accommodations, public services, transportation, and telecommunications.³⁵⁷ It fails generally to prohibit genetic discrimination—relegating specifically authority to the states regarding insurance/genetic issues.³⁵⁸ Because neither the ADA nor its regulations consider genetic discrimination, continuing problems arise over the issue of whether the ADA's definition of "disability" covers genetic conditions.³⁵⁹

For an individual to come within the coverage of the ADA, he must prove a "disability" which is tied to a physical or mental impairment and in turn "substantially limits one or more of the major life activities" in which he participates; that he has developed a record of such an impairment or "is regarded as having such an impairment."³⁶⁰ Similarly, an impairment is defined as a "physiological disorder, whether physical, or mental, including presently expressed genetic diseases."³⁶¹

The Equal Employment Opportunity Commission (EEOC) took the position in 1992 that the ADA impairment definition "does not include characteristic predisposition to illness or disease."³⁶² In 1995, however, the EEOC re-classified individuals with a genetic susceptibility to disease as individuals with an asymptomatic illness—thereby allowing carriers of genetic defects as individuals within the coverage of the ADA and thus suffering a disability.³⁶³

An Alternative Strategy

In addition to, or in lieu of seeking to enact comprehensive genetic nondiscrimination legislation, Congress could amend either The Americans with Disabilities Act³⁶⁴ or Privacy Act³⁶⁵ to include relevant provisions concerning these issues. Although addressing analogous discrimination and privacy issues, the ADA and Privacy Act fall short, for example, of extending explicit protection to

asymptomatic individuals with abnormal genotypes.³⁶⁶ Thus, it appears that a most fruitful path in the legislative arena here would be by amendment of these two legislative schemes. As amended, these statutes would then recognize the fundamental importance of privacy and equality rights while extending explicitly the protection of these principles to problems of discrimination based on genetic information. Such detailed amendments to an established statutory framework would simplify the process of effectuating newly enacted protections, rather than establishing a new complex area of law subject to the promulgation of indecisive administrative regulations by the EEOC and uneven judicial clarifications of them.

Conclusions

In exploring the noncoital reproductive sciences, a balance should be struck between the unfettered use of science for individual satisfaction and the promotion and maintenance of the social good. Thus, embryo research and experimentation—which contributes to the goal of minimizing human suffering and maximizing the social good deriving therefrom—must be pursued in a reasonable manner. So long as the central driving force in marital relationships continues to be procreation and the family unit remains at the core of a progressive society, efforts will be pursued which seek to expand the period of fecundity, combat infertility and assure that inherited genetic deficiencies are not passed on to future generations. Genetic experimentation and planning, in conjunction with eugenic programming, are more rational and humane than alternatives to population regulation through death, famine and war or an abdication of genetic autonomy to the countervailing doctrines of gene sovereignty and biological determinism.³⁶⁷

Socially responsible scientific inquiry should be restrained only when the scientist “is clearly able to foresee that the particular line of work is leading to a kind of scale of dangers” that would constitute a “limitation;” or, in other words, presents “dangers of cataclysmic physical or psychological proportions for mankind as a whole.”³⁶⁸

Acknowledging the fact that there are, indeed, absolute limits for scientific investigation which promote a sense of global repulsion (*e.g.*, the creation of human/animal hybrids), Justice Michael D. Kirby of the High Court of Australia argues, nonetheless, ethical judgments must be rooted in a thorough understanding of the pertinent science supporting their propositions or suffer the “shifting sands of ignorance.” And, for this understanding to come about, he maintains an informative on-going, multi-disciplinary dialogue with the community-at-large is necessary.³⁶⁹

While some would view research and experimentation in human embryology and reproductive biology as promoting a genetic disaster or cataclysm, the better view is that such work advances the goal of minimizing human suffering and maximizing the quality of purposeful and meaningful existence free of inherited genetic disabilities.³⁷⁰ Certain aspects of the new human reproductive biology (*e.g.*, cloning) might well require greater degrees of reasonable self-restraint. By and large, however, the nature and degree to which restraint is mandated must be

determined by the individual scientist who should be guided or, as the case directs, constrained by the cultural norms of the society in which he lives.

Preemption of scientific work in human reproductive biology by the state is short-sighted and repressive of the principle of free scientific inquiry.³⁷¹ Instead of developing a scientific regulatory scheme relying on legislative prohibition, rule-making committees within the pertinent medical and scientific profession should be established to monitor and control scientific inquiry. Perhaps the best model would be a simple organization approached easily on a consultative and advisory basis and designed to assist biologist, scientist, and medical researchers make their own decisions.³⁷²

President Clinton renewed hope in the scientific community during the Summer of 1995 by issuing an Executive Order creating a new National Bioethics Advisory Commission charged with studying ethical issues arising from experiments on human biology and behavior and the relations of these issues to the goals of the federal investment in science and technology. More specifically, the Commission considered how best to use and manage genetic information derived from the Human Genome Project as well as the scientific, legal, and ethical implications of patenting human genes and the feasibility of human cloning.³⁷³ The Commission concluded its work on October 3, 2001.³⁷⁴ Whether its legacy will meet with greater success than its most recent predecessor depends in large part upon the degree to which politics can be disengaged from the ultimate recommendations it will make. Previously, in August, President Bush announced yet another new bioethics advisory commission would be established and headed by Professor Leon R. Kass of the University of Chicago's Department of Philosophy.³⁷⁵

The Bioethics Council was constituted officially in January, 2002. Charged with avoiding on the "intersections of medicine and morality," the Council considered—initially—the ethics of human cloning and of experimentation on clonal embryos.³⁷⁶ With charges that the membership of the Council is "politically stacked" to the conservative right, questions have been raised already as to the level of objectivity that will be brought to their deliberations.³⁷⁷

In January, 2004, the Council produced its much anticipated report on new reproductive medicine³⁷⁸ and surprised many of its critics—especially the American Fertility Association—by not recommending new restrictions on egg and sperm donation or surrogacy arrangements.³⁷⁹ Rather, it chose to stress the need—among the members of the reproductive medicine community—to place greater attention on professional reforms and maintenance of ethical standards. Urging, specifically, the need for thoughtful boundaries to be imposed on new forms of reproduction, with a heavy burden of persuasion being set for those wishing to cross it in the name of scientific advancement, the Council recommend Congress prohibit, temporarily, the gestation of human embryos in animal wombs and the fertilization of human eggs with animal sperm and *vice versa*. Additionally, the President's Council called for a ban on any transfer of an IVF embryo to a woman's womb for any purpose other than to produce a live born baby—this, designed as such, to prevent farming of fetuses for body parts. For women participating in the IVF procedures, more effective frameworks for assuring informed consent were urged—especially

disclosures regarding not only the risks, but the costs of such fertility treatments.³⁸⁰

In order to combat misleading rates of success reported by IVF clinics in the 1980's and the misuse of embryos and eggs—oftentimes even discarded without patient permission—the Federal Fertility Success Rate Act of 1992 was enacted. It provides a useful mechanism for assuring that clinic success rates for prospective patients and policy makers alike is a matter of public record.³⁸¹

Two central issues regarding future uses of IVF remain: the need to develop safe practices and sound ethical guidelines for chromosomal and genomics screening of embryos as couples seek increasingly to screen embryos in order to ensure a healthy child and the need to reduce the high incidence of multiple pregnancies.³⁸² All too often, infertile couples—wishing to maximize their chances of achieving pregnancy—either ignore or down play the risks of a multiple pregnancy. Such pregnancies with two or more fetuses, not only carry heavy, significant extra burdens and major risks for both the woman and offspring, but also impose a greater societal burden leading, as such, to greater overall health care costs and maintenance concerns.³⁸³

Since it is highly unlikely that laws will be enacted limiting the number of embryos allowed to be created in IVF clinics—this, because of the prevailing American attitude toward privacy in medical decision-making, guidelines designed to reduce multiples will have to be issued and respected by professional organizations of IVF physicians. In 1999, the American Society of Reproductive Medicine took a bold step forward in regulating this area of concern by recommending that patients, younger than thirty-five years of age with a good prognosis of success, have not more than two embryos transferred in IVF procedures. Those between the ages of thirty-five to forty with an average prognosis of success, should be limited to three transfers. For patients who have had previous difficulties or are forty-years or older, four embryo transfers would be allowed.³⁸⁴ These recommendations, although but of an advisory nature, should—over time—have the effect of reducing greatly the high incidence of multiple IVF births.³⁸⁵

The ultimate challenge for contemporary lawyers in the Age of The New Biology is to become more aware and, indeed, educated to the challenges and complexities of these scientific and technological advances in reproductive biology. No doubt the central focus of this energy should be a serious attempt to tackle the extent to which there is a fundamental constitutional and/or international human right to procreative liberty, health assistance in biological reproduction and the point in the biological developmental chart at which the state is obligated to assert its protective interest to “life.”

While ever mindful of the perhaps unavoidable mixture of religion into science and the new laws of reproductive biology, every step must be taken to assure as pragmatic a view as possible is adhered to in the ultimate structuring of legislative responses and judicial interpretation. Scientific objectivity, if not verifiability, should be not an ideal but a given in this area of decision making.³⁸⁶ If this is attained, law, science, medicine, and religious ethics will have formed a dynamic collaboration which will go far toward assuring that all citizens have an equal

opportunity to achieve their maximum potential within the economic marketplace, their physical suffering minimized and spirituality tranquility preserved.³⁸⁷

Advances in rDNA technology and screening techniques have created a new genus in the taxonomy of genetic information, information that is particularly susceptible to misuse both by state and private entities. As with any new invention—whether a genetically altered plant or a laboratory technique for identifying mental illness—such technical capability and concomitant information is often met with fear. Similarly, those individuals identified by such technology as genetically distinct from the social norm are at risk for disparate and intrusive treatment.³⁸⁸

The perception by both public and private institutions that identifying and singling out persons with genetic abnormalities serves either public or private commercial interest in turn sets the stage for an erosion of fundamental privacy rights based on such genetic information. Whatever the risks from the perspective of individual rights, however, it is increasingly clear that rDNA techniques and the valuable knowledge they generate provide great hope for alleviating human suffering both as diagnostic measures to avoid genetically related illness and as therapeutic techniques to cure such illness.³⁸⁹ Discerning a rational course between the often conflicting interests of individual rights and the greater social good in the application of rDNA technology presents particularly difficult problems regarding how to apply existing constitutional precedent and public policy to this new technology. Indeed, the factual permutations raised by the use of rDNA and screening techniques appear at first consideration novel and strange.

Closer examination, however, reveals recurring constitutional and policy questions. For example, to the extent such genetic markers are immutable characteristics which subject a class of individuals to any stigma, the Equal Protection clause of the Fourteenth Amendment arguably recognizes the need for heightened judicial scrutiny of government action affecting such a suspect class.³⁹⁰ Exacting judicial scrutiny imposes on the state and its agents a higher standard of rationality. As with any suspect class like race or alienage, such scrutiny attempts to discern the extent to which fear or prejudice may have supplanted rational discourse in the making of public policy.

Similarly, fundamental privacy rights recognize an individual's interest in not disclosing personal information that might hold him up to unnecessary public scrutiny and reputational damage.³⁹¹ This principle applies with particular force to an individual's interest in concealing from public scrutiny the makeup of their genetic map.³⁹² Although these rights, especially as defined by the Fourth Amendment, are qualified, when balancing society's interest in obtaining and using genetic information courts and legislatures should give great weight to the private nature of such information given its personalized and sensitive nature.

Finally, in the legislative sphere, the logical complement to recognizing rights of equal protection and privacy for individuals with genetic abnormalities is the extension of those rights as protections not only against state action but also against private entities. Specific amendments to the ADA³⁹³ and the Federal Privacy Act³⁹⁴ could have the effect of preventing genetic discrimination in the workplace and thus

clarifying, definitively, any further ambiguities arising in administrative rulings or interpretations by the EEOC here. As important, such legislation would further advance the principle that absent some compelling reason, private individuals and institutions will be charged with treating individuals whose genetic maps diverge from the norm as they would a person with a completely normal genotype.

Obviously, the wide number of social dislocations produced by the biotechnological advances of the New Biology neither must nor should be a serious matter of constitutional concern.³⁹⁵ Rather, efforts should be undertaken with resolve to sharpen ethical constructs for principled decision making within the professional bodies concerned with the development and management of the New Biology. The state legislatures and courts should—in partnership with medical scientists, ethicists, philosophers and the other architects of the new biological sciences—endeavor to regulate, and thereby resolve, the complexities of these biotechnological sciences.³⁹⁶

To be sure, the constitutional challenges raised as a direct consequence of the startling advances in bio-science are unique for they hold every promise of changing some of the most fundamental principles of this country's political order—challenges “that the individual human being is autonomous and exercises free will, that all people are entitled to equal treatment, that individuals enjoy a legitimate expectation of privacy in their dealings with the state and that freedom of scientific inquiry and expression can flourish along with freedom of religion.”³⁹⁷

While the Human Genome Initiative will provide startling genetic maps, it remains for the law to sequence or identify the policy issues inherent in the complex issues of medical genetics and then to proceed to map them (or, in other words, determine them and then resolve them to the extent possible within legal doctrines).³⁹⁸ This, in turn, forces a need to examine critically the true social significance of the concepts of normality and abnormality.³⁹⁹ With this all comes a fear—rational or irrational—that laws will be passed requiring everyone to submit to gene therapy or even, as the case may warrant, “provide personally identifiable genetic material for purely scientific uses.”⁴⁰⁰ Yet, interestingly, individuals are less likely to be interested in knowing about their genetic profiles if they are obsessed with an over-riding fear that such knowledge will then be used (or has a real potential for misuse) to punish them. Society will thus be forced to develop both ethical and legal norms designed to protect those of its members at higher risk from genetic discrimination.⁴⁰¹

From a more positive side, universal access to the wide opportunities of genetic services will allow persons “to act on the perception that it is good to want to know about genetic risks.”⁴⁰² Accordingly, when the benefits of genetic diagnosis and treatment become more evident over time, genetic information will, in turn, become far less threatening and stigmatizing.⁴⁰³

In order to meet these new challenges, law and sciences must march together as full partners and not—as in the past—with law behind the scientific cadence. All too often, as former Chief Justice Warren E. Burger has observed, “The law does not search out as do science and medicine; it reacts to social needs and demands.”⁴⁰⁴ It is thus vitally incumbent upon the law to develop a contemporary agenda for

social change and changing socio-political needs instead of responding simply to or reacting to change itself—especially so here with the Age of The New Biology.⁴⁰⁵ In the final analysis, then, it is well to recognize that, “Each new power won by man is a power *over* man as well,”⁴⁰⁶ and that within every risk taken is an opportunity for untold success.

ENDNOTES

1. Compton, *Science, Anti Science and Human Values*, 1 AMICUS 33 (1980). *See generally*, G.P. SMITH, II, GENETICS, ETHICS AND THE LAW (1981).
2. *Investors Dream of Genes*, TIME Mag., Oct. 20, 1980, at 72. While biotechnology stocks have recently turned in uneven performances, and Genentech no longer seems to be the market leader, this was not the case in the early 1980s. *See* I. P. COOPER, BIOTECHNOLOGY AND THE LAW (1987). *See also* GENOMICS: COMMERCIAL OPPORTUNITIES FROM A SCIENTIFIC REVOLUTION (G.K. Dixon, L.G. Copping & D. Livingstone eds. 1998); Waldholz & Stout, *A New Debate Rages Over the Patenting of Gene Discoveries*, WALL ST. J., April 17, 1992, at 1.
3. Gillis, *Celera Forms Stem Cell Alliance*, WASH. POST, June 13, 2000, at E6.
Advanced Cell Technology, Inc. of Worcester, Mass. and the Jones Institute for Reproductive Medicine in Norfolk, Va. are endeavoring — with some success — to develop therapeutic cloning whereby human embryos are created for the express purpose of yielding healthy stem cells which can then be used to replace diseased tissue in ailing patients. Stolberg, *Company Using Cloning to Yield Stem Cells*, N.Y. TIMES, July 13, 2001, at A14; Stolberg, *For Clinic, Stem Cell Test Is Rebirth of Old Debate*, N.Y. TIMES, July 12, 2001, at A21.
See generally Chea, *Biotechs Get a Venture Capital Bounce*, WASH. POST, Oct. 3, 2001, at E5.
4. *Diamond v. Chakrabarty*, 447 U.S. 303 (1980).
5. Annas, *Life Forms: The Law and the Profits*, 18 HASTINGS CENTER REP. 21, 22 (1978). *See also* Stich, *The Rewards and Risks of Studying Genes*, 26 HASTINGS CENTER REP. 39 (1986).
6. Compton, *supra* note 1 at 37.
7. *See* Hilts, *'Rules' Drawn for Marketing Gene Research*, WASH. POST, Mar. 28, 1982, at A1.
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9. SMITH, *supra* note 1 at 1.
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10. J. FLETCHER, THE ETHICS OF GENETIC CONTROL: ENDING REPRODUCTIVE ROULETTE (1974). *See* Smith, *Manipulating the Genetic Code: Jurisprudential Conundrums*, 64 GEO. L. J. 697 (1976).
11. Feder, *The 'Pharmers' Who Breed Cows That Can Make Drugs*, N.Y. TIMES, Feb. 9, 1992, at F9 (animals artificially endowed with human genes may produce hormones for drug companies such as Genpharm International, Inc. and DNX Corporation).
See generally Smith, *Imitations of Immortality: Clones, Cryons and The Law*, 6 U. N. SO. WALES L. J. 119 (1983).
See also Gugliotta, *The Robot With the Mind of an Eel*, WASH. POST, April 17, 2001, at A1.
12. G. P. SMITH, II, THE NEW BIOLOGY: LAW, ETHICS AND BIOTECHNOLOGY ch. 5 (1989).
See Mooney & Mikos, *Growing New Organs*, 280 SCIENTIFIC AM. 38 (April, 1999) (detailing how researchers have taken the first steps toward creating semi-synthetic living organs that can be used as human replacement parts). *See also* Noble, *To a Heart-Like Beat, Scientist Succeeds in Growing Pig Blood Vessels*, INT'L. HERALD TRIB., April 17-18, 1999, at 3.
13. Clark, Begley & Hager, *The Miracle of Spliced Genes*, NEWSWEEK, Mar. 17, 1980, at 62; *See generally* THE CODE OF CODES (D. J. Kevles *et al.*, eds. 1992) (discussing scientific and social issues in the Human Genome Project and the possibility of DNA-based medicine); Baker & Clugh, *The Technological Use and Methodology of Recombinant DNA*, 51 S. CAL. L. REV. 1009 (1978).
14. *Scientists Want Limit Dropped on Gene Splitting Experiments*, WASH. POST, Nov. 26, 1980, at C3. *But see*, Eisenberg, *Patenting The Human Genome*, 39 EMORY L. J. 721 (1990). *See also* NIH May Accept Ban on Patenting Genes, WALL ST. J. Aug. 27, 1992 at B4.
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15. Neville, *Philosophic Perspectives on Freedom of Inquiry*, 51 S. CAL. L. REV. 1115, 1128-29 (1978).

16. See generally Cohen, *Restriction of Research with Recombinant DNA: The Dangers of Inquiry and The Burden of Proof*, 51 S. CAL. L. REV. 1081, 1098 (1978); Note, *Genetic Engineering: Innovation and Risk Minimization*, 57 GEO. WASH. L. REV. 100 (1988).
17. Fletcher, *Ethics and Recombinant DNA Research*, 51 S. CAL. L. REV. 1131, 1139, (1978).
18. See Toulmin, *Science and Ethics: Can They Be Reconnected?*, U. CHICAGO MAG., Winter 1981, at 2.
19. See *Roe v. Wade*, 410 U.S. 113 (1973); Smith, *Procreational Autonomy v. State Intervention: Opportunity or Crisis for a Brave New World?*, 2 NOTRE DAME J. L. ETHICS & PUBLIC POL'Y 635 (1986); Smith & Iraola, *Sexuality, Privacy and The New Biology*, 67 MARQ. L. REV. 63 (1984).
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22. See generally T. HOWARD & J. RIFKIN, WHO SHOULD PLAY GOD? (1977); Hiltz, *Genetic Scientist is Punished for Test Violations*, WASH. POST, March 23, 1981, at A1.
23. Sinsheimer, *Recombinant DNA—On Our Own*, 26 BIOSCIENCE 599 (1976).
24. Sinsheimer, *Potential Risks*, in RESEARCH WITH RECOMBINANT DNA at 78 (National Academy of Science ed., 1977).
25. J. GOODFIELD, PLAYING GOD 71 (1977).
26. See Fletcher, *supra* note 17, at 1131-39.
27. *Id.* at 1138-39.
28. See generally T. L. BEAUCHAMP & L. WALTERS, CONTEMPORARY ISSUES IN BIOETHICS (1978); Smith, *Uncertainties on the Spiral Staircase: Metaethics and The New Biology*, 41 THE PHAROS 10 (1978).
29. See Irons & Sears, *Patent 'Re-examination': A Case for Administrative Arrogation*, 1980 UTAH L. REV. 287-88.
30. See *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 279 (1976) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966)); *Atlantic Works v. Brady*, 107 U.S. 192, 200 (1882). Interestingly, about 65-70% of litigated patents are invalidated. BEAUCHAMP & WALTERS, *supra* note 28 at 305.
31. *Diamond v. Chakrabarty*, 447 U.S. 303 (1980).
32. Justice Brennan, writing in dissent, surveyed the Patent Act of 1793, as re-enacted in 1952, the Plant Patent Act of 1920, and the Plant Variety Protection Act of 1970 and concluded that there existed a strong congressional limitation against patenting bacteria. *Id.* at 322.
33. 35 U.S.C. § 101 (1976).
34. *Diamond v. Chakrabarty*, 447 U.S. at 307.
35. Gore, *The Awesome Worlds Within a Cell*, 150 NAT'L GEOGRAPHIC 355, 374-75 (1976).
36. See generally Kiley, *Common Sense and the Uncommon Bacterium—Is 'Life' Patentable?*, 60 J. PAT. OFF. SOC'Y 468 (1978).
37. Application of Chakrabarty, 571 F.2d 40 (C.C.P.A. 1979) *dismissed* 439 U.S. 801 (1978) *rev'd sub nom.* Application of Bergy, 596 F.2d 952 (C.C.P.A. 178), *cert. granted*, 444 U.S. 924 (1979). See Dresser, *Ethical and Legal Issues in Patenting New Animal Life*, 28 JURIMETRICS 399 (1988).
38. *Diamond v. Chakrabarty*, 447 U.S. 308, 314 at n.9 (1980). See also Daus, Bond & Rose, *Microbiological Plant Patents*, 10 IDEA 87 (1966).
39. *Id.* at 94 n. 36. See Pottage, *The Inscription of Life in Laws: Genes, Patents and Bio-politics*, 61 MOD. L. REV. 740 (1998); Cooper, *Patent Protection for New Forms of Life*, 38 FED. BAR. J. 34 (1978); Kip, *The Patentability of Natural Phenomena*, 20 GEO. WASH. L. REV. 371 (1952).
40. See Daus, *Patents for Biotechnology*, 26 IDEA 263 (1985-86); Barinoga, *Making Transgenic Mice: Is it Really That Easy?*, 245 SCIENCE 590 (1989); Biggart, *Patentability in the United States of Microorganisms, Processes Utilizing Microorganisms, Products Produced by Microorganisms and Microorganism Mutational and Genetic Modification Techniques*, 22 IDEA 113 (1981-82).
41. See generally Nelkin, *Threats and Promises: Negotiating the Control of Research*, 107 DAEDALUS, 191 (1978); Roberts, *Ethical Questions Haunt New Genetic Technologies*, 243 SCIENCE 1134 (1989); Pottage, *supra* note 39.
42. 447 U.S. at 308 (1980).
43. *Id.* at 308-309.

44. *Id.* at 310. *See generally*, Delgado & Miller, *God, Galileo and Government: Toward Constitutional Protection or Scientific Inquiry*, in 1 ETHICAL, LEGAL AND SOCIAL CHALLENGES TO A BRAVE NEW WORLD 231 (G.P. Smith, II, ed. 1982).

45. 447 U.S. at 315.

46. *Id.* at 316-317.

47. *Id.*

48. *Id.* at 317.

49. *Id.* at 311.

50. Wallis, *Should Animals be Patented?*, TIME Mag., May 4, 1987, at 110. *See also* T. INGOLD, WHAT IS AN ANIMAL? (1988).

See Note, Evolving Biotechnology Patent Laws in The United States and Europe: Are They Inhibiting Disease Research?, 12 IND. INT'L & COMP. L. REV. 183 (2001).

51. *Id.*

52. *Id.*

53. *Id.* *See also* Elmer-Dewitt, *The Perils of Trading on Heredity*, TIME Mag., Mar. 20, 1989, at 70-71; Coment, *Biotechnology and The Legal Constitution of the Self: Managing Identity in Science, the Market and Society*, 51 HASTINGS L. J. 909 (2000).

54. *Id.*

Codifying the present rules of the U.S. Patent and Trademark Office that human organisms are not subject to patents, the Congress included a provision in an amendment within a package of spending bills—while barring the issuance of patents—will not interfere with stem cell research. AP, *Hill Negotiations Agree to Bar Patents for Human Organisms*, WASH. POST, Nov. 25, 2003, at A18; Weiss, *Funding Bill Gets Clause on Embryo Patents*, WASH. POST, Nov. 17, 2003, at A4.

55. *Id.*

56. Pub. L. 100-703, tit. II, § 201, 102 Stat. 4676, 35 U.S.C. § 271 (1988). *See generally* Comment, *All Animals Are Equal, But Some Are Better Than Others: Patenting Transgenic Animals*, 7 J. CONTEMP. HEALTH L. & POLICY 245 (1991).

57. *House Passage of Animal Patent Bill*, 36 PAT. TRADEMARK & COPYRIGHT J. (BNA) No. 897 at 499 (Sept. 15, 1988).

58. 134 CONG. REC. H7439 (Daily ed. Sept. 13, 1988), (Remarks of Rep. C. Rose).

59. Weiss, *Patent Sought in Making of Part-Human Creatures*, WASH. POST, April 2, 1998, at 2. *See also* WHO OWNS LIFE? (D. Magnus, A. Caplan & G. McGee eds. 2002).

60. Schneider, *A Patent on Life Forms Gets Genes Into Business*, INTL. HERALD TRIB., June 9, 1987, at 1.

61. *Id.* *See also*, Wasowski, *The Evolution of Patentable Compositions of Matter: The United States Patent Office Accepts Genetically Altered Animals as Patentable Subject Matter* under 35 U.S.C. § 101, 2 AD. L.J. 309 (1988).

62. *See supra* notes 5-28.

63. *See generally* Kulseth, Note, *Biotechnology and Animal Patents: When Someone Builds a Better Mouse*, 32 ARIZ. L. REV. 691 (1990). *See also supra* note 50.

64. S. GOLDBERG, SEDUCED BY SCIENCE 15-17 (1999).

See Andrews, Religious Leaders Prepare to Fight Patents on Genes, N.Y. TIMES, May 13, 1995, at A1.

65. Day, *Church Groups to Fight Patenting of Life Forms*, WASH. POST, May 13, 1995, at A3.

See generally Whitaker, *The Patentability of Embryonic Stem Cell Research Results*, 13 U. FLA. J.L. & PUB. POL'Y 361 (2002).

66. GOLDBERG, *supra* note 64 at 15.

67. A. R. CHAPMAN, UNPRECEDENTED CHOICES: RELIGIOUS ETHICS AT THE FRONTIERS OF GENETIC SCIENCE 211-223 (1999).

See GOD AND THE EMBRYO: RELIGIOUS VOICES ON STEM CELLS AND CLONING (B. Waters & R. Cole-Turner eds. 2003) (various denominational positions are presented in the appendices).

68. J. FLETCHER, HUMANHOOD: ESSAYS IN BIOMEDICAL ETHICS 93 (1979). *See also* Commercialization of Biotechnology: Hearings Before the Subcomm. On Technology and Competitiveness of the House Comm. On Science, Space and Technology, 102 Cong., 1st Sess. 70-75 (1991); Anderson, *The Decline of Moral Competence: Attacks on Science Show How far Authority has*

Declined in the West, AM. OUTLOOK 38 (Spring 1999).

69. *Id.* See also D. CALLAHAN, WHAT PRICE BETTER HEALTH? HAZARDS OF THE RESEARCH IMPERATIVE ch. 4 (2003); Eisenberg, *The Social Imperatives of Medical Research*, 198 SCIENCE 1105 (1977).

70. Greely *et al.*, *The Ethical Use of Human Fetal Tissue in Medicine*, 320 NEW ENG. J. MED. 1093 (1989). It is between the sixth and eleventh weeks of gestation that nearly eighty percent of all individual abortions are performed. Thus, neural and other tissue are at a sufficiently developed state that it may—with success—be retrieved and transplanted. For those abortions performed between fourteen and sixteen weeks, pancreatic tissue is of particular value in diabetes research. Robertson, *Rights, Symbolism and Public Policy in Fetal Tissue Transplants*, 28 HASTINGS CENTER REP. 5 (1988).

71. Ethics Advisory Board of the Department of Health, Education and Welfare, *Report and Conclusions: HEW Support of Research Involving Human In Vitro Fertilization and Embryo Transfer*, 44 Fed. Reg. 35,033 (1979). See McCormick, *Who or What is the Pre-embryo?*, 1 KENNEDY INST., ETHICS J., at 1 (Mar. 1991).

72. Krause, *Artificial Conception: Legal Approaches*, 19 FAM. L. Q. 185, 190 (1985).

73. Abramowitz, *A Stalemate on Test-Tube Baby Research*, 24 HASTINGS CENTER REP. 5 (1984).

74. See *Hearings On Human Embryo Transfer, Subcommittee on Investigations and Oversight, U.S. House of Representatives' Committee on Science and Technology*, 98th Cong., 2nd Sess. 142 (1984).

75. Abramowitz, *supra* note 73.

76. Ethics Advisory Board, *supra* note 71 at 33,057. Among these conditions were that the embryo be sustained *in vitro* beyond the implantation stage and that IVF, followed by embryo transfer, be used only by married couples who had donated their sperm and ova. Abramowitz, *supra* note 73.

77. Amramowitz, *supra* note 73 at 6. See Fletcher & Ryan, *Federal Regulations for Fetal Research: A Case for Reform*, 15 L. MED. & HEALTH CARE 126 (1987).

78. 45 C.F.R. §§ 46.101-124, 46.301-306(g), 46.401-409 (1991).

79. 45 C.F.R. §§ 46.204(d) (1991). See also 45 C.F.R. § 46.205 (1991).

80. 45 C.F.R. §§ 46.102-206 (1985). *In Vitro* Fertilization is defined as “any fertilization of human ova which occurs outside of the body of a female, either through a mixture of donor human sperm and ova or by any other means.” Section 46.203(g) (1991).

81. 45 C.F.R. § 46.101(a)(1991).

82. Blumberg, *Legal Issues on Nonsurgical Human Ovum Transfer* 251, J.A.M.A. 1178 (1984).

83. 45 C.F.R. § 46.203(c) (1991).

84. 45 C.F.R. §§ 46.208(a)(1)-(2) (1991).

85. 45 C.F.R. §§ 46.209(b)(1)-(3) (1991).

86. Specter, *Fetal-Tissue Research Ban Formally Extended*, WASH. POST, Nov. 3, 1989, at A5.

87. *Id.*

88. *Id.* See Specter, *Abortion Issues Chills Research: Fetal Tissue Fund Ban Sidelines U.S. Experts*, WASH. POST, Mar. 27, 1990 at 1; Marcus, *Fetal Protection Policies: Prudence or Bias?*, WASH. POST, Oct. 8, 1990, at A1.

89. *Id.*

90. Smith, *supra* note 19 at 638. See generally, Richard Locayo, *Pro Choice? Get Lost: Antiabortion Views Are a Must at Health and Human Services*, TIME Mag., Dec. 4, 1989, at 43.

91. WEEKLY COMP. PRES. DOC. at 87 (Jan. 25, 1993).

The National Bioethics Advisory Committee recommended in May, 1999, that the congressional ban on funding for human embryo research be lifted to allow research to be conducted on leftover embryos from fertility clinics if they were no longer wanted by their genetic parents. INT’L HERALD TRIB., May 24, 1999, at 2.

92. Dickson, *Fetal Tissue Transplants Win U.K. Approval*, 245 SCIENCE 464 (Aug. 4, 1989). See generally, Notes & News, *BMA Guidelines on The Use of Fetal Tissue*, THE LANCET, 1119 (May 14, 1988).

93. Dickson, *id.*

94. *Id.*

95. *Id.* See White & Wintour, *Britain Gives The Go-Ahead for Embryo Research*, 142 MANCHESTER GUARD. WKLY., April 29, 1990, at 1.

But see Brownsword *Stem Cells, Superman, and The Report of the Select Committee*, 65 MOD. L. REV. 568 (2002) (reviewing the work of the House of Lords report issued in 2002 dealing with the science and ethics of stem cell research and the regulatory issues to which it gives rise—all building upon the Human Fertilization and Embryology Act of 1990).

96. Dickson, *supra* note 92.

The U.S. position may be, at last, catching up with the British on this point. See INT'L. HERALD TRIB., *supra* note 91.

97. Fletcher, *supra* note 68 at 96.

98. *Id.* See Smith, *supra* note 19; Smith, *Intrusions of a Parvenu: Science, Religion and The New Biology*, 3 PACE L. REV. 63 (1982).

99. Sinsheimer, Paper, *The Daw of Genetic Engineering*, at a meeting of The Genetic Society of America, Chapel Hill, N.C., Aug. 1975, 80 GENETICS 89 (1975). See also Sinsheimer, *The Presumptions of Science*, DAEDALUS, 23 (Spring, 1978). But see Comment, *The Prospect of Private Unauthorized Eugenics and Ten Feet Tall Basketball Players: A Case of Legislative Oversight?*, 1 J. CONTEMP. HEALTH L. & POL'Y 155 (1985).

100. See Note, *Building a Better Bacterium: Genetic Engineering and the Patent Law After Diamond v. Chakrabarty*, 81 COLUM. L. REV. 159 (1981).

101. Lederberg, *Orthobiosis: The Perfection of Man*, in PLACE OF VALUE IN A WORLD OF FACTS 29 (A. Tiselius & S. Nillson eds. (1980)).

102. See CALLAHAN, *supra* note 69, chs. 5, 8; Kirby, *Bioethical Decisions and Opportunity Costs*, 2 J. CONTEMP. HEALTH L. & POL'Y 7 (1986); Baltimore, *Limiting Science: A Biologist's Perspective*, DAEDALUS, Spring 1978, at 37. See generally G. V. NOSSAL, HUMAN GENETIC INFORMATION: SCIENCE, LAW AND ETHICS (1990); G. P. SMITH, II, *Monograph, DEVELOPING A STANDARD FOR ADVANCING GENETIC HEALTH AND SCIENTIFIC INVESTIGATIONS* (1997).

103. Sanders, *Whose Lives Are These? A Judge Sets a Pro-Life Precedent for Embryos*, TIME Mag., Oct. 2, 1989, at 19.

See Annas, *The Shadowlands—Secrets, Lies and Assisted Reproduction*, 339 NEW ENG. J. MED. 935 (1998) (discussing the growth of infertility clinics).

104. USA TODAY, Aug. 7, 1989, at 1A.

See Kolata, *Clinics Selling Embryos Made for Adoptions: Couples Can Even Pick Ancestry for \$2,750*, N.Y. TIMES, Nov. 23, 1997 at 1 (discussing the practices of the Columbia-Presbyterian Medical Center in New York City).

105. Attorney General for Queensland *ex rel. Kerr v. T.*, 57 A.L.J.R. 285 (Austl. 1983).

In Canada, Justice Matheson of the Saskatchewan Court of the Queen's Bench held that a fetus is not a person within the meaning of the law. Therefore, it is not within the scope of the term "everyone" as used in the Canadian Charter of Rights and Freedoms which provides that "[e]veryone has the right to life . . . and the right not to be deprived thereof except in accordance with the principles of fundamental justice." *Borowski v. Attorney-General of Canada*, 4 D.L.R. 4th 112, 121 (1983) (quoting CAN. CHARTER OF RIGHTS AND FREEDOMS § 7).

106. Gavigan, *The Criminal Sanction as it Relates to Human Reproduction: The Genesis of the Statutory Prohibition of Abortion*, 5 J. LEGAL HIST. 20 (1984).

107. *Id.* at 21.

108. 410 U.S. 113 (1973).

See Roy, *Roe and The New Frontier*, 27 HARV. L. REV. 339 (2003).

109. It is only when the fetus reaches a "compelling" point of viability or when it "presumably has the capability of meaningful life outside the mother's womb," the state's interest in protecting fetal existence will be asserted. *Id.* at 163-64. It is at the third trimester of development that the state's interest becomes controlling. See King, *The Judicial Status of the Fetus: A Proposal for Legal Protection of the Unborn*, in 1 ETHICAL, LEGAL AND SOCIAL CHALLENGES TO A BRAVE NEW WORLD 110 (G. P. Smith, II, ed. 1982).

110. *Davis v. Davis*, No. E-14496, slip op. at 17 (Tenn. Cir. Sept. 21, 1989) (1989 WL 140495). The State of Louisiana appears to be the only state that has determined legislatively that:
 A viable *in vitro* fertilized human ovum is a juridical person which shall not be intentionally destroyed by any natural or other juridical person or through the actions of any other such person. An *in vitro* fertilized human ovum that fails to develop further over a thirty-six hour period except when the embryo is in a state of cryopreservation, is considered non-viable and is not considered a juridical person.
- LA. REV. STAT. ANN., § 9:126 (West 1991). *See also* 720 ILL. COMP. STAT. ANN. 5/9-1.2(3)(b) (West 1993) (criminalizing killing of an unborn child defined as “any individual of the human species from fertilization to birth.”).
111. *See Davis*, No. E-14496 at 20.
112. *Davis*, No. E-14496 at 17, n.45.
113. *Id.* at 15.
114. *Davis v. Davis*, C/A No. 180, slip op. at 4 (Tenn. Ct. App. Sept. 13, 1990).
115. *Carey v. Population Services Int’l.*, 431 U.S. 678, 685 (1977).
116. *Davis*, C/A No. 180 at 6.
See generally Symposium, *Status of The Embryo*, 22 J. MED. & PHIL. 407 (Oct. 1997).
117. *Davis v. Davis*, 842 S.W. 2d 588, 604 (Tenn. 1992).
118. *Davis* at 604.
119. *Davis* at 604.
See Dehmel, To Have or Not to Have: Whose Procreative Rights Prevail in Disputes over Dispositions of Frozen Embryos, 27 CONN. L. REV. 1377 (1995); Roy, *supra* note 108 at p. 363 *passim*.
- The Supreme Court of New Jersey held that an ex-wife’s right not to procreate was greater than her former husband’s right to procreate and that the frozen pre-embryos of their previous marriage could not be donated to other couples but had to be destroyed as the former wife, J.B., wanted. *J.B. v. M.B.*, 783 A. 2d 707 (N. J. 2001).
120. *Kass v. Kass*, No. 19658/93, 1995 WL 110368 (N.Y. Sup. Ct. Jan. 18, 1995), rev’d 663 N.Y.S. 2d 581 (App. Div. 1997), aff’d 696 N.E. 2d 174 (N.Y. 1998).
 The Massachusetts Supreme Judicial Court has rejected expressly the idea that prior agreements of progenitors should govern the disposition of frozen embryos. *A.Z. v. B.Z.*, 725 N.E.2d 1051 (Mass. 2000). Here, the enforcement of the agreement would have forced the former husband to have become a parent against his will and this, the court reasoned, would have been against public policy.
See Shapo, Frozen Pre-Embryos and The Right to Change One’s Mind, 12 DUKE J. COMP. & INT’L. L. 75 (2002); Theyssen, *Balancing Interests in Frozen Embryo Disputes: Is Adoption Really A Reasonable Alternative?*, 74 IND. L. J. 710 (1999).
121. *See Curriden, Frozen Embryos—The New Frontier*, 75 A.B.A. J. 68 (1989).
122. Pirrie, *Re-inventing the Law of Human Life*, WALL ST. J., Sept. 26, 1989, at A26 (discussing the status and ethics of IVF research in Australia and Europe).
123. *Id.*
124. *Id.*
125. Elson, *The Rights of Frozen Embryos*, TIME Mag., July 24, 1989, at 63.
126. *Id.*
See generally B.A. BRODY, THE ETHICS OF BIOMEDICAL RESEARCH: AN INTERNATIONAL PERSPECTIVE, ch. 5 (1998).
127. *See SMITH, supra* note 12 at 11.
See also MEDICAL ETHICS ch. 8 (R. M. Veatch ed., 2d ed., 1997).
128. The following sources serve as references for the presentation of arguments opposing and favoring the use of *in vitro* fertilization: MAKING BABIES: THE TEST TUBE AND CHRISTIAN ETHICS (A. Nichols & T. Hogan eds. 1984); R. McCORMICK, HOW BRAVE A NEW WORLD? chs. 1, 16 (1981); TEST-TUBE BABIES: A GUIDE TO MORAL QUESTIONS, PRESENT TECHNIQUES AND FUTURE POSSIBILITIES (W. Walters & P. Singer eds. 1982 [hereinafter TEST-TUBE BABIES]); M. TOOLEY, ABORTION AND INFANTICIDE (1983); Harris, *In Vitro Fertilization: The Ethical Issues*, 33 PHIL. Q. 217 (1983).
129. M. TOOLEY, ABORTION AND INFANTICIDE chs. 5-7 (1983). *See* Robertson, *supra* note 70.

130. See TEST-TUBE BABIES, *supra* note 128 chs. 8, 11. See also Harvey, *A Brief History of Medical Ethics from the Roman Catholic Perspective*, in CATHOLIC PERSPECTIVES ON MEDICAL MORALS at 129 (E. Pellegrino, J. Langan & J. Harvey eds. 1989).

131. Purvis, *An Early Warning System*, TIME Mag., Nov. 27, 1989, at 56.

132. *Id.*

133. See generally Letter, Steptoe & Edwards, *Birth after the Re-Implantations of a Human Embryo*, THE LANCET 366 (Aug. 12, 1978).

134. Priest, *The Report of the Warnock Committee on the Human Fertilization and Embryology*, 48 MOD. L. REV. 73 (1985). See also Glazebrook, *Human Beginnings*, 43 C.A.M.B. L. J. 209 (1984); Douglas, *The Human Fertilization and Embryology Act 1990*, 21 F.A.M. L. 110, 116 (Mar. 1991).

135. Priest, *supra* note 134, at 75-78. See also *The Warnock Committee*, 289 BRIT. MED. J. 238 (1984).

136. See Priest, *supra* note 134, at 77.

137. *Id.*

The results of a study by The Society for Assisted Reproduction Technology showed that, in the U.S., fertility clinics have accumulated some 400,000 frozen human embryos—about twice the number estimated in 1986—all maintained with no storage limits. Britain has some 52,000 such embryos and Australia 71,000. Under German Law, all embryos created must be implanted. In the U.S., it was found that 87% of stored embryos being held were for possible future use, 3% were earmarked for research and 2% for destruction. In Britain, surplus embryos are preserved for 5 years, with one 5 year extension allowed. Wade, *Clinics Hold More Embryos Than Had Been Thought*, N.Y. TIMES, May 9, 2003, at A24.

138. *Id.*

When this primary condition is met, scientific research of a therapeutic or diagnostic nature is permitted in the United Kingdom, Spain, and Denmark—with a consensus extracorporeal embryos should not be kept alive for more than 14 days. Kriari-Catranis, *Embryo Research and Human Rights: An Overview of Developments in Europe*, 4 EUR. J. HEALTH L. 41, 55-58 (1997). See *infra* note 380 setting forth the recommendation of the President's Council on Bioethics that embryo research be prohibited beyond 14 days of development.

139. See Lee, *Re-Reading Warnock* in RIGHTS AND WRONGS IN MEDICINE at 37-52, 43 (P. BYRNE ed. 1986). See Goodhart, *Embryo Experiments*, 297 BRIT. MED. J. (1988); *BMA Guidelines*, *supra* note 92.

140. Priest, *supra* note 134.

141. *Id.*

See generally Gunsburg, *Frozen Life's Dominion: Extending Reproductive Autonomy Rights to In Vitro Fertilization*, 65 FORDHAM L. REV. 2205 (1997).

142. *Id.*

See Priest, *Assisted Reproduction—Development in England*, 37 INT'L. & COMP. L. Q. 535 (1988).

143. (Commencement No. 1) Order 1990 No. 2165 (c.52).

See generally Black, *Regulation as Facilitation: Negotiating the Genetic Revolution*, 61 MOD. L. REV. 621 (1998).

See D. MORGAN & R. G. LEE, BLACKSTONE'S GUIDE TO THE HUMAN FERTILIZATION AND EMBRYOLOGY ACT 1990: ABORTION AND EMBRYO RESEARCH (1991).

144. Douglas, *supra* note 134 at 110.

145. *Id.* at 112.

146. *Id.* at 113.

See generally Brownsword, Cornish & Llewelyn, *Human Genetics and The Law: Regulating a Revolution*, 61 MOD. L. REV. 593 (1998). See Lee, *Lessons Learned from Great Britain's Human Fertilization and Embryology Act: Should the United States Regulate the Fate of Unused Frozen Embryos?*, 19 LOY. L. A. INT'L. & COMP. L. J. 1027 (1997). See generally GENETIC ETHICS chs. 15, 19 (J. F. Kilner, R. D. Pentz & F. E. Young eds. 1997).

147. Ross, *Britain Legalizes Cloning Human Embryos*, WASH. TIMES, Jan. 23, 2001, at 1.

The fourteen day period of experimentation imposed (almost universally) is about the time the "primitive streak" begins to form within the embryo—thus signaling the beginnings of the nervous

system. *Id.*

See *British Researchers Start to Build Human Embryo Stem Cell Banks*, GENOMICS & GENETICS WEEKLY, April 12, 2002, at 13.

See also *Different Stances in Law [on Stem Cell Research Globally]*, THE (LONDON) TIMES (Higher Ed. Supp.), Mar. 8, 2002, at 4. Apart from the Council of Europe Convention on Human Rights and Biomedicine, which specifically prohibits human reproductive cloning and the creation of human embryos for research, most of the international instruments have been in fairly broad declaratory terms. *Id.*

148. Ross, *id.*

In 2002, the German Parliament voted to allow limited imports of human embryonic stem cells for research purposes. Williamson, *Germany in Stem Cell Compromise [on] Embryo Research*, FIN. TIMES, Jan. 31, 2002, at 10.

See Reuters, *Canada Takes Middle Path on Stem-Cell Study*, N.Y. TIMES, Mar. 2, 2002, at A5.

149. Weiss, *Panel Drafts Ethics Plan for Embryo Cell Studies*, WASH. POST, April 9, 1999, at A2.

See Symposium, *Human Primordial Stem Cells*, 29 HASTINGS CENTER RPT. 30 (1999).

150. *Id.*

See Petersen, *Embryonic Stem Cells for Medicine*, 280 SCIENTIFIC AM. 45 (April, 1999).

151. Wakayama, Tabor *et al.*, *Differentiation of Embryonic Stem Cell Lines Generated from Adult Somatic Cells by Nuclear Transfer*, 292 SCIENCE 740 (April 27, 2001).

See Weiss, *New Potential for Stem Cells Suggested*, WASH. POST, April 27, 2001, at A2.

152. Cibelli, Lanza & West, *The First Human Cloned Embryo*, 286 SCIENTIFIC AMERICA 44 (Jan. 2002).

See also Weiss, *First Human Embryos Are Cloned in U.S.*, WASH. POST, Nov. 26, 2001, at A1; Fischer, *The First Clone*, U.S. NEWS & WORLD REP., Dec. 3, 2001, at 52; McNeil, *Cloned Human has been Born, Sect Says*, INT'L HERALD TRIB., Dec. 28-29, 2002 at 3; Hawkes, *Scientists doubt claim on difficult technique*, THE (LONDON) TIMES, Dec. 28, 2002, at 5; Weiss, *Cloning a Previous Hoax?*, WASH. POST, Dec. 31, 2002, at A3.

153. *Id.*

154. *Id.*

155. *Infra*, notes 178-81.

156. Norton, *Vatican Condemns Cloning of Human Embryo by U.S. Scientists*, CATH. STANDARD, Nov. 29, 2001, at 3.

Vergano, *The Adult vs. Embryonic Controversy Rages On*, USA TODAY, April 4, 2002, at 8D; Gillis, *Questions Raised on Stem Cells: Adult Cells Found Less Useful*, WASH. POST, Mar. 14, 2002, at A3.

157. Cibelli, Grant *et al.*, *Parthenogenic Stem Cells in Nonhuman Primates*, 295 SCIENCE 819 (Feb. 1, 2002).

158. *Id.*

159. *Id.*

160. Wade, *New Stem Cell Sources Called Possible*, N.Y. TIMES, Feb. 1, 2002, at A18.

See Gillis, *Study Finds Potential in Adult Cells*, WASH. POST, June 21, 2002, at A1.

New research has found that cells from blood can regenerate not just the blood supply but tissues of the skin, liver and gut. Korbling, Estrov *et al.*, *Hepatocytes and Epithelial Cells of Donor Origin in Recipients of Peripheral-Blood Stem Cells*, 346 NEW ENG. J. MED. 788 (Mar. 2, 2002). See also Vauter, *An Ethical and Policy Framework for the Collection of Umbilical Cord Blood Stem Cells*, in STORED TISSUE SAMPLES: ETHICAL, LEGAL, AND PUBLIC POLICY IMPLICATIONS at 32 (R. F. Weir ed. 1998); AP, *Long-frozen Blood from Umbilical Cords Shown Able to Grow*, WASH. TIMES, Dec. 31, 2002 at A3.

161. *Id.*

162. Bono, *Bioethics Council Debates Human Cloning for Research*, CATH. STANDARD, Jan. 31, 2002, at 12.

See Stolberg, *Bush's Bioethics Advisory Panel Recommends a Moratorium, Not a Ban, on Cloning Research*, N.Y. TIMES, July 11, 2002, at A21 (reporting on the Panel's recommendation that a 4 year moratorium be imposed on human cloning to allow for more public debate).

163. *Supra* note 160.

164. 65 C.F.R. § 51.976 (2000).

See Weiss, *U.S. to Issue New Rules for Research on Embryo Cells*, WASH. POST, Aug. 23, 2000, at A1.

The new rule not only disallows payment to embryo donors, but precludes—as well—donors from determining, in advance, who will receive the stem cells. This will prevent—hopefully—the creation of a market in embryo cells. Embryo donors are, furthermore, required—in giving their consent to the procedure—to fully understand that their embryos will not only not survive the scientific investigation but that embryonic cells may be kept alive indefinitely and could be made into tissues which in turn could be transplanted into patients.

A special advisory committee of scientists and ethicists designated as the human pluripotent stem cell review group will review all embryo cell grant applications to the NIH. If approved, the applications will then be sent to the NIH Scientific Advisory Committee for final action.

165. *Id.*

Interestingly, under S. 2015, the proposed Stem Cell Research Act of 2000, sponsored by Senators Arlen Specter and Tom Harkin, the Secretary of Health and Human Services was authorized to conduct embryonic stem cell research only from human embryos that otherwise would be discarded that have been donated from *in vitro* fertilization clinics with informed consent of the progenitors.

166. Ross, *supra* note 147.

167. Park, *Just Press Print*, THE ECONOMIST, Mar. 3, 2001, at 76.

168. Lau, *Living Cells Grown from Dead Brains*, WASH. TIMES, May 4, 2001, at A5; Weiss, *Human Fat May Provide Stem Cells*, WASH. POST, April 10, 2001, at A1; *Cadavers Are Latest Source of Versatile Stem Cells*, WASH. POST, Nov. 6, 2000, at A19.

Australian scientists are experimenting with an alternative procedure to therapeutic cloning known as embryonic stem cell-based nuclear programming. ES involves replacing the nucleus of an ES cell with another from an adult cell. The cells cannot grow into fetuses and thus could not be used for human reproductive cloning. Hope, *Scientists Sidestep Stem Cell Barriers*, THE (WEEKEND) AUSTRALIAN, June 8, 2002, at 3.

169. Weiss, *supra* note 151.

170. Pear, *Stem Cell Study Divides U.S. Officials*, INT'L. HERALD TRIB., June 28, 2001, at 6.

A giant step toward growing tailor-made replacement tissues—and thereby advancing therapeutic cloning efforts—was taken by two South Korean scientists when they succeeded, for the first time ever, in cloning human embryos and then extracting universal stem cells upon from them. Hwang *et al.*, *Evidence of a Pluripotent Embryonic Stem Cell Derived from a Cloned Blastocyst*, SCIENCE MAGAZINE On line, <http://www.sciencemag.org/cgi/content/abstract/1094515>.

See also Weiss, *Nature Human Embryos Cloned*, WASH. POST, Feb. 12, 2004, at A1.

In light of this scientific achievement, Dr. Leon R. Kass, Chairman of the President's Council on Bioethics, called upon the U.S. Congress to enact a comprehensive ban on moratorium on human cloning. Hall, *Specter of Cloning May Prove a Mirage*, N.Y. TIMES, Feb. 14, 2004, at F1.

171. Weiss, *supra* note 151.

See THE HUMAN EMBRYONIC STEM CELL DEBATE: SCIENCE, ETHICS AND PUBLIC POLICY (S. Holland, K. Labacqz & L. Zoloth eds. 2001).

See also Mumola, *Adult Stem Cells Found to Have Same Transforming Properties as Embryonic Ones*, CATHOLIC STANDARD, July 13, 2000, at 7; *The Vatican's Pontifical Academy for Life's Declaration on The Production and The Scientific and Therapeutic Use of Human Embryonic Stem Cells* at <http://www.vatican.va>. (Aug. 25, 2000).

172. Weiss, *Fetal Cell Research Funds Are at Risk*, WASH. POST, Jan. 26, 2001, at A3.

See McGough, *A Case for Federal Funding of Human Embryonic Stem Cell Research: The Interplay of Moral Absolutism and Scientific Research*, 18 J. CONTEMP. HEALTH L. & POL'Y 147 (2001).

173. *Id.*

See also Wade, *Stem-Cell Advances Are Likely to Heighten Ethics Debate*, N.Y. TIMES, April 27, 2001, at A1; Faden *et al.*, *Considerations of Justice in Stem Cell Research and Therapy*, 33 HASTINGS CENTER RPT 13 (2003) (discussing the availability of stem cell research therapies for every patient who needs them—as they might benefit only white Americans).

174. Pear, *supra* note 170.

175. Doerflinger, *The Ethics of Funding Stem Cell Research: A Catholic Viewpoint*, 9 KENNEDY INST. ETHICS J. 137 (1999).

176. Pear, *supra* note 170.

177. Pear, *id.* See generally Robertson, *Ethics and Policy in Embryonic Stem Cell Research*, 9 KENNEDY INST. ETHICS J. 109 (1999).

As of August, 2002, only 3 colonies of embryo cells were readily available to U.S. researchers and only 9 research facilities had applied for federal grants to conduct embryonic research on the cells. As a result of this state of affairs, Australia, England and Israel have moved forward as the leaders in the field. Gillis & Weiss, *Stem Cell Research Not Yet Booming*, WASH. POST, Aug. 6, 2002, at 1.

But see Connolly, *California to Enact Bill Promoting Stem Cell Research*, WASH. POST, Sept. 22, 2002, at A12 (reporting that the legislation is designed to make California a safe haven for human embryonic stem cell research including cells extracted from cloned embryos but does not permit reproductive cloning. The effect of this state law—if a federal ban on stem cell research were ever to be imposed—remains uncertain. Senate Bill 253 was signed into legislation by Governor Gray Davis on September 22 codifying this position. HEALTH & SAFETY CODE § 125115, Art. 5, (2002).

See also Vergano, *States Divide Into Stem-Cell Debates: Patchwork of Laws May Slow Research*, USA TODAY, April 21, 2004, at D1 (reporting on the efforts of some 33 state legislatures to alternatively condemn, condone or fund embryonic stem-cell research).

178. George W. Bush, *Address to The Nation on Stem Cell Research*, 37 WEEKLY COMP. PRES. DOC. 1141 (Aug. 2001).

See Seelye, *Bush Backs Federal Funding for Some Stem Cell Research*, N.Y. TIMES, Aug. 10, 2001, at A1; Stolberg, *Tangled Issues in Congress: Cloning and Stem Cell Study*, N.Y. TIMES, July 31, 2001, at A17.

See also Gillis & Connolly, *Bush Policy on Stem Cells Appears Safe on Hill*, WASH. POST, Sept. 2, 2001, at A15.

The National Institutes of Health posted on its Web site a stem cell registry listing 72 colonies or stem lines at 11 institutions in five countries (<http://escr.nih.gov/>). WASH. POST, Nov. 8, 2001, at A14.

In March, 2002, in a little-noticed ruling, the National Institutes of Health determined that scientists receiving federal monies for stem cell research could study new lines, even deriving them from embryos in their university laboratories, so long as they did not commingle their federal funds with private monies. With this simple clarification, an important barrier to this type of research has been lifted. Heretofore, the few academic researchers conducting embryonic studies did so in their private research laboratories with independent funds—fearful, as such, that using equipment in their university facilities would jeopardize the loss of their government grants. Stolberg, *Ruling by U.S. Widens Study of Stem Cells*, N.Y. TIMES, Aug. 7, 2002, at A1.

179. Gillis, *Stem Cell Research Faces FDA Hurdle*, WASH. POST, Aug. 24, 2001, at A1.

See Weiss, *Scientists Say Access to Embryo Cells Lacking*, WASH. POST, Sept. 26, 2002, at A19 (noting none of the cell lines approved by Bush have real therapeutic potential because they were cultivated with mouse cells thus making them all but ineligible for transplantation into humans); *supra* note 170 (discussing international research efforts in South Korea to begin therapeutic human cloning research).

180. Connolly, Gillis & Weiss, *Viability of Stem Cell Plan Doubted*, WASH. POST, Aug. 20, 2001, at A1; Weiss, *Stem Cell Studies Test Bush Policy: Scientists Push Use of Newer Colonies*,

WASH. POST, April 22, 2003, at B1; Weiss & Gillis, *New Embryonic Stem Cells Made Available*, WASH. POST, Mar. 4, 2004, at A2 (detailing how, using private monies, Harvard University researchers created 17 new colonies of human embryonic stem cells—this obtained from 344 three-day-old to five-day-old human embryos donated for research use by a local fertility clinic).

See also Lakshmi, *India Plans to Fill Void in Stem Cell Research: Scientists Say Restrictions in U.S. May Give Them Advantage in Development* (where there are little constraints on stem cell research), WASH. POST, Aug. 27, 2001, at A7; Williamson, *supra* note 147 regarding the German position. And, in 2002, it was announced that England was set to become the world's first stem cell bank in 2003 as record science spending will allow the country to become the world's leading public funding source for research in this field. Henderson, *Stem Cell Scientists Given 40m (pound Sterling) boost*, THE (LONDON) TIMES, Dec. 10, 2002, at 12.

See also Brainard, *Scientists' Partial Victory on Stem Cells May Be Undercut by Ban on Cloning*,

CHRON. HIGHER ED., Aug. 17, 2001, at 21.

181. Stolberg, *A Science in Its Infancy, but With Great Expectations for Its Adolescence*, N.Y. TIMES, Aug. 10, 2001, at A1.

See generally Robertson, *supra* note 177.

182. *See* J. NOWAK, R. ROTUNDA, J. YOUNG, CONSTITUTIONAL LAW 740 (2d ed. 1983). *See also*, Lorio, *In Vitro Fertilization and Embryo Transfer: Fertile Areas for Litigation*, 35 SW. L.J. 973, 983 (1982).

183. *Zablocki v. Redhail*, 434 U.S. 374, 384 (1978). *See e.g.*, *Carey v. Population Services Int'l*, 431 U.S. 678, 685 (1977); *Roe v. Wade*, 410 U.S. 113, 153 (1973); *Eisenstadt v. Baird*, 405 U.S. 438 (1972); *Loving v. Virginia*, 388 U.S. 1, 12 (1967).

184. Lorio, *supra* note 182, at 1007-8.

185. *Id.*

186. Hafen, *The Constitutional Status of Marriage, Kinship and Sexual Privacy*, 81 MICH. L. REV. 463 at 538 (1983).

See generally Dolgin, *Suffer the Children: Nostalgia, Contradiction and The New Reproductive Technologies*, 28 ARIZ. L. J. 471 (1996).

187. *Roe*, 410 U.S. 113.

188. *See generally*, Smith, *Through a Test Tube Darkly: Artificial Insemination and The Law*, 57 MICH. L. REV. 127 (1968).

189. *See* Vetri, *Reproductive Technologies and United States Law*, 37 INT'L. COMP. L. Q. 505, 520 (1988).

190. *Id.*

191. *See, e.g.*, CAL. HEALTH & SAFETY CODE §25956(a) (West 1984); MINN. STAT. AN. §145.422(2) (1998).

192. *See e.g.*, MICH. STAT. ANN. §14.15(2685) (1999).

193. Andrews, *The Stork Market: The Law of the New Reproduction Technologies*, 70 A.B.A.J. 50, 54-55 (1984). Blumberg, *Legal Issues on Nonsurgical Human Ovum Transfer*, 251 J.A.M.A. 1178 (1984); Flannery, Weisman, *et al.*, *Test Tube Babies: Legal Issues Raised by In Vitro Fertilization*, 67 GEO. L.J. 1295 (1979).

194. 18 PA. STAT. ANN. § 3213(e) (Purdon 1983).

195. LA. CIV. CODE ANN. arts. 129, 130 (West 1990). The U.S. Court of Appeals for the Fifth Circuit in *Margaret S. v. Edwards*, 794 F.2d 994 (5th Cir. 1986), examined the constitutionality of a Louisiana statute that provided, "no person shall experiment on an unborn child or a child born as the result of an abortion, whether the unborn child or child is alive or dead, unless the experimentation is therapeutic to the unborn child or child." LA. REV. STAT. ANN. § 40.1299.35.13. The court held the statute unconstitutionally vague, because the distinction between experimentation and testing, or between research and practice, is virtually meaningless. *Id.* at 999.

196. *See* 18 PA. STAT. ANN. § 3212(e) (Purdon 1983).

197. *See* LA. CIVIL CODE, Art. 129 (1986).

198. LA. CIVIL CODE, Art. 26 (1993), LA. REV. STAT. 9:123 (1998).

199. LA. REV. STAT., §§ 9:121, 9:122 (1998).

200. LA. REV. STAT. § 9:126 (1998).

201. *See* ILL. ANN. STAT. ch. 38, para. 8-126(7) (Smith-Hurd 1989).

South Dakota has enacted legislation prohibiting nontherapeutic embryonic research but allows *in vitro* fertilization and accompanying embryo transfer to a woman's body. S.D. CODIFIED LAWS ANN. §34-14-16 *et seq.* (Supp. 2001).

202. *See* *Lifchez v. Hartigan*, 735 F. Supp. 1361 (N.D. Ill. 1990).

The only other decision involving an *in vitro* fertilization procedure was an unpublished case, *Del.Zio v. Manhattan's Columbia Presbyterian Medical Center*, No. 74-3588 (S.D.N.Y., filed April 12, 1978), which resulted in an award of \$50,000 damages to the prospective parents for emotional distress caused by the willful destruction of an embryo produced by IVF. *See* Lorio, *supra* note 182 at 996-97.

203. *Webster v. Reproductive Health Services*, 109 S. Ct. 3040, 3079 (1989).

204. Polls show 70% of Americans believe that abortion should be a decision for women to make alone. Yet more than 50% also think the act to be inherently wrong. According to a Los Angeles Times poll, 47% approved of the Supreme Court's decision in *Webster*, 40% disapproved, and 13% were not

certain. Cassidy, *U.S. Abortion Ruling Divides a Nation*, THE SUNDAY TIMES (London) July 9, 1989, at C4.

205. Webster, 109 S. Ct. at 3047.

206. *Id.*

207. *Id.*

208. *Id.* at 3050. See *American Survey: The Fearful Politics of Abortion*, THE ECONOMIST, July 8, 1989, at 31.

209. Webster, 109 S. Ct. at 3050.

The viability testing provision of the statute requires physicians to determine fetal viability if the pregnant woman is more than twenty weeks pregnant. If deemed viable, the fetus may not be aborted unless its mother's life is in danger. The majority held that this provision was consistent with the exercise of a physician's professional judgment and complimentary to the state's interest in protecting human life. *Id.* at 3055.

A simple ultra sound examination can determine gestational age, fetal weight and fetal lung maturity which in turn allows a physician to determine whether a fetus is viable. Smith, Frey & Johnson, *Assessing Gestational Age*, 33 AM. FAM. PHYSICIANS 215, 219-20 (1986).

210. Webster, 109 S. Ct. at 3079-85.

211. *Id.* at 3081.

212. 381 U.S. 479 (1965).

213. Webster, 109 S. Ct. 3083.

214. *Id.* (Emphasis added).

While some faiths regard one is a genetically unique human from the moment of conception, others maintain personhood occurs at the 14th day thereafter or either when brain wave activity or survival outside the womb can be sustained. See S. GOLDBERG, *supra* note 64 at 110, 111 (1999); E. A. COOK, T. G. JELEN & C. WILCOX, *BETWEEN TWO ABSOLUTES: PUBLIC OPINION AND THE POLITICS OF ABORTION* 93-130 (1992) and L. H. TRIBE, *ABORTION: THE CLASH OF ABSOLUTES* 117 (1992).

For a comparative law analysis, see MEDICAL LAW ch. 11 (I. Kennedy & A. Grubb eds.) (3d ed. 2000).

215. Robertson, *Extracorporeal Embryos and the Abortion Debate*, 2 J. CONTEMP. HEALTH L. & POL'Y 53, 59-60 (1986).

216. *Id.*

217. *Id.* at 60.

218. *Id.* See also Robertson, *Procreative Liberty and The Control of Conception, Pregnancy and Childbirth*, 69 VA. L. REV. 405 (1983). See generally, Smith & Iraola, *supra* note 19; Smith, *Quality of Life, Sanctity of Creation: Palliative or Apotheosis?* 63 NEB. L. REV. 709 (1984).

219. Webster, 109 S. Ct. at 3059.

220. *Id.*

221. *Id.* at 3062 (citing Thornburgh v. American College of Obstetricians & Gynecologists, 476 U.S. 747 (1986)).

222. *Id.*

223. *Id.* at 3061.

224. Webster, 109 S. Ct. at 3063.

225. *Id.* Chief Justice Rehnquist noted that the Webster District Court found uncontradicted medical evidence that a 20-week-old-fetus was not viable, and furthermore, that the earliest point in pregnancy where a reasonable possibility of viability exists was between 23½ to 24 weeks of gestation. Webster, 109 S. Ct. at 3055. However, the district court also recognized that there was a four week margin of error in determining gestational age, thus giving support for the commencement of testing at 20 weeks. 662 F. Supp. 407, 420 (W.D. Mo. 1987).

In *Roe*, which is still controlling, the Court acknowledged that viability was "usually placed" at or around seven months (or twenty eight weeks), but on occasion may occur as early as twenty-four weeks.

226. See G.P. SMITH, II, *Monograph*, BIOETHICS AND THE ADMINISTRATION OF JUSTICE (1998).

See generally Smith & Iraola, *supra* note 19.

227. Watson & Crick, *Genetic Implications of the Structure of Deoxyribonucleic Acid*, 171 NATURE 964 (1953).
228. Nobles, *Birthright or Life Sentence: Controlling the Threat of Genetic Testing*, 65 S. CAL. L. REV. 2081 (1992). See SMITH, *supra* note 1 at 229.
229. See generally D. NELKIN & L. TANCREDI, DANGEROUS DIAGNOSTICS: THE SOCIAL POWER OF BIOLOGICAL INFORMATION (1989); G. NOSSAL, HUMAN GENETIC INFORMATION: SCIENCE, LAW & ETHICS (1990).
230. THE CODE OF CODES: SCIENTIFIC AND SOCIAL ISSUES IN THE HUMAN GENOME PROJECT, (D. J. Kevles & L. Hood eds. (1992)). See generally, Smith, *Uncertainties in the Spiral Staircase: Metaethics and the New Biology*, 41 THE PHAROS MED. J. 10 (1978).
231. *The Aim is to Get Genes to Do The Work: Newsday Interview with James D. Watson*, NEWSDAY, July 6, 1993, at 59. See also *Changing Your Genes*, THE ECONOMIST, April 25, 1992 at 11; Janoff, *Making the Best of a Bad Gene*, TIME Mag., Feb. 10, 1992 at 78.
232. See Lee, *Creating a Genetic Underclass: The Potential for Genetic Discrimination by the Health Insurance Industry*, 13 PACE L. REV. 189, 195 (1993).
233. Cookson, *The Men Who Would Play God*, FIN. POST (Weekly Ed.), Feb. 10, 1992 at S37.
234. *Genetic Code of Human Life is Created by Scientists*, N.Y. TIMES, Spl. Ed., June 27, 2000, at 1; Wade, *Now, the Hard Part: Putting the Genome to Work*, N.Y. TIMES, June 27, 2000, at D1.
- The National Human Genome Research Institute of the National Institutes of Health announced in May, 2002, that six more species would have their entire genetic code deciphered: the chimpanzee, the chicken, the honeybee, the sea urchin, the protozoan *Tetrahymena thermophila* and a family of fungi.
- Building upon the successes achieved in identifying and placing in order virtually 3.1 billion "letters" of the human genetic code, the NIH expects—with this new project—to enhance their understanding of evolutionary processes and thereby uncover the causes of many human diseases. Chimpanzees, for example, are mankind's closest relatives—with only 1.2 percent sequence divergence believed to exist between the species' two genomes. New strategies for fighting human diseases—especially AIDS that do not affect chimps—could be generated from these studies of the chimp genome.
- Weiss, *More Species Chosen for Genome Project*, WASH. POST, May 23, 2002, at A3.
235. The basic idea of eugenics was to improve the human gene pool by increasing the number of supposedly desirable human beings ("positive" eugenics) and getting rid of undesirable ones ("negative" eugenics). Kevles & Hood, *The Deoxyribonucleic Acid Test*, SAN FRAN. CHRON., Dec. 5, 1992, § Z1 at 8. In Nazi Germany, the eugenics movement rationalized policies of mass sterilization and ultimately the creation of death camps for the extermination of individuals deemed undesirable by virtue of ethnicity, religion or sexual orientation. Similarly, in the United States, many states enacted sterilization laws justified in large part by eugenic principles. In California alone, 6,255 individuals were sterilized by 1929. Most of these laws were overturned, however, by a decision of the United States Supreme Court in 1942. *Id. Skinner v. Oklahoma*, 316 U.S. 535 (1942).
236. See Billings, Kohn, et al., *Discrimination as a Consequence of Genetic Testing*, 50 AM. J. HUM. GENET. 476, 479, 481 (1992). The findings of this study affirm the existence of discrimination against individuals who are completely asymptomatic, their only "abnormality" being in their genotype. Indeed, it appears that genetic conditions are regarded by many social institutions (*i.e.*, insurance companies) as extremely serious, disabling, or even lethal conditions. Such institutions reach this conclusions regardless of the fact that many individuals with "abnormal" genotypes will either be perfectly healthy, have medical conditions which can be controlled by treatment, or suffer only a mild form of disease. As a result of these misconceptions, such institutions base decisions solely on the basis of an "associated diagnostic label" rather than the actual health status of the individual or family. It appears that the evaluation of genetic conditions by such institutions reflects a lack of understanding of such basic concepts as incomplete genetic penetrance, variable expressivity and genetic heterogeneity. See generally DeGorgey, *The Advent of DNA Databanks: Implications for Information Privacy*, 16 AM. J. L. & MED. 381 (1990).
237. Andrews, *The Future of Confidentiality of Genetic Information*, in MEDICAL GENETICS: A LEGAL FRONTIER 209 (1987); See Smith, *Genetics, Eugenics and Public Policy*, 1985 S. ILL. L. REV. 435.

238. Andrews, *id.* at 187-88, 209. Unlike an infectious disease, a genetic disorder is generally immutable. Thus, an inappropriate disclosure may cause serious financial, emotional and perhaps even physical harm to the individual in question.

See generally Iles, *The Human Genome Project: A Challenge to the Human Rights Framework*, 9 HARV. HUMAN RIGHTS J. 27 (1996).

239. *Id.* *See* Holtzman, *Recombinant DNA Technology, Genetic Tests and Public Policy*, 42 AM. J. HUMAN GENETICS 624 (1988). *See generally*, Smith, *Biotechnology and the Law: Social Responsibility in Freedom of Scientific Investigation*, 36 MERCER L. REV. 437 (1988).

240. Natowicz, *et al.*, *Genetic Discrimination and the Law*, 50 AM. J. HUMAN GENETICS 465, 466 (1992). The authors distinguish genetic discrimination from discrimination based on disability caused by altered genes and thereby clarify the point that genetic discrimination is not based on any notion of the present function of the individual; rather the discriminating party relies on that individual's genotype to assess risk of future dysfunction.

See G. LAURIE, *GENETIC PRIVACY: A CHALLENGE TO MEDICO-LEGAL NORMS* chs. 3, 4 (2002).

241. *Id.*

242. *Id.* *See* U.S. Cong., Office of Technology Assessment, *GENETIC MONITORING AND SCREENING IN THE WORKPLACE*, OTA-BA-455 (1990). *See generally* O'Neill, *Insurance and Genetics: The Current State of Play*, 62 MOD. L. REV. 716 (1998).

Interestingly, more than 250 voluntary genetic support organizations were operating in 1996. J.D. WEISS & J.S. MACKTA, *STARTING AND SUSTAINING GENETIC SUPPORT GROUPS* (1996).

243. *See supra* note 240 at 467.

244. *Id.* *See* Rothstein, *Genetic Screening in Employment: Some Legal, Ethical and Societal Issues*, 1 INT'L J. BIOETHICS 239 (1990). It is to be remembered that while not all employment discrimination is inefficient, this does not mean "that it is or should be lawful." R. A. POSNER, *ECONOMIC ANALYSIS OF LAW* 337 (4th ed. 1992).

245. Nobles, *supra* note 228 at 2089. A more accurate measure of safety risk instead of utilizing genetic testing would be a test of an individual's actual capacity to function in a safety sensitive job. Council on Ethical and Judicial Affairs, *Use of Genetic Testing of Employers*, 226 J.A.M.A. 1827, 1828 (Oct. 2, 1991).

246. Nobles, *id.*

Over time, as the costs of genetic testing decrease and their degree of accuracy increases, insurers may well be expected to find it not only cost effective to screen genetically prospective clients but indeed a competitive necessity. The central problem with insurers, either in performing genetic testing themselves or obtaining genetic information about such tests performed independently, is that this practice would lead in all likelihood to discrimination (i.e. higher premiums or rejection altogether) against those who carry genes or genetic markers which dispose them to future illness. And interestingly, since each individual has potentially anywhere from four to eight genes which can cause disease, everyone seeking to enter the active work force is at risk for being genetically discriminated against by aggressive high-tech insurance companies. O'Hara, *The Use of Genetic Testing in the Health Insurance Industry: The Creation of a Biologic Underclass*, 22 Sw. U. L. REV. 1211 (1993).

247. Nobles, *supra* note 228, at 2089.

248. *Id.*

249. *Id.* at 2090. Florida, Louisiana, New Jersey and North Carolina have enacted legislation prohibiting discrimination in employment and insurance based on carrying the sickle-cell trait, hemoglobin C trait, thalassemia, tay-sachs or cystic fibrosis. FLA. STAT. § 448.076 (1991); LA. REV. STAT. §§ 22:652.1. 23:1002A (1992); N.J. STAT. §§ 10:5-12, 10:5-5 (1992); N.C. GEN. STAT. §§ 58-51-45, 58-58-25, 95-28.1 (1992).

250. Nobles, *supra* note 228 at 2090.

251. *Id.*

252. *Id.*

See generally Elliott, *The Genome and The Law: Should Increased Knowledge Change the Law*, 25 HARV. J.L. & PUB. POL'Y 61 (2002).

253. Beckwith, *Foreward: The Human Genome Initiative: Genetics' Lightning Rod*, 17 AM. J. L. & MED. 1, 2 (1991). See M. SINGER & P. BERG, GENES & GENOME: A CHANGING PERSPECTIVE (1991).
254. Barrad, *Genetic Information and Property Theory*, 87 Nw. U. L. REV. 1037, 1043 (1993).
255. Lubove, *Genomic Wildcatters*, FORBES, Feb. 3, 1992, at 97; Watson, *The Human Genome Project: Past, Present and Future*, 248 SCIENCE 44 (1990). See generally J. BISHOP & M. WALDHOLZ, GENOME (1990).
256. See, Medical Research Council, HUMAN GENOME RESEARCH: A REVIEW OF EUROPEAN AND INTERNATIONAL CONTRIBUTIONS (1991). The most comprehensive analysis of the Human Genome Initiative is to be found in, Office of Technology Assessment, U.S. Congress, MAPPING OUR GENES: GENOME PROJECTS—HOW BIG, HOW FAST? (1988).
257. Koshland, *Sequences and Consequences of the Human Genome*, 246 SCIENCE 189 (1989).
258. Weiss, *Genome Project Completed*, WASH. POST, April 15, 2003, at A6.
259. *Id.*
260. *Id.*
261. Collins, Green *et al.*, *A Vision for the Future of Genomics Research*, 422 NATURE 835 (April 24, 2003).
- See also, Sternberg, *First Edition of Genome Goes to Press*, USA TODAY, April 15, 2003, at 8D.
262. *Supra* note 254 at 1043.
263. See Smith, *Manipulating the Genetic Code: Jurisprudential Conundrums*, 64 GEO. L. J. 697, 733 (1976).
264. See SMITH, *supra* note 1 at ch. 5. See also P. REILLY, GENETICS, LAW AND SOCIAL POLICY, 120 & ch. 5 (1977).
265. *Supra* note 254 at 1046.
266. *Id.* at 1047.
267. *Id.*
268. Brown, *Filling in Gene Map, But Far From Home*, WASH. POST, Mar. 8, 1993, at A3.
269. See H. JONAS, THE IMPERATIVE OF RESPONSIBILITY: IN SEARCH OF AN ETHIC FOR THE TECHNOLOGICAL AGE. (1984).
270. Gustafson, *Genetic Therapy: Ethical and Religious Reflections*, 8 J. CONTEMP. HEALTH L. & POL'Y 183, 190 (1992).
271. *Id.* at 199, 200.
272. Dreyfus & Nelkin, *The Jurisprudence of Genetics*, 45 VAND. L. REV. 313, 347, 348 (1992).
273. *Id.* at 343, 345.
274. President's Commission for The Study of Ethical Problems in Medicine & Biomedical & Behavioral Research, SPLICING LIFE: A REPORT ON THE SOCIAL & ETHICAL ISSUES OF GENETIC ENGINEERING WITH HUMAN BEINGS 22 (1982).
275. *Supra* note 272 at 339, 340.
276. WASH. POST, Nov. 14, 1990, at 1. See generally Anderson, *Human Gene Therapy: Scientific and Ethical Considerations*, 10 J. MED & PHIL. 275 (1985).
277. Coumoyer, *Gene Therapy: A New Approach for the Treatment of Genetic Disorders*, 47 CLIN. PHARMACOLOGY & THERAPEUTICS 1 (1990).
278. *Supra* note 276. See also WASH. POST, July 31, 1990, at 3; WASH. POST HEALTH Mag., Sept. 25, 1990, at 8-9.
279. Anderson, *supra* note 272.
280. *Id.*
281. *Id.* See also Anderson, *Human Gene Therapy: Scientific and Ethical Considerations*, 10 J. MED. & PHIL. 275 (1985).
282. Herman, *Gene Therapy is No Longer a Rarity*, WASH. POST HEALTH Mag., Jan. 21, 1992, at 7.
283. Anderson, *supra* note 276 at 283.
- Current gene therapy applications include those for hemophilia, molecular degeneration, and amyotrophic lateral sclerosis. Lysaght & Aebischer, *Encapsulated Cells as Therapy*, 280 SCIENTIFIC AM. 58 (April, 1999).

284. *Supra* note 282.
285. *Id.*
286. Herman, *Tinkering with Essence of Humanity*, WASH. POST HEALTH Mag., Oct. 8, 1991, at 6.
287. *Id.*
288. *Id.*
289. *Id.*
290. Dreyfus & Nelkin, *supra* note 272 at 314. For an historical overview of early state mandated PKU testing between 1963 and 1968 and the state legislative citations to the forty-three states where such genetic testing is required, see P. REILLY, *supra* note 264 at 37 *passim*, 49-52 & ch. 4.
291. Dreyfus & Nelkin, *supra* note 272 at 320, 321. See Jones, *Sex Selection: Regulating Technology Enabling the Predetermination of a Child's Gender*, 6 HARV. J. L. & TECH. 1, 21 (1992) where the principle justification of sex selection is that its use serves to reduce or eliminate certain sex-linked diseases such as hemophilia, Cooley's anemia, Down's syndrome and more than 400 hundred others that increase aggregate social anxiety and tax society's medical and financial resources.
292. Dr. James Watson, Director of the Human Genome Initiative, said, "Our fate is in our genes." Jaroff, *The Gene Hunt*, TIME Mag., Mar. 20, 1989, at 62, 67.
293. Rovner, *Many Americans Say Gene Therapy Okay*, WASH. POST HEALTH Mag., Sept. 29, 1992, at 5. See generally Markel, *The Stigma of Disease: Implications of Genetic Screening*, 93 AM. J. MED. 209 (Aug. 1992).
294. Fletcher & Wertz, *After the Human Genome is Mapped*, 39 EMORY L. J. 747, 757 (1990).
295. Smith, *supra* note 218.
See Ramm, *An Ethical Evaluation of Biogenetic Engineering*, 26 J. AM. SCIENTIFIC AFFILIATION 137 (1974).
296. Ramm, *id.* at 142.
297. G. P. SMITH, II, FINAL CHOICES: AUTONOMY IN HEALTH CARE DECISIONS (1989).
298. SMITH, *supra* note 1.
299. J. FLETCHER, THE ETHICS OF GENETIC CONTROL 156-7 (1974).
300. *Id.* at 157.
301. *Id.* at 160.
302. *Id.*
303. *Id.* at 180.
- Other ethicists, geneticists and philosophers have asked, for example, whether or not a basic right exists for every person to be born mentally and physically sound and whether society has a responsibility to support "the burden of genetic misfortune" among its citizens. Glass, *Heredity and Ethical Problems*, 15 PERSPECTIVES BIOL. & MED. 252 (1972).
304. Docksai, *The Limits of Genetic Control*, 15 NEW GUARD 21 (1975).
305. P. RAMSEY, FABRICATED MAN 150-151 (1970).
306. See Fletcher, *Where in the World Are We Going with the New Genetics?*, 5 J. CONTEMP. HEALTH L. & POLICY 33 (1989).
307. Kass, *The Future of Man, The Organism: The New Biology in AMERICA AND THE FUTURE OF MAN* 55 (1974).
308. 16 NEW CATHOLIC ENCYCLOPEDIA 2 (1974).
309. Sinsheimer, *Prospects for Future Scientific Developments in ETHICAL ISSUES IN HUMAN GENETICS* 345 (B. Hilton & D. Callahan eds. 1973).
310. Sinsheimer, *id.*, at 350.
311. P. RAMSEY, PATIENT AS PERSON 164 (1970).
312. Gastonquay, *Human Genetics: A Model of Responsibility*, 4 ETHICS SCI. & MED. 129, 132 (1977).
313. See Smith, *supra* note 90 at 635.
314. Sonneborn, *Ethical Issues Arising from the Possible Issues of Genetic Knowledge in ETHICAL ISSUES IN HUMAN GENETICS* 5 (1973).
315. Fletcher, *Ethical Aspects of Genetic Controls: Designed Genetic Changes*, 285 NEW ENG. J. MED. 782 (Sept. 1971).

316. McCormick, *Genetic Medicine: Notes on the Moral Literature*, 33 THEO. STUDIES 531, 533 (1972).
317. *Id.* at 552.
318. Shaw, *Defining the Quality of Life*, 7 HASTINGS CENTER RPT. 11 (1967).
319. Lappe, *What's in the Genes, Anyway?*, 1 J. VAL. & ETHICS HEALTH CARE MAINTENANCE & MED. 272 (Summer 1976).
320. Callahan, *The Meaning and Significance of Genetic Disease: Philosophical Perspectives in ETHICAL ISSUES IN HUMAN GENETICS* 86 (1973).
321. Ramsey, *Screening, An Ethicist's View*, in ETHICAL ISSUES IN HUMAN GENETICS 159 (1993).
322. Kass, *Implications of Prenatal Diagnosis for the Human Right to Life* in ETHICAL ISSUES IN HUMAN GENETICS 189 (B. Hilton & D. Callahan eds. 1973).
323. Ramsey, *supra* note 321.
324. Kass, *supra* note 322 at 188.
325. *See* Nobles, *supra* note 228 at 2097; Fletcher & Wertz, *After the Human Genome is Mapped*, 39 EMORY L. J. 747, 758, 763, 787-88 (1990); L. ANDREWS, THE FUTURE OF CONFIDENTIALITY OF GENETIC INFORMATION, IN MEDICAL GENETICS: A LEGAL FRONTIER 209 (1987).
326. Nobles, *supra* note 228 at 2094. This particular author noted that state constitutional provisions protecting the right of privacy are found in Alaska, Arizona, California, Florida, Hawaii, Illinois, Louisiana, Montana, South Carolina, and Washington. California in particular prohibits reasonable searches and seizures by private and public employers. Cal. Const. art I §13.
327. Nobles, *supra* note 228 at 2094.
See e.g., Confidentiality of Medical Information Act, CAL. CIV. CODE § 56 *et. seq.* (1982); MONT. CODE ANN. § 50-16-525 *et. seq.* (1989); Confidentiality of Health Care Act, R.I. GEN. LAWS § 5-37.3-1 *et. seq.* (1995).
328. *Loving v. Virginia*, 388 U.S. 1, 12 (1967) (marriage); *Prince v. Massachusetts*, 321 U.S. 158, 166 (1944) (contraception); *Skinner v. Oklahoma*, 316 U.S. 535, 541-42 (1942) (procreation); *Pierce v. Society of Sisters*, 268 U.S. 510, 535 (1925) (child rearing and education).
329. *Griswold v. Connecticut*, 381 U.S. 479 (1964).
330. *Roe v. Wade*, 410 U.S. 113, 153 (1973). *See* Smith & Iraola, *supra* note 19. *See generally* Smith, *Limitations on Reproductive Autonomy for the Mentally Handicapped*, 4 J. CONTEMP. HEALTH L. & POL'Y 71 (1988).
331. *Bowers v. Hardwick*, 478 U.S. 186, 190-91 (1986).
332. *United States v. Miller*, 425 U.S. 435 (1976).
333. *Fisher v. United States*, 425 U.S. 391 (1976).
334. *Id.* at 399.
335. 429 U.S. 589, 591 (1977).
336. *Id.* at 598. The court also recognized the interest of the individual in the independent making of important decisions, here the decision to receive medication without the threat of being labeled a drug addict. *Id.* at 599-600.
337. *Id.* at 600.
338. *Id.* at 600-03.
339. *Id.* at 601 n. 27.
340. H.R. 5612, 101st Cong., 2d Sess. (1990).
341. S1416, 104th Cong., 1st Sess. (1995).
342. G. Annas, L. Glantz, & P. Roche, THE GENETIC PRIVACY ACT AND COMMENTARY at vi (Feb. 1995). *See generally*, G. LAURIE, GENETIC PRIVACY: A CHALLENGE TO MEDICO-LEGAL NORMS chs. 3, 4 (2002); Annas, *Privacy Rules for DNA Databanks: Protecting Coded Future Diaries*, 270 J.A.M.A. 2346 (1993).
343. H.R. 341, 106th Cong., 1st Sess. (1997).
344. H.R. 3178.
345. H.R. 304.
346. 110 Stat. 1936, 42 U.S.C. §201 *et seq.*, (1997), 26 U.S.C. §62 *et seq.*, (1997), 29 U.S.C. §1181 *et seq.*, (1997).

347. 29 U.S.C. §1181 (1997).

348. Senate Bill 300.

349. Sections 301—304.

350. *Id.*

351. *Id.*

352. *Id.*

353. S318, 107th Congress. The companion bill in the House was H.R. 602.

354. S382.

The 108th Congress passed S1053, The Genetic Information Nondiscrimination Act, on October 14, 2003. The Bill, sponsored again by Senator Olympia Snow, incorporates —essentially—all of the provisions of her past legislative proposals in this area. Under the Bill, employers and health insurers would be barred from discriminating on the basis of a person's genetic profile or family history. It is expected that the House will also approve the proposed legislation next year. The White House has given its full support to the Senate Bill. Devar, *Senate Backs Safeguards for Genetic Data*, WASH. POST, Oct. 15, 2003, at A10.

355. S19, 107th Congress.

356. §714(h)(2).

§2707 prohibits discrimination against groups on the basis of predictive genetic information concerning an individual in the group.

357. 42 U.S.C. §§12101—12213 (1994).

358. Holmes, *Solving The Insurance/Genetic Fair/Unfair Discrimination Dilemma in Height of The Human Genome Project*, 85 KY. L.J. 503, 605 (1996-97).

359. *Id.* at 606. See Weaver, *Genetic Screening and the Right Not to Know*, 13 ISSUES L. & MED. 243 (1997).

360. 29 C.F.R. §1630.2(k) (1996).

361. 29 C.F.R. §1630.2(h) (1996), 29 C.F.R. §1630.2(h)(2)(i) (1996). See Holmes, *supra* note 159 at 609.

See generally, Rothstein, *Genetic Discrimination in Employment and The Americans With Disabilities Act*, 29 HOUS. L. REV. 23 (1992).

362. 29 C.F.R. §1630.2 App. (1992).

See Amer, *Breaking The Mold: Human Embryo Cloning and Its Implications for a Right to Individuality*, 43 U.C.L.A. L. REV. 1659 (1996).

363. Holmes, *supra* note 358 at 610.

364. 42 U.S.C. §§12101—12213 (1994).

365. 5 U.S.C. §552a (1988). The Privacy Act restricts the type of information that the federal government may collect and disclose.

366. See Gurd, *Whether a Genetic Defect Is a Disability Under the Americans With Disabilities Act: Preventing Genetic Discrimination by Employers*, 1 ANNALS HEALTH L. 107, 118 (1992).

Because of the statutory requirements of some past or present dysfunction, many individuals who have a genetic defect are not covered. Furthermore, the ADA is inapplicable to carriers or individuals receiving treatment to prevent gene expression. Accordingly, the ADA provides no protection from discrimination based on an individual's genetic profile. See also Gostin, *Genetic Discrimination: The Use of Genetically Based Diagnostic and Prognostic Tests by Employers and Insurers*, 17 AM. J. L. & MED. 110, 123 (1991) (explaining that a genetic condition which does not cause substantial impairment may not constitute a disability as defined under the Act).

The agency charged with enforcing the ADA—the Equal Employment Opportunity Commission—has determined that there is no individual coverage under the law until one is determined to be symptomatic. Thus, presymptomatic individuals with late onset disorders as, for example, adult polycystic kidney disease, would have no coverage under the Act. Similarly, those carriers of recessive disorders such as cystic fibrosis are also not covered and could be denied employment. Holtzman & Rothstein, *Eugenics and Genetic Discrimination*, 50 AM. J. HUMAN GENETICS 457, 458 (1992). See also Juengst, *Priorities in Professional Ethics and Social Policy for Human Genetics*, 266 J.A.M.A. 1835 (1991).

With respect to the Federal Privacy Act, the main defect is that it restricts only the types of information that may be collected by the federal government. However, its provisions seem to apply

broadly, and would thus include genetic information with other types of personal data. See Andrews & Jaeger, *Confidentiality of Genetic Information in the Workplace*, 17 AM. J.L. & MED. 75, 101 (1991).
367. Smith, *The Province and Function of Law, Science and Medicine: Leeways of Choice and Patterns of Discourse*, 10 U. NEW. SO. WALES L. J. 103, 123 (1987).

See generally Petersen, *Embryonic Stem Cells for Medicine*, 280 SCIENTIFIC AM. 45 (April, 1999); Blumenthal, *Conflict of Interest in Biomedical Research*, 12 HEALTH MATRIX 377 (2002).
368. Stone, *supra* note 8.

369. Kirby, Paper, *Human Freedom and The Human Genome*, presented at the International Workshop on Freedom and Risk Situations, Valencia, Spain, January 25, 1999, at ps. 21, 31-3.

See generally J. ZIMAN, P. SIEGHART & J. HUMPHERY, *THE WORLD OF SCIENCE AND THE RULE OF LAW*, chs. 2, 3 (1986).

370. See generally, Delgado & Miller, *supra* note 44.

371. See Nelkin, *supra* note 41.

372. See Edwards & Sharpe, *Social Values and Research in Human Embryology*, 231 NATURE 87, 90 (1971).

373. Ex. Order 12975. 31 WEEKLY COMP. PRES. DOC. 1759 (Oct. 3, 1995).

See Barnett, *Biotechnology: Can the Law Cope?*, 15 ANGLO-AM. L. REV. 149 (1986).

See also Kolata, *Commission on Cloning: Ready-Made Controversy*, N.Y. TIMES, June 9, 1997, at A12 (detailing how the National Bioethics Commission concluded human cloning should be illegal—at least for the present).

374. Weiss, *Bush Unveils Bioethics Council*, WASH. POST, Jan. 17, 2002, at A21.

375. *Id.*

See also News of [the] Week, 295 SCIENCE 602 (Jan. 25, 2002).

376. Weiss, *From the Cutting Edge to the End of the Road: Bioethics Commission Set to Expire Today*, WASH. POST, Oct. 3, 2001, at A29.

See Stolberg, *supra* note 162 (reporting on the Panel's recommendation for a temporary moratorium on human cloning). The report, HUMAN CLONING AND HUMAN DIGNITY: AN ETHICAL INQUIRY, fails to recommend a blanket ban on therapeutic and reproductive cloning and—indeed—expresses considerable sentiment for pursuing properly regulated therapeutic cloning. Hall, *Specter of Cloning May Prove a Mirage*, N.Y. TIMES, Feb. 17, 2001, at F1.

At its August, 2002, meeting, The House of Delegates of The American Bar Association approved a resolution opposing governmental actions that would prohibit scientific research conducted for therapeutic purposes or penalize individuals or research entities that participate in such research. Report No. 117B. But see PR Newservice, *Bishops' Official Criticizes Bar Association for Supporting Human Cloning*, August 13, 2002.

See also R.M. GREEN, *THE HUMAN EMBRYO RESEARCH DEBATES: BIOETHICS IN THE VORTEX OF CONTROVERSY* ch. 6 (2001).

377. *Supra* note 178.

378. BIOTECHNOLOGIES TOUCHING THE BEGINNINGS OF LIFE (2004).

379. Weiss, *Bioethics Panel Calls for Bans on Radical Reproductive Procedures*, WASH. POST, Jan. 16, 2004, at A2.

380. *Id.*

The report, REPRODUCTION AND RESPONSIBILITY: THE REGULATION OF BIOTECHNOLOGIES (2004), was released in April. See Weiss, *Greater Regulations of Fertility Encouraged: Bioethics Council Seeking Changes*, WASH. POST, April 2, 2004, at A8. Among those changes suggested by the Council is that an official Congressional policy be set which follows embryo research only up to 14 days of development.

381. 42 U.S.C.A. § 263a-1 (1992).

382. Jones, *Multiple Births: How Are We Doing?*, 79 FERTILITY & STERILITY 17 (2003).

383. Robertson, *IVF After 25 Years: Challenges for a Maturing Technology*, 3 LAB RPT. 8, 9 (Winter 2003-2004), Institute for Bioethics, Health Policy & Law, U. Louisville.

384. *Id.*

385. *Id.*

386. See generally R. BLANK & J. C. MERRICK, HUMAN REPRODUCTION, EMERGING TECHNOLOGIES AND CONFLICTING RIGHTS (1995).
387. Burger, *Reflections on Law and Experimental Medicine*, in 1 ETHICAL, LEGAL AND SOCIAL CHALLENGES TO A BRAVE NEW WORLD 211, (G.P. Smith, II, ed. 1982); Shapiro, *Introduction to the Issue: Some Dilemmas of Biotechnological Research*, 51 S. CAL. L. REV. 987 (1987).
388. See discussion *supra* note 236.
389. See *supra* note 229. But see Commoner, *Unraveling The DNA Myth*, HARPER'S, Feb. 2002, at 39.
390. *Plyler v. Doe*, 457 U.S. 202, 216-17 (1982). See also discussion *supra* note 101.
391. See generally GENETIC SECRETS: PROTECTING PRIVACY AND CONFIDENTIALITY IN THE GENETIC ERA (M. A. Rothstein ed. 1997).
392. See generally Korbin, *Confidentiality of Genetic Information*, 30 U.C.L.A. L. REV. 1283 (1983); Rothstein, *Preventing the Discovery of Plaintiff Genetic Profiles by Defendants Seeking to Limit Damages in Personal Injury Litigation*, 71 IND. L. J. 877 (1996).
393. 42 U.S.C. §§12011—12213 (1994).
394. 5 U.S.C. §552a (1988).
395. Jasanoff, *Biology and The Bill of Rights: Can Science Reframe the Constitution?*, 13 AM. J. L. & MED. 249, 288 (1990).
396. *Id.*
397. *Id.* at 287. See Smith, *supra* note 98.
398. Andrews, *Genetics and the Law*, 39 EMORY L. J. 619, 620 (1990); Branscomb, *It's a Genome, Not a Cure All*, WASH. POST, July 2, 2001, at A1.
399. Capron, *Which Ills to Bear?: Reevaluating the 'Threat' of Modern Genetics*, 39 EMORY L. J. 665, 694 (1990).
400. *Id.* at 695. See generally Shapiro, *Biotechnology and The Design of Regulation*, 17 ECOLOGY L. Q. 1 (1990).
- See also Altman, *Genomics Chief Has High Hopes and Great Fears, for Genetic Testing*, N.Y. TIMES, June 27, 2000, at D6.
401. Fletcher & Wertz, *supra* note 325 at 759.
- See generally Kim, *Genetic Discrimination, Genetic Privacy: Rethinking Employee Protection from a Brave New Workplace*, 96 NW. U. L. REV. 1497 (2002) (arguing the central issue of employer use of genetic information is grounded in privacy and thus privacy protections need to be in place in order to protect individual autonomy).
402. Fletcher & Wertz, *id.*
403. *Id.*
404. Burger, *Reflections on Law and Experimental Medicine*, *supra* note 387.
- See generally Kilner *et al.*, *supra* note 146.
405. See Smith, *Biomedicine and Biomedical Ethics: De Lege Latta, De Lege Ferenda*, 9 J. CONTEMP. HEALTH L. & POL'Y 233 (1993); Caplan, *Bioethics: Is Biomedical Research Too Dangerous to Pursue?* 303 SCIENCE 1142 (Feb. 20, 2004).
406. C. S. LEWIS, THE ABOLITION OF MAN 71 (1965).

CHAPTER 5

GENETIC ENHANCEMENT

Both the sperm counts of men, world-wide, appear to be dropping precipitously together with the quality of the sperm itself.¹ What this means essentially is that the percentage of healthy, vigorous cells versus malformed, sluggish ones, is in major decline.² The net result of this is that there has been a significant drop in male fertility.³

While stress, smoking, drug use, sexually transmitted diseases and the very decision by men to have children later in life when sperm counts diminish are all causes—it is thought—contributing to this national problem, there are strong suggestions that environmental estrogens (*e.g.*, DDT, some forms of dioxins and PCBs) are also contributing to this reproductive problem.⁴ When it is considered, additionally, that over 4,000 inherited disorders have been identified,⁵ there is every reason for concern to be given to eugenics and the quality of the national gene pool.⁶

Substantial scientific evidence indicates man's genetic inheritance acts as a major influence not only upon his behavior but also upon his health.⁷ In the United States, for example, it is estimated that one out of every twenty babies is born with a discernible genetic deficiency;⁸ of all chronic diseases, between twenty and twenty-five percent are predominantly genetic in origin.⁹ At least half of the hospital beds in America are occupied by patients whose incapacities are known to be of a genetic origin.¹⁰ Because modern medicine can alleviate the symptoms of some genetic diseases through sophisticated treatment, many who are afflicted and who would not have survived in the past now survive. Medicine is unable to cure genetic defects;¹¹ however, those afflicted with genetic diseases who are kept alive by modern technologies can reproduce and this may increase the number of defective genes in the gene pool.¹²

Considerable research into techniques for perfecting genetic engineering has been undertaken in an attempt to develop new treatment for individuals with inherited diseases.¹³ Under the rubric of the "New Biology," scientists are investigating and developing many interventions, including gene deletion surgery, splicing and transplantation, cloning *in vitro* or test tube fertilization, embryo implantation, parthenogenesis, amniocentesis, and experimentation with the scope and application of DNA.¹⁴ Genetic engineering uses some of these procedures to reorganize human genes to produce varied, particular characteristics.¹⁵

To combat genetic disease, genetic engineering may, and frequently does, rely upon eugenics, the science that deals with improving heredity. Stated simply, a positive eugenics program seeks to develop superior qualities in man through the

propagation of his superior genes,¹⁶ and the positive eugenists seek to produce a “new breed” with keener and more creative intelligence.¹⁷ Conversely, a negative eugenics program attempts only to eliminate genetic weaknesses.¹⁸ When seen in application, positive eugenics programs encourage the fit and “proper” individuals to reproduce, while negative eugenics programs discourage those less fit and those with inheritable diseases from procreating.¹⁹ Abortion is one way of implementing a program of negative eugenics after earlier attempts to regulate have failed.²⁰

The Historical Perspective

Plato, in his *Republic*, idealized selective breeding as the foundation for the creation and maintenance of a superior Guardian class.²¹ In his 1859 treatise, *ON THE ORIGIN OF SPECIES*, Charles Darwin, postulated a theory of evolution, as seen in Chapter 2, based upon the natural selection of the fittest organisms by virtue of their greater reproductive successes in the competitive struggle for existence.²² Later, in *DESCENT OF MAN AND SELECTION IN RELATION TO SEX*, Darwin suggested that man could profit if selective breeding techniques were introduced into his reproductive cycle.²³ It was his cousin, Sir. Francis Galton, however, who became recognized as the father of eugenics.²⁴ As early as 1869, Galton began to acknowledge that each generation had the power and a coordinate responsibility to those who followed to use its natural gifts in a way that would be advantageous to future generations.²⁵ Eugenics developed as a theory in 1883, and it was later described as a scientific approach designed to give “the more suitable races or strains of blood a better chance of prevailing speedily over the less suitable than they otherwise would have had.”²⁶

First in Europe, and subsequently in the United States, social reformers and modernists seized upon Darwin's theory of evolution as a key to understanding the social disorganization of that period.²⁷ Indeed, this particular period of social evolution was compared with the very evolution of an organism. Social Darwinists were formed as a group that saw the decaying social order as the product of heathy competition where only the fittest survived.²⁸

The real honor of being the “father” of modern genetics was bestowed upon Gregor Mendel, an Austrian monk. In the 1860s, Mendel began exhaustive experiments into inheritance factors which were later designated as genes or units of heredity.²⁹ Mendel discovered, through a process of cross breeding peas, that a pair of determiners or genes was the mechanism through which inherited traits were passed. Thus, if a plant were to inherit a gene for round leaves from each parent, it would have that specific trait. Yet, if a plant inherited one gene for sets of round leaves and another gene for pointed leaves, the plant would exhibit but one of those traits. The gene for the exhibited trait would be considered the dominant gene, while the other would be classified as recessive genes. Recessive traits would appear only when a plant inherited two recessive genes. Accordingly, a recessive trait could skip a generation, yet appear in a later one. Using this data, Mendel developed a detailed system of ratios which was used to predict the appearance of a trait.³⁰

Although Mendel applied and validated his ratios only with peas, the eugenicists who followed Mendel applied these ratios to all species to describe evolutionary genetics at a time when knowledge of the field was quite primitive. Almost all of an individual's physical and psychological characteristics were attributed to the presence of a gene for each specific trait in his parent's reproductive or germ cells. There was much agreement that common physical traits such as iris color, hair color, and skin pigmentation were inherited. The eugenicists extended this position by maintaining that psychological traits as sincerity or insincerity and truthfulness or untruthfulness were also inherited.³¹

The noble ideals of positive eugenic programs sought to encourage those with what were perceived as socially beneficial traits to consider basic eugenic principles when choosing a marriage partner and deciding family size. The negative program for eugenic improvement stressed eradicating socially inadequate traits such as feeble-mindedness from the American stock through legally sanctioned sterilization procedures.³² While the purposes and ideals of a positive eugenics program captured the interest and imagination of many Americans, such a program never developed.³³

In 1929, the following groups were determined to be "socially inadequate" (or social parasites) and recognized as the target groups for sterilizations: the feeble-minded; the insane (which included the psychopathic); the criminalistic (including the delinquent and wayward); epileptics; inebriates (which includes drug habitues); the diseased (*e.g.*, the tubercular, syphilitic, leprosy, and all others with chronic, infectious, and legally segregable diseases); the blind and those with seriously impaired vision; the deaf and those with seriously impaired hearing; the deformed (which included the crippled); and dependents taken as orphans, ne'er-do-wells, the homeless, tramps and paupers.³⁴ The stated goal of a number of the eugenicists was to build sufficient institutions so that by 1980, care could be extended to the 1,500 feeble-minded per 100,000 of the population which the eugenicists maintained would then be living in the United States.³⁵

By 1925, twenty-three states had enacted at least one piece of eugenic sterilization legislation. While varying classes of people were declared to be subject to the laws, each law combined various degrees of punitive, eugenic and therapeutic measures to effectuate its intent.³⁶ The statutes were challenged on constitutional grounds. When a statute of this type was determined to be unconstitutional, the decision was founded on a denial of equal protection of the laws (*i.e.*, invidious discrimination against a class of citizens), a violation of due process or a recognition that the sterilizations were cruel and unusual punishment.³⁷

Although by 1931 thirty-two states had passed some type of sterilization legislation, the full popularity of the eugenics movement had begun to decline as early as 1927.³⁸ Interestingly, during the 1920s, scientific investigations began to show clearly that feeble-mindedness was not a direct consequence of Mendelian ratios, but rather the result of very complex causes.³⁹ Finally, in the 1930s, research in psychology, sociology, and anthropology showed that environmental influences were certainly as significant a determiner of human character and intelligence as heredity.⁴⁰ Equally as important, the passionate commitment of the original leaders

of the eugenics movement was not found to be replaceable in the new converts, once the original leadership ranks were thinned by death or retirement.⁴¹

Implementing a Negative Eugenics Program

To eliminate genetic weaknesses from society, a negative eugenics program requires a determination of genetic composition. Genetic screening and counseling accomplish this objective by identifying carriers of genetic diseases and advising couples whether reproduction is biologically desirable.⁴² Screening and counseling may occur at both preconceptional and postconceptional stages.⁴³ A simple preconceptional screening procedure consists of withdrawing and analyzing a blood sample to determine if an individual possesses recessive traits for genetic disease.⁴⁴ Postconceptional screening and counseling procedures are more complicated medically and also pose more complex legal issues. Postconceptional procedures are described below.

Amniocentesis

A recently developed postconceptional screening procedure, amniocentesis, has emerged as a principal element of negative eugenic programming. The procedure consists of inserting a needle through the abdominal wall of a pregnant woman into the amniotic sac containing the fetus, withdrawing a sample of amniotic fluid, and analyzing it.⁴⁵ Because the sac contains cells from different parts of the fetus, analysis of this sample reveals the sex of the fetus and also whether it will be affected by certain genetic disabilities.⁴⁶ By permitting a physician to predict accurately the presence of certain genetic defects, amniocentesis surpasses standard genetic counseling procedures that must rely on probabilities.⁴⁷

If amniocentesis reveals a genetically defective fetus, the parents face the difficult choice of whether to abort the fetus. A couple informed of a genetically defective fetus may decide for religious, personal, or ethical reasons that they want to allow the pregnancy to continue. Such a choice raises the issue whether the child could bring a tort action against his parents for wrongful life. Under current law, such a claim would likely fail.⁴⁸

Genetic Screening and Counseling Programs

Some of those involved currently with negative eugenics have emphasized the need for the application of traditional screening procedures to identify the carriers of certain diseases.⁴⁹ Certain leaders of Jewish communities encourage citizens of their communities to participate in screening to identify carriers of the Tay Sachs recessive gene, which can cause a debilitating illness.⁵⁰ Federal legislation permits the use of public funds to establish voluntary genetic screening and counseling programs for carriers of sickle cell anemia,⁵¹ some state legislatures have gone further to require genetic screening of school age children for the trait.⁵² New York provides for premarital testing to identify carriers of the sickle cell gene.⁵³ Genetic

screening programs also may include provisions for counseling.⁵⁴ Unfortunately, counseling efforts to date have been sporadic and ineffective.⁵⁵ If genetic screening programs are to have any significant impact, more effective counseling techniques must be devised and implemented.⁵⁶

Public acceptance of mandatory genetic screening programs should not be impossible to achieve. Premarital genetic screening would be a simple addition to state statutes that already require premarital testing for maternal rubella titre (although not itself considered to be a genetic defect), blood group, and Rh status.⁵⁷

One scholar asserts that statutes requiring genetic screening for the population at large would be a simple and readily acceptable extension of present laws requiring vaccinations and chest X-rays for school children.⁵⁸ Moreover, societal problems such as population control, the cost of supporting the handicapped, and the general welfare of the population favor the trend toward mandatory genetic screening.⁵⁹

Some legal scholars maintain that compulsory genetic screening programs may be unconstitutional.⁶⁰ They assert that the taking of a child's blood sample would constitute a physical invasion of the body in violation of the fourth amendment to the Constitution and that a compulsory counseling program would interfere with the fundamental rights to marry and procreate.⁶¹ These critics also contend that a less intrusive voluntary program, together with extensive dissemination of educational material, could accomplish the same objectives.⁶² Although genetic screening involves a minor intrusion into an individual's body and may involve a "search" within the meaning of the fourth amendment, the search is not unreasonable and prohibited if executed properly and justified by a legitimate state interest.⁶³ Similarly, if mere screening and counseling interfere with the right to procreate such interference may be justified by a compelling state interest which must be preserved. The state's interest in improving the quality of a population's genetic pool in order to minimize suffering, to reduce the number of economically dependent persons, and possibly, to save mankind from extinction arguably justifies the infringement of individual's civil liberties.⁶⁴

The key to any sustained success for a genetic screening program is education. Individuals must be made to understand that while genetic screening will bring about the birth of fewer people with debilitating genes and associated traits, it is not incompatible with a just and contemporary acceptance and allowance for inequality of talent.⁶⁵ Accordingly, the choice between screening and therapy is clearly not an either/or situation. Rather, it must be seen that, "the same genetic advances that locate a gene and permit screening also point out the direction for research on mechanisms and treatment. And the two approaches should not have to compete for the same funds if initiatives in either vein are independently worthy of public support."⁶⁶

Unfortunately, voluntary programs seldom achieve their goals. People are too preoccupied with the daily vicissitudes of life to be concerned with prospective occurrences of genetic possibilities. Therefore, although a voluntary program concededly is less intrusive, the only way to achieve positive, enduring results is to implement some form of mandatory genetic screening program.⁶⁷

Restrictions on Marriage

An even more effective means of preventing the birth of genetically defective persons is to prohibit marriage between carriers of the same genetic defect. Both constitutional and social objections have been raised to such restrictions on marriage.⁶⁸ Existing laws prohibiting marriage for eugenic reasons and proposals to restrict marriage between carriers of the same genetic defect are attacked as being excessively broad, and critics have suggested that only procreation needs to be regulated to ensure eugenic preservation and responsible parents.⁶⁹

Since procreation is set traditionally within the marriage framework, however, establishing restrictions on marriage is the most practical mechanism for implementing a negative eugenics program. Moreover, married couples prohibited from procreation nonetheless might have children accidentally or intentionally.⁷⁰ Whether a state's pursuit of the public's health and welfare would justify an abridgment of the fundamental right of marriage between carriers of the same genetic defect is doubtful. Such restrictions also might prove ineffective at present due to increasing tolerance of free love and common law (or *de facto*) relationships. Thus, it is unlikely that restrictions on marriage would prove to be an acceptable method of eugenic control.

Restrictions on Reproduction

Modern cases support the proposition that marital and procreative decisions fall within a constitutionally protected zone of privacy.⁷¹ As early as 1941, the United States Supreme Court declared that man possess the basic civil right to have offspring.⁷² In 1973, the Court held that the choice of whether to give birth is within a constitutionally protected zone of privacy.⁷³ These broad pronouncements, however, do not force the conclusion that all restrictions on reproduction are per se unconstitutional. If a state may prevent a person from marrying more than one person at a time, should it not have the same power to prevent a person from having more than one or two children? The right to procreate may not include a right to breed without restrictions.⁷⁴ Societal interests may be sufficiently powerful to justify at least regulation of reproduction.⁷⁵

Some legal precedents uphold the constitutionality of eugenic sterilization. In *Buck v. Bell*,⁷⁶ the United States Supreme Court upheld a Virginia statute providing for sterilization of inmates of state-supported institutions who were found to have a hereditary form of insanity or imbecility.⁷⁷ And still today, nearly half of the states have some form of compulsory sterilization legislation,⁷⁸ and the courts typically uphold the validity of the statutes.⁷⁹

The extension of *Buck* to sterilization of carriers of recessive defective genes could not be accomplished easily. Since its decision in that case, the Court has recognized increasingly the right to marry and have children as a basic or fundamental right, so that a state must show a compelling interest in order to justify any abridgment of the right.⁸⁰ Several factors indicate that the state interest in sterilization of carriers of defective genes is not as compelling as it is with regard

to mental incompetents. A mental incompetent may be unable to be an adequate parent, and the burden of care therefore would fall upon the state.⁸¹ Moreover, the sterilization of mental incompetents in institutions can benefit them directly in that it “enable[s] those who otherwise must be kept confined to be returned to the world”⁸² In making this statement, the Court assumed that there is a strong likelihood that the child of an intellectually defective mother would inherit the same defect.⁸³ The Court's assumption is not necessarily correct since the child of two heterozygous individuals has only a one in four chance of exhibiting that defective trait.⁸⁴

Sterilization as a Restriction on Reproductive Freedom

In the United States, sterilizations are performed almost exclusively with the subject's consent today.⁸⁵ This is not to suggest, however, that all problems associated with the approval of the procedure itself have disappeared. The concerns are, however, decidedly different.⁸⁶ The principal concern is whether the procedures are truly voluntary. Classically, the individual who is to undergo the intervention is incapable mentally of giving a valid and informed consent to the operation. Here, the law's objective is to obtain a valid, substituted consent and cause to place in being those necessary standards and protections designed to assure that whatever ultimate medical decision is made is not only justified medically but also is in the best interest of the subject.⁸⁷ Thus, a decision made in full accordance with these criteria would ideally complement or be in agreement with the patient's very own decision if he were competent to make it. Regrettably, this ideal is not always realized, with both the laws and the practices falling short of the ideal.⁸⁸

Of particular testing relevance here is the nature of and dimension of “voluntariness” for sterilization of children under statutes specifying no minimum age and it's performance on persons within institutional environments who give an informed consent only as a condition of discharge.⁸⁹ Although since the 1960's these problems have largely been resolved in the United States, the potential remains for such abuse of the principle of “voluntariness”—especially so as the rationales for sterilizations begin to shift more from eugenics to parenthood and considerations of public welfare.⁹⁰ As observed, “[t]he fact that some of the cases involved persons of normal mental competence” and that some of the statutes aimed at the mentally incompetent—an infinitely more vulnerable group—endorse these new rationales shows that there is no reason to be complacent.⁹¹

“Normalization,” or the development of skills that thereby enable a mentally retarded person to live in an autonomous or independent environment and be as self-sufficient as possible, is the goal of modern mental health programs.⁹² This ideal goal of de-institutionalization has resulted in a significant number of the mentally disabled being forced to live—because of their physical and economic circumstances—with their parents.⁹³ Even with these growing efforts to place the deinstitutionalized in local neighborhood or community environments, and thus curtail the costs of institutional maintenance, it is instructive to review, from an economic standpoint, the societal costs incurred in dealing with the mentally

handicapped.

Unrestricted genetic transmission forces a heavy burden upon society. The Juke and Kallikak family histories reveal clearly this point. Max Juke resided in Ulster County, New York. He had two sons who married two of six sisters of a local feeble-minded family. One other sister left the area; the other three married mental defectives. From these five sisters, 2,094 direct descendants and 726 consortium descendants were traced by 1915 into fourteen states. All of them were feeble-minded and the cost to society from their welfare payments, illicit enterprises, jail terms, and prostitution brothels was \$2,516,685.00.⁹⁴

Martin Kallikak, Sr., fostered a son, Martin Jr., by a feeble-minded girl during the Revolutionary War. Martin Jr. married a feeble-minded girl and they, in turn had seven children: five of whom were similarly afflicted. From these progeny sprung 480 descendants, 143 feeble-minded, 46 normals, and 291 of unknown mental stature. When Martin Sr. returned from the War, he married a normal woman and started a line culminating in 496 descendants, all of whom were normal.⁹⁵

Thirty percent of all hospitalized children have genetic diseases and six percent of the United States population is afflicted with some form of genetic ailment.⁹⁶ Various estimates have been made relative to the lifetime costs of various genetic diseases—often with rather astonishing results. For example, it has been calculated that the lifetime costs of maintaining a seriously defective individual is \$250,000.00; this assumes, of course, institutionalization. Conservative estimates place the number of new cases of Down's Syndrome in the United States at five thousand or, one in every seven hundred live births. Using the \$250,000.00 figure for the cost of maintenance, the lifetime committed expenditure for new cases of Down's Syndrome standing alone come to at least \$1.25 billion yearly, a staggering figure for but one disease entity.⁹⁷ It is estimated that it costs a family with a Tay-Sachs child between twenty and forty thousand dollars a year for the child's four to five years of misery.⁹⁸

Another way of calculating the toll of genetic disease is to estimate the future life years' costs. One widely cited estimate indicates that thirty-six million future life years are listed in the United States by birth defects—putting the figure for recognized genetic disease (eighty percent of birth defects being genetic in whole or in part) at twenty-nine million future years lost, or several times as much as from heart disease, cancer, and stroke.⁹⁹

Mentally retarded parents have become the focus of an intense and far-ranging debate not only among psychologists and social workers, but educators and lawyers as well.¹⁰⁰ The question put simply is: can individuals with unusually low intelligence quotients ever be "good" parents? The next two questions are linked inextricably with the first and ask: will educational or vocational training be of any real positive assistance for retarded parents who seek to give a minimum level of care to their offspring and, if not, when should the state enter and remove the children from their parental environments?¹⁰¹ Stephen Greenspan, and educational psychologists at the University of Connecticut, raise an interesting issue: namely, since decisions about fit parenting, or more specifically who should be a parent, are

not made on the basis of age, income or race, why then should it be based on one's intelligence quotient? An obvious reply is that without a properly functioning mind, one is not only unable to take proper care of oneself but, as in parenting, runs the risk (genetic and/or social) of hindering or preventing an offspring from achieving intellectual independence and thus results in a heavy economic burden to the state and its taxpayers.¹⁰²

The children of retarded parents may, in turn, become as handicapped as their parents because of improper intellectual and social stimulation in the home environment. And, statistics confirm the fact that, when parents are retarded, there is a higher risk of child abuse and neglect resulting. Because of the intellectual inadequacies of the parents, the children of mentally retarded persons who might have an opportunity for "normalization" are oftentimes grid-locked into mediocrity and become models of their parents. When children are cognizant of the intellectual limitations of their parents, the rather normal rebellious attitudes of adolescence often times become major problems.¹⁰³

Even though the institutional cost of maintenance of the mentally handicapped during the 1970's is, now with deinstitutionalization, curtailed by public health care expenditures for medication and physical care, supervisory assistance, and maintenance of the group or half-way rehabilitation homes for the retarded individuals, it could be argued that these expenditures are small, compared with the societal advantage of allowing citizens to become useful or at least semi-useful individuals. Commendable though this posture may be, the specter of the "Kallikak saga" is still ever-present in some form or other and, accordingly, raises the question of what society does if and when two mentally handicapped individual, married or unmarried have a child. If such a hypothetical couple were to find themselves in this condition, and unable to care for themselves, the extra burden placed upon society to not only give the couple lifetime care but, additionally, to be responsible for raising the child (who itself might suffer genetic deficiencies) raises the vexatious question of whether mentally retarded individuals should be limited in their procreative freedoms. Stated otherwise, would it not be in the best interests of the retarded individuals, their potential offspring and society to prevent this scenario from being written? Economic costs are, in reality, but one factor in resolving this problem.

The New Biology and a Program for Positive Eugenics Artificial Insemination

Artificial insemination, referred to as AID or heterologous insemination by a donor, is the process of inseminating a woman with the sperm of a donor. Although AID was developed to provide a child to a married couple that could not reproduce due to a physical impediment of the husband, the method today is also used in positive eugenics programs.¹⁰⁴ Sperm banks have been established to maintain semen of "distinguished" persons even beyond their lifetimes.¹⁰⁵ Positive eugenicists advocate use of superior sperm banks to develop the population's genetic strength and to assure the survival of the human race.¹⁰⁶ The ultimate goal

of positive eugenics is to assure *euteleogenesis*, mass insemination with superior sperm.¹⁰⁷

The word “euteleogenesis” was first proposed by Marion Piddington in 1916 “as a means of populating Australia and creating a race combining high moral worth with should physical development,” and was used subsequently by early American eugenisists.¹⁰⁸ The use of AID practices to implement a positive eugenics program should encounter little resistance because these practices infringe upon individual rights only minimally, neither restricting nor prohibiting marriage or reproduction.¹⁰⁹ Of course, there are varying ethical and moral issues associated with this practice by unmarried women.¹¹⁰

In Vitro Fertilization and Embryo Implants

In 1974, Dr. Douglas Bevis of Leeds University announced that out of thirty attempts to conceive human embryos *in vitro*, or in test tubes, and then implant them *in utero*, or into the wombs of women, he had achieved three implants that resulted in the births of three babies.¹¹¹ The three mothers had been infertile because of diseased, blocked, or missing Fallopian tubes. Dr. Bevis removed ova from each woman, fertilized the ova in the test tubes with sperm from the women's respective husbands, and then implanted the fertilized eggs into the women's wombs.¹¹² Because he was unwilling to fully document his research, Dr. Bevis' announcement was doubted considerably.¹¹³ Dr. Patrick Steptoe, a British gynecologist, and Dr. Robert Edwards, a Cambridge University physiologist, documented the laboratory conception of a test tube baby and its birth in 1978.¹¹⁴

In Australia, Dr. Carl Wood of Monash University and the Queen Victoria Medical Centre in Melbourne has gained worldwide credit for perfecting and advancing *in vitro* fertilization techniques, and for utilizing frozen embryos to combat infertility.¹¹⁵ The use of frozen embryos raises a number of moral, ethical, and religious issues which are beyond the scope and purpose of this chapter.¹¹⁶ The use of *in vitro* fertilization and embryo transplants in humans will increase until other means of conquering infertility are discovered or made available.

If a woman is infertile due to a blocked or missing Fallopian tube, an ovum may be taken from one of her ovaries, fertilized in a test tube with her husband's sperm (or a donor's sperm if her husband is infertile) and implanted in her uterus. If a woman cannot produce normal egg cells, a donor's egg, already fertilized by the husband's sperm through artificial insemination or fertilized *in vitro* with the husband's sperm, could be implanted into her uterus.¹¹⁷ A woman who cannot carry a baby to term because of a physical disability could enter into a contract with a surrogate or host mother to do so,¹¹⁸ and an egg fertilizer either *in vitro* or *in vivo* could be implanted into the host mother. A healthy career woman, such as a professional athlete, for example, may also seek the services of a surrogate mother if she does not wish to miss valuable time from her professional interests to carry a baby for the full term.¹¹⁹

Successful *in vitro* fertilization also may lead to the development of *in vitro* gestation or complete development of a fetus outside the womb.¹²⁰ Married couples

could also rely on *in vitro* fertilization techniques to have a child not even genetically their own. An unmarried person desiring a child might wish to utilize these methods as well. Since an unmarried individual would need a donor's egg or sperm to effectuate the procedure, positive eugenics concepts could be used to create children with a stronger genetic heritage.¹²¹ As in the case of AID programs, the incorporation of positive eugenics concepts would infringe on individual rights minimally because they neither restrict nor prohibit marriage or reproduction, as eugenics programs do generally.

Asexual Reproduction: Cloning and Parthenogenesis

Research into artificial sexual reproductive techniques, and more specifically, cloning, is said to “go to the very nature of the individuality which is implicit in any legal order.”¹²² Accordingly, ethical and religious objections tie to the nature of cloning as being an unreasonable and “unnatural” interference with “normal” procreative processes.¹²³ It is not only a form of inbreeding but is said to endanger evolutionary development and the very values of human diversity which come from it.¹²⁴

The word “cloning,” which derives from a Greek root meaning cutting, is defined generally as asexual propagation and is commonly used to develop new varieties of plants.¹²⁵ In 1966, a team of Oxford University biologists, headed by Dr. John Gurdon, announced that they had grown seven frogs from the intestinal cells of tadpoles.¹²⁶ What had been routine in the garden, now existed for one group of animals: a new organism was produced from a single parent.

Several steps would be required to clone a human. First, the nucleus of a donor's egg cell would be destroyed. Second, a nucleus from any convenient cell of the person to be cloned would be inserted into the enucleated egg by microsurgical techniques which scientists today have yet to develop. Third, the new cell, placed in a nutrient medium, would begin to divide, and fourth implantation of the embryo into the uterus would follow in approximately four to six days.¹²⁷ The cloned individual would be the identical twin of the person who contributed the body cell.¹²⁸ The establishment of banks of tissue cultures would permit the cloning of deceased persons.

Parthenogenesis, commonly referred to as virgin birth, is another form of asexual reproduction.¹²⁹ The French-American biologist, Jacques Leob, achieved parthenogenesis in sea urchins in 1899.¹³⁰ More recently, scientists have reported laboratory parthenogenic experiments for frogs and mice.¹³¹ If this process is perfected for humans, a woman one day may produce the necessary egg cell for conception, jolt the egg by pulling an electric switch or administering a drug, thereby enabling it to split, and then have it implanted in her womb for gestation and ultimate birth—all without physical contact with man or with his sperm.¹³²

Not enough is known about human cloning or parthenogenesis to raise concern about whether it should be undertaken.¹³³ Present medical ethics require that a researcher be reasonably confident about the outcome of his research, that he undertake research for reasonably humanitarian purposes, and that he obtain the

informed consent of the research subjects.¹³⁴ These factors do not determine whether cloning is proper. If the rate of pollution of the human gene pool continues to increase through uncontrolled sexual reproduction, however, efforts to produce healthier people may be required to compensate for the increase in the number of people afflicted with genetic diseases.¹³⁵ In that event, one could make a strong ethical argument to justify cloning of healthy individuals on the ground that it could achieve the greatest good for the greatest number of people.¹³⁶ Fears of the degradation of parenthood and the dehumanization of man by the promotion of genetic bondage or slavery as a consequence of genetically engineering individuals according to preconceived designs, underscore for some the conclusions that human cloning is a direct assault on the principle of the sanctity of human life.¹³⁷ To consider, as well, a ban on cloning because of fears that it might be used for racist purposes has been held as “tantamount to saying that sexual intercourse should be prohibited because it permits the possibility of rape.”¹³⁸

Involuntary cloning is of obvious concern—this because of the relative ease by which it is accomplished. Inasmuch as DNA from only one cell is required to make a clone—and this can be obtained easily from hair, saliva or other cell sources—cloning an individual without his consent or knowledge could, in theory, be done routinely.¹³⁹ This concern is allayed, however, when it is realized that physicians would surely not act unethically and assist patients who wish to clone other people than themselves for sport or enjoyment. The vast majority of people would—no doubt—want only to propagate themselves.¹⁴⁰ This desire for clonal self-replication would, however, be met with another competing one: namely, that any cloned children have opportunities for *better* lives than their cloning parent. Thus, this secondary concern may in fact be a “reality check” and serve as a deterrent to the unrestricted popularity and use of cloning.¹⁴¹

Statistical Uncertainties

The limited success in cloning cows, sheep, goats, pigs and mice are limited—with between 95 to 97% of these scientific efforts ending in disaster.¹⁴² Extrapolating from these efforts and applying them to chances for human cloning, it is estimated that most all of the first one hundred clones will end by spontaneous abortion—this, because of extreme physical abnormalities which in turn would place the lives and health of the surrogate mothers carrying the clones at risk. Of the handful of surviving clones, most will have not only grossly enlarged placenta, but fatty livers as well. The three or four fetuses surviving birth, will be monstrously large—perhaps fifteen or more pounds and will likely die within a week or two from heart and blood vessel complications, underdeveloped lungs, diabetes or deficiencies within the immune system.¹⁴³ The one surviving clone will have similar features to those animal clones: a huge naval (two or three times the normal size) head deformities (with cows, some of the clones have a squashed-up face or head) and malformed arteries.¹⁴⁴ The associated question then becomes: what is to be done with a malformed clone? With animals, they are destroyed. For flawed human clones, it is thought that they would, with medical intervention, be

kept alive. Even for a “normal looking” clone life under these conditions would not be pleasant.¹⁴⁵

Genetic imprinting is crucial to the process of successful human cloning for it is a molecular mechanism through which genes inside sperm and egg cells are turned on or off in preparation for early embryonic and fetal development. Regrettably, no test exists presently for determining whether the genes of a cloned embryo are imprinted properly. Thus, it is quite impossible to determine and select out those embryos which are foredoomed to develop abnormally.¹⁴⁶

Additional ethical issues could arise when a cloned child might be used as a means to an end—when, for example, it has been created to serve as a source for a new and perfectly matched bone marrow transplant for an existing child. Although seen from one perspective as unethical, such actions in and of themselves should not be seen as reasons for banning cloning altogether. Rather, the benefits derived from beneficent actions of this nature would be weighed—in every individual case and jurisdiction—against the social costs and risk of harm to the individual clone from such procedures.¹⁴⁷

Legislative Blueprints

Behind all of these ethical concerns lie the constitutional values of privacy and of personal autonomy—the protection of which is surely a valid secular purpose for legislation. Any state purpose, then, that protects the sanctity of human life contains a combination of religious, moral and secular purposes. If, for example, a legislative ban of cloning achieved a coalescence of these purposes, it might well be expected to encounter difficulty in the courts—especially those which do not view “morality legislation” as proper. Indeed, some statutes have been invalidated because they were found to have an improper purpose of enforcing morals *qua* morals.¹⁴⁸

Legislation that embodies positive eugenics concepts and permits only individuals with superior genetic endowments to clone would raise a serious constitutional issue. Such a statute would require safeguards against the large scale cloning of particular types of individuals. To do otherwise would decrease the genetic variation that is so vitally necessary to natural selection and would even threaten man with his own extinction.¹⁴⁹ By discriminating between those with superior genetic traits and all others, however, legislation of this nature would be subject to equal protection challenges. Under standard equal protection analysis, if a court determined that the statutes affected a fundamental right, the state would need to show that the legislation served a compelling state interest.¹⁵⁰ The right to procreate has been declared a fundamental right,¹⁵¹ but the denial of cloning methods to individuals who are capable of reproducing in the normal manner may not be a sufficient infringement of this fundamental right to trigger the compelling interest requirement.¹⁵² If it were not such an infringement, the state would be required to show only rational relation between the legislation and a legitimate state interest.¹⁵³ A court might determine that the state's interest in the propagation of superior traits is impermissible constitutionally because it violates the Constitution's

nobility clause¹⁵⁴ or the thirteenth amendment's prohibition of involuntary servitude.¹⁵⁵ If a court determined that the state has a legitimate interest in the propagation of superior traits, it would probably go on to find that the legislation is rationally related to that purpose.

Persons who carry genes for recessive traits might succeed in claiming that permitting only genetically superior people to clone infringes upon their right to procreate—with that claim triggering strict judicial scrutiny of the cloning law and requiring the state to show a compelling interest for its action.¹⁵⁶ Under this type of judicial scrutiny, at least two constitutional attacks on the statute itself could be made in addition to challenging the state's purpose. It is doubtful whether scientific evidence could provide a rational basis for classification of individuals based on genetic traits.¹⁵⁷ Moreover, the state may be able to achieve its objective through a less intrusive program: its interest in the propagation of superior traits through a positive eugenics program is probably less compelling than its interest in the diminution of inferior traits through a negative eugenics program.¹⁵⁸

Thus, it is seen that there are—essentially—two legislative approaches to the issue of human cloning: enforcing a total prohibition on this form of sexual reproduction in order to safeguard ideals of humaneness and sanctity of life—together with personal privacy and individual autonomy—or, promoting a selective regulation of cloning thereby seeking to accommodate the humanitarian goal of providing infertile couples with biologically linked descendants and promote consequentially the improvement of the gene pool.¹⁵⁹

As seen previously, in March, 1997, President Clinton banned the use of federal funds for human cloning,¹⁶⁰ but settled subsequently on a five year work moratorium.¹⁶¹ In June of that year, however, the National Bioethics Advisory Commission recommended federal legislation be enacted to allow a limited number of scientists to create cloned human embryos. The use of the embryos by implantation to make cloned human babies would be prohibited however.¹⁶²

The U.S. House of Representatives voted along bipartisan lines (265 to 162) on July 31, 2001, to ban cloning for reproduction as well as for therapeutic medical research purposes. This action by the House not only prohibits specifically therapeutic cloning but outlaws the sale of treatments developed from it but imposes for violation thereof, a criminal sanction of up to ten years of imprisonment and a civil penalty of not less than \$1,000,000.00.¹⁶³ Senator Samuel D. Brownback of Kansas introduced similar proposed legislation which, while calling for an international effort to prohibit human cloning, also calls for further study of the advantages and disadvantages of cloning to produce human embryos for research.¹⁶⁴

Predictably, the cloning issue is enmeshed with the politics of embryonic stem cell research. Yet, a line of distinction is sought by advancing the argument that since stem cell research is to be limited to cells extracted from embryos otherwise discarded by fertility clinics, it is a less threatening activity in popular society than therapeutic cloning.¹⁶⁵

While abortion opponents heralded the House action, the biotechnology industry viewed the action “as a step backward for medical research.”¹⁶⁶ At times,

the debate appeared to be a discourse in theology more than a political discussion—“with lawmakers expounding on matters like whether embryos created through cloning are embryos at all.”¹⁶⁷

Some feminists on the political left oppose all forms of cloning because of their fears science will place undue burdens on those women who choose to donate their eggs either for research or reproductive purposes. Others support a moratorium an outright—ban on research cloning.¹⁶⁸

Abortion rights were revitalized as an ancillary issue, as well, when the Bush Administration began efforts in January, 2002, to extend health care to more women during pregnancy and included health insurance coverage for developing fetuses.¹⁶⁹

The effect of such a policy is to define childhood—for the first time in any federal program—as commencing *before* birth. While the Secretary of Health and Human Services stated the policy would assist lower-income or poor mothers in taking care of their unborn children and obtaining medical care, abortion rights advocates criticized the action as nothing more than a ruse for the development of legal grounds for, very simply, outlawing abortion.¹⁷⁰ The Vice President of the National Partnership for Women and Families opined that this new policy “is not about providing prenatal care or expanding coverage for pregnant women . . . [but about] granting legal personhood to a fetus.”¹⁷¹

Congressional “Action” and Inaction

On April 10, 2002, President Bush called upon the Senate to ban all types of human cloning either for reproduction or medical research.¹⁷² Hinting that he would use a veto to achieve this goal, the President aligned himself with many Congressional Republicans who think as he does, and particularly with the bill proposed by Senator Brownback—this, in opposition to most Democrats who defend therapeutic or research cloning.¹⁷³

Despite heavy lobbying on both sides of the aisle,¹⁷⁴ and growing fears that the two types of cloning have merged in the public’s mind¹⁷⁵—together with a realization in the American scientific community that U.S. biologists will need to emigrate to laboratories in Australia, Japan, Israel and certain European countries if the Brownback prohibitions were enacted into law¹⁷⁶—the Congress found itself paralyzed and unable to act.¹⁷⁷ This inactive course of events has given a new focus and impetus to state legislative programs designed to tackle and resolve the cloning issue¹⁷⁸ even though the final result may well be a crazy patch-work quilt of various responses. When all is said and done, however, most informed observers fully expect Congress, over time, to act by banning reproductive cloning and thereby preventing hopefully a science fiction scenario being developed wherein corporation’s engage in selling standardized people specially engineered genetically for specific job purposes (*e.g.*, captive organ donors, hyper-violent soldiers, assembly line drones).¹⁷⁹

Administrative Uncertainties

It has been determined that the Federal Food and Drug Administration has the authority to regulate human cloning. Thus, any efforts undertaken to attempt research in this area must be initiated with the filing of a formal application to the FDA which would then undertake a lengthy review. Anyone failing to follow this procedure will be prosecuted.¹⁸⁰

A number of legal scholars hold to the opinions that there is little evidence to support this assertion of authority by the FDA over cloning. Indeed, it is contended that there is no basis in present food and drug laws which would provide a legal basis for preventing physicians from attempting to clone human beings and, furthermore, if a court challenge were to be made, the FDA would lose.¹⁸¹ The director of the FDA's Center for Biologics Evaluation and Research argues, however, that the Administration's regulatory authority derives from the Public Health Service Act which delegates to it the power to regulate "biological products" used to treat medical conditions. A cloned human embryo is defined by the FDA as a "somatic clone" and is, consequently, to be considered a "biological product" intended to treat infertility.¹⁸²

There is a growing consensus among scientific leaders on this issue that the FDA will be more reasonable than will Congress if and when it decides to impose a blanket prohibition on cloning.¹⁸³ As observed, any congressional action limiting the right of scientists to pursue their intellectual interests would have to be drawn very narrowly in order to avoid a successful First Amendment challenge.¹⁸⁴ Thus, if the government views the central issue of cloning as a health and safety issue, there should be a law setting forth minimal safety standards for scientific work in this field.¹⁸⁵

Ultimately, it may well be up to the U.S. Supreme Court to decide whether there are acceptable limits to be placed on human reproduction. In the past—as seen—the Court has recognized procreative liberties as "fundamental rights" and cautioned the government that any abridgement of these rights cannot be undertaken or validated unless a truly compelling state interest can be shown.¹⁸⁶

Market Strategies for Control?

At the national level of debate, various suggestions have been made to regulate participation in genetic technologies.¹⁸⁷ Total bans have been suggested as the most direct means of curtailment. Targeting directly health care professionals and institutional providers (*e.g.*, hospitals and IVF clinics), legislation could be enacted making it not only a crime to provide genetic enhancements, but allowing a loss of medical licenses and hospital accreditation for convictions thereof. If tested as proprietary products similar to drugs or medical devices, marketing denial of genetic enhancements could be imposed by the Food and Drug Administration.¹⁸⁸ The enforcement of such prohibiting regulations would be complicated, however, by the ongoing need to distinguish valid therapeutic uses of genetic modification through assisted reproductive technologies from invalid enhancement uses.¹⁸⁹

Licensing has been proposed as an alternative to legislative prohibitions on genetic enhancements. Accordingly, under this scheme, a licensing system would be imposed for the ownership and/or use of dangerous enhancement products. As suppliers, providers of this service would be required to obtain a license which, in turn, would impose restrictions on use as well as impose reporting requirements. Those seeking a license would be required to justify the social benefits deriving from their use of enhancement technologies and would be required, furthermore, to report to the licensing board in order to provide assurance of satisfactory performance.¹⁹⁰ Obviously, this scheme would be open only to those having adequate financial resources to participate in the first instance.¹⁹¹

In order to equalize opportunity for use of genetic enhancement therapies, a final suggestion has been made to establish either a national enhancement lottery or a subsidization program. These would provide people, otherwise lacking in sufficient resources, with an opportunity for access to enhancements.¹⁹² Under one format, the government would seek to subsidize enhancements for certain “underprivileged” genetic classes. The other strategy would provide a national lottery where everyone would be given one chance in a drawing—with the winner being entitled to use those public resources necessary to purchase legally a tailored-to-need enhancements package in the private market.¹⁹³ Here, there are obvious problems of fairness in not only determining the standards used for selecting the “underprivileged” for participation in such a program but—as well—the first order determination of the national need (and justification) for a vast commitment of resources to correct genetic “deficiencies” or abnormalities within the general population.¹⁹⁴

Global Action

Internationally, it has been asserted that specie-altering experiments, together with human replication, should be allowed. Indeed, international rules should be developed and applied not only to genetic engineering of this nature but to artificial organs, embryo research, brain alterations and to human/machine cyborgs¹⁹⁵ and xenografts.¹⁹⁶ As such, it is argued, these scientific investigations could be classified as “actions that threaten the integrity of the human species itself.”¹⁹⁷

In 2001, Britain’s prestigious Royal Society—reporting to the House of Lords Ad Hoc Committee on Stem Cell Research—called for an international moratorium on human reproductive cloning and stated its conclusion that nothing short of a worldwide ban will be able to stop risky and unethical attempts to duplicate babies. Yet, the Society’s report urged that a ban of this nature must nonetheless ensure therapeutic cloning research aimed at developing new treatments not be jeopardized as a valuable scientific undertaking.¹⁹⁸ This specific proposal is consistent with previous recommendations by a panel headed by Britain’s chief medical officer, Liam Donaldson, recommending that researchers be allowed to create cloned human embryos for some research purposes so long as they are destroyed within 14 days.¹⁹⁹ Essentially, this recommendation would not change existing British law making it a crime to transfer cloned embryos to a woman’s womb where they might

grow into babies.²⁰⁰ It would allow embryo research for the purpose of developing cell and tissue therapies and allow—as observed—scientists to clone human embryos genetically identical to a consenting adult if, and only if, cloning is the only way to answer a relevant scientific question.²⁰¹

Whether the use of species-altering or species endangering human experiments rise to the level of being considered terrorism, is—of course—debatable.²⁰² What is indisputable, however, is the need for full international debate on the legal, ethical, religious and social ramifications of the new biology. Such world discussions at the United Nations might lead, in turn, to an international treaty banning various types of species-altering human experiments with enforcement (and appeals therefrom) of such prohibitions to an international administrative agency which, in turn, would have referral powers to the international criminal court.²⁰³

The New Eugenics

With the introduction of contemporary molecular biology into prenatal testing, society is being led—inescapably—into eugenics—albeit from a far differently focused perspective than seen in Nazi Germany during World War II.²⁰⁴ There are, to be sure, fears that this new *laissez-faire* eugenics will seek to transform the population in a particular direction—thus not advancing an inherent goal of eugenics to avoid suffering, but rather reflecting and advancing a particular set of social values.²⁰⁵ Today, parents may—through genetic screening on *in utero* testing—learn whether a prospective offspring will be born with, for example, neurofibromatosis or Hurler syndrome; and knowing this may take what action is deemed appropriate.

Utopian Eugenics seeks to uncover those consideration which should or may guide reproductive choices. Thus, for example, a high priority of this science is assessing the array of fetal characteristics which would lead responsible people to terminate a pregnancy.²⁰⁶ Utopian Eugenics seeks not to coerce parents, but rather to educate them and—furthermore—seeks no societally imposed restrictions on reproductive choice.²⁰⁷ Accordingly, this science seeks to foster an understanding—by and through education—that “abortion is appropriate when the fetus suffers from a genetic disease.”²⁰⁸ When it is determined that a fetus had no chance of self-determination, as with early-onset neurodegenerative disorders, or in cases where a low quality of life combines with a large impact on the lives of others (as when it tests positive for degenerative muscular disease and the parents-to-be are already struggling to make a decent living for themselves and other existing children), Utopian eugenists would suggest a clear case for abortion exists.²⁰⁹ And, they in turn, would stress—by way of justifying their position—that the prevention of “disease has nothing to do with imposing social values, for whether or not something is a disease is a matter of objective fact.”²¹⁰

However one chooses to view the field of molecular biology—as an out-an-out attack on the right to life movement—or an exciting aspect of modern science, one fact is indisputable: namely, the field, itself, presents and “unimaginable ocean of truth”²¹¹ with which contemporary society must deal. It cannot be sealed-off and

closeted as a forbidden zone of simply theoretical knowledge.²¹²

Modern Trends

It has been suggested that the traditional approach to eugenic improvement has been re-packaged modernly, so to speak, by new innovations in modern technology and social thinking. While, for example, at the turn of the century education and voluntary use of vasectomies undertaken to limit the size of families thus permitted the eugenicists of the day to abandon harsh calls for castration, today the wonders of NORPLANT capsules and the promotion of its educational use as an aid to family planning substitutes for a frontal attack on women's fertility. Indeed, the critics charge that—in reality—NORPLANT is nothing more than but a form of socially acceptable sterilization and thus eugenic in its purpose and effect.²¹³

Similarly, social attitudes in some parts of the country advance the argument that women on welfare allow themselves to become pregnant in order to accrue more benefits under such programs as Aid to Families with Dependent Children (AFDC) and perpetuate a cycle which repeats itself with their very own children. The “solution” has been to curtail this cycle of births by, in turn, curtailing welfare benefits—all done with the hope as such of ending the whole process by simply stopping welfare altogether.²¹⁴

Arizona and Nebraska were the first two states to prohibit increases in welfare benefits through AFDC programs for recipients who have additional babies while on public assistance. Other states (*e.g.*, New Jersey, Wisconsin and Georgia) have shown their interest to follow suit in one form or another her as well—with some even making the use of NORPLANT as a condition for new or continued grants of social benefits.²¹⁵ The Florida legislature attempted, albeit unsuccessfully, in the Spring of 1994 to offer \$200.00 annually for contraceptive use by those women receiving AFDC assistance or who were below 125 percent of the poverty line. For men below the same percentage of the poverty line, a \$500.00 bonus for sterilization was offered.²¹⁶

Before human rights banners are unfurled in outrage over these state-wide activities, it should be remembered and understood that past efforts to curtail the national problem of illegitimate birth have not with any degree of success.²¹⁷ While the primary focus of these new policies and social perceptives is but to lessen the oppressive tax burden of supporting illegitimacy and its tragic cycle of dependency—thereby diverting scarce economic resources from other competing social goals—if the salutary effect of these actions results in enhancing the quality of the gene pool, then both policy objectives or, as the case may be, achievements, must be seen as valid and efficacious.

A Sociobiological Challenge

A new and exciting debate is beginning to focus renewed interest and momentum in structuring a modern discipline that portends vast increases in attaining a higher level of understanding about genetic response mechanisms. The

debate also presents a perfect example of the much needed full partnership of law, science, and medicine if sustained progress is to be achieved.

The sociobiology debate has been described “as the continuance of the historic conflict created in the social sciences and humanities by the mechanistic examination of human nature through the instruments of conventional biology.”²¹⁸ Strictly as a discipline, rather than a theory, sociobiology is defined classically as, “[t]he systematic study of the biological basis of all social behavior,”²¹⁹ with human sociobiology being but one aspect of the whole study of the biological basis of social behavior.²²⁰ Stated otherwise, sociobiology is the study of “the evolutionary roots of social behavior.”²²¹ Evolutionary sociobiology’s goal should be not only to reconstruct the history of primates and identify their course of adaptation over time, but to monitor the genetic basis of current models of social behavior. Edward O. Wilson, the modern progenitor of sociobiology, has stated: “Contemporary general sociobiology might at best explain a tiny fraction of human social behavior in a novel manner. Its full applicability will be settled only by a great deal more imaginative research by both evolutionary biologists and social scientists. In this sense the true creative debate has just begun.”²²²

As seen, Darwin’s basic evolutionary theory is that all living organisms are related by common inheritance.²²³ Repackaged as the basis for Francis Galton’s effort in 1865 to encourage a positive eugenics movement,²²⁴ eugenic sterilization laws flourished in most of the states in America as a way to prevent the genetically “inferior” from procreating.²²⁵ It was only much later that environmental influences began to be seen as a more significant force in shaping personal qualities than transmissible.²²⁶ Today, environmentalists constantly challenge gene sovereignty or biological determinism,²²⁷ asserting that, as to sociobiology, there is no genetic variation in the transmission of culture. Culture, noted Dobzhansky, is not inherited through genes, it is acquired by learning from other human beings.²²⁸ Boulding’s theory of ‘Ecodynamics’ builds up a nonbiologic process in which each generation of humans learns culture from the preceding generation rather than through the inheritance of biologically predetermined genes.²²⁹

Sociobiologists’ assertions that sociobiology allows for an opportunity to explain previously unexplainable behavioral phenomena within a restructured framework of contemporary Darwinian evolutionary theory have rekindled a strong biological interest in the sociobiology discipline.²³⁰ There has been substantial criticism about what is perceived as the illegitimate use of biological analogy in analyzing social systems²³¹ and about the inherent weakness of sociobiologists’ nonverifiable assertion that human social structures exist because of a superior adaptive value.²³² Nevertheless, the efficacy and relevance of the theory of sociobiology for the study of both human behavior and human nature is of unique significance because it “stands as an instance of a rarely observed intellectual phenomenon: the attempt to produce and legitimize a new scientific discipline.”²³³

Evolution may be regarded as “a competition for survival among genes.”²³⁴ The survival depends in large part upon regeneration of the species.²³⁵ This, in turn, will be tied to a standard of evolutionary behavior that will mandate, all things being equal, a form of altruistic conduct promotive of this regeneration.²³⁶ One

commentator has noted:

The evolutionary theories of sociobiologists show that beings who considered only their own interests would leave fewer descendants than beings who also considered the interests of their kin. So there is a good reason to believe that we do not all act solely in our own interests. Genes promoting strictly selfish behavior in individual animals would be less likely to survive than genes which do not.²³⁷

Relying upon the principle of reciprocity, sociobiologists suggest two forms of altruism are at work in the process of natural selection and propagation of the gene: kin altruism and reciprocal altruism.²³⁸ Both forms are, in an ultimate sense, promotive of the ‘Selfish Gene’s’ best interests of survival and propagation.²³⁹

Kin altruism is a genetically based tendency to assist one’s relatives and should extend beyond immediate family to include cousins, as well as nieces and nephews.²⁴⁰ In the animal kingdom, kin altruism as a theory merely posits that animals may be *expected* to act *as if* they are aware of genetic relationships, with no direct knowledge of the degree of relationship being acknowledged.²⁴¹ While reciprocal altruism should be regarded ideally as the source of attitudes of moral approval and disapproval, as well as ideas of fairness, gratitude, retribution, and cheating, it appears not to be altruism at all, but merely “enlightened self-interest.”²⁴² “Concern for one’s own interests, plus the knowledge that exchanges of assistance are likely to be in the long-term interests of both partners, is all that is needed.”²⁴³

The effect of biological evolution upon the development of law has been studied and evaluated for quite some time.²⁴⁴ Indeed, the legal roots of sociobiology are found in the writings of Maine, Corbin, Wigmore, and Holmes,²⁴⁵ and, of course, one must add Stone and Pound. Holmes structured the very theory of legal evolution when he observed that:

The life of the law has not been logic: it has been experience. The felt necessities of the time, the prevalent moral and political theories, intuitions of public policy, avowed or unconscious, even the prejudices which judges share with their fellow-men, have had a good deal more to do than the syllogism in determining the rules by which men should be governed.²⁴⁶

Continuing further, he stated that, “The truth is, that the law is always approaching, and never reaching consistency. It is forever adopting new principles from life at one end, and it always retains old ones from history at the other . . . It will become entirely consistent only when it ceases to grow.”²⁴⁷

Modern efforts are being undertaken to postulate a theory of sociobiology for aid-giving actions that have legal consequences,²⁴⁸ and more especially intestate wealth transfers,²⁴⁹ general property rights,²⁵⁰ privacy,²⁵¹ and the doctrine of nuisance.²⁵² Although biological theory may offer no unquestioned answers of why certain legal outcomes result from genetic alignments, some proffer important partial explanations.²⁵³ Others disagree, however, and are quick to note that

evolution has had little effect on the law.²⁵⁴

Human Application

Theoretically, the core of sociobiology is that evolutionary biology has programmed us to be predisposed, either at a conscious or unconscious level, to aid other humans in such a manner “that the genes or genetic material we each carry are likely to be ultimately benefited in the sense of being proliferated through reproduction.”²⁵⁵ Followed to a reasonable level of application, this theory may project varying (and sometimes startling) implications pertinent to one’s predisposition to aid either a direct offspring, a parent, niece, or even a stranger.²⁵⁶ Interacting with environment and culture, these predispositions vary in intensity.²⁵⁷ They make the task of the behavioral scientist a truly formidable one as he seeks to predict the levels of cooperative behavior or, in other words, the “nuances of aid-giving” likely to happen with different environments and cultures.²⁵⁸

The law often finds it necessary to engage in predictions or speculations that actually involve aid-giving inclinations.²⁵⁹ The average, ordinary, reasonable person’s reactions to a given situation are tested repeatedly in order to reach a standard of fairness for judicial decision making or legislative design.²⁶⁰ The enhanced opportunities for more accurate prediction or speculation are realized when the behavioral scientists are allowed to join forces with legal decisionmakers in an attempt to determine how the somewhat mythical average person with a defined set of characteristics is most likely to follow a particular behavioral pattern when an issue of aid-giving is present.²⁶¹ “Even those judges or legislators who are jealous of their decisionmaking prerogatives and suspicious of ‘mechanical’ approaches based upon scientific information should be receptive to advice from scientists regarding such questions.”²⁶²

Marked differences of opinion abound within the discipline of sociobiology, thus its essential underpinnings are in a state of flux.²⁶³ Basing sociobiology’s efficacy in genetics and evolutionary learning is indeed conceptually difficult. Obviously, until the theory of sociobiology becomes more settled and empirically verifiable, it cannot be used as a basis for law making. On the other hand, “the potential for immediate mutually beneficial joint research projects between lawyers and scientists appears to exist Thus, it is not too early for lawyers and sociobiologists to become more aware of each other.”²⁶⁴

Exceptions

If one of the most important ideals or tasks for a contemporary society is to devise a system of laws in which man-made laws complement the laws of nature, then sociobiology holds the hope and the promise of such a normative coalescence.

Even though science is not capable of solving normative problems, it can serve a valuable role in assisting the evaluation of the *means* as well as the *consequences* of reaching various goals. Thus, together with individual value judgments, these analyses can contribute directly to a final selection of goals. Surely, scientific

insights into human nature are equally important to the task of formulating ethical and legal systems. Since biological evolution has, by predetermination, imposed broad behavioral constraints on individual development, cultural evolution must endeavor to chart a course between these borders.²⁶⁵ Perhaps the time has come to seriously consider temporarily taking ethics from the philosophers and giving it to the scientists to be “biologized.”²⁶⁶ Indeed, sociobiology should be recognized as affording a basis for a new and enhanced understanding of ethics. Sociobiology enables a fresh comprehension of ethics as “a mode of human reasoning which develops in a group context, building on more limited biologically based forms of altruism.”²⁶⁷

Because the extent of biology’s gift to future lawmaking efforts is clouded, perhaps it is better to test or evaluate the absorptive capacities of law.²⁶⁸ The extent to which law receives or at least listens to what sociobiology is revealing depends in large part upon the willingness of lawmakers, judges, and legal scholars to welcome scientific knowledge as a bridge to present levels of ignorance and professional rigidity.²⁶⁹ By endeavoring to explain norm-forming processes, sociobiology and other behavioral sciences may have an important contribution to make in forming broad legal policies,²⁷⁰ specifically by arranging interactions in order to facilitate dispute resolution and promote norm-forming action.²⁷¹

Conclusion

It would appear that eugenics enjoys clearly a dual relationship with genetics; for it does not only have a negative force, but the threatening potentiality of its unrestrained application is of minor consequence when the positive sequence of its potential contributions is both appreciated and utilized. The dynamic vectors of force seen in the application of modern eugenics through efforts of genetic advancement and “engineering” must be restrained and placed in equilibrium in order to alleviate fears of unbridled slippery slopes of scientific advancement pursued blindly.²⁷² Viewed as not only an aid to the tragedy of infertility in family planning, but as a tool for enhancing the health of the future members of society, vital research and experimentation must continue apace in eugenics and genetics. To attempt to sever one from the other assures an impotent, as opposed to a virile, response to both the challenge and the mystery of amazing development of the new reproductive biology.²⁷³

The failure of the early eugenics movement can be attributed to its endorsement of principles and initiatives which had the ultimate effect of both devaluing and marginalizing large segments of the public.²⁷⁴ Today, the new genetics—feared and shadowed by the eugenic records of the past—must state with clarity and purpose its central policy: namely, to ensure that its maximum benefits are obtained while avoiding the exclusion and stigmatization of any individual.²⁷⁵ Fears of promoting and, indeed, developing a “genetic ghetto” should not hold back the untold opportunities for good coming from research and advancement in eugenics and genetics.²⁷⁶ In order to safeguard this needed compatibility, a spirit of accommodation must be fostered—one that accommodates genetic advances and,

at the same time, integrates individuals with disabilities. Accepted as such, eugenics becomes a moral obligations society must both accept and act upon.²⁷⁷

Controlled breeding through genetic manipulation is not far behind legalization of artificial insemination. Once public acceptance of donor insemination or AID is achieved, rapid progress will be made in achieving similar recognition of other new reproductive techniques. The law will then be in a better posture to chart a course of action and keep pace with science instead of remaining behind in grappling with the scientific, legal, ethical, and social issues in the Brave New World. Although assertions are made that eugenic control is not only dangerous and foolhardy but destructive of the integrity of the basic family unit as well as violative of the human right to determine the size of the family unit, the unalterable fact is that population forecasts indicate that the world will soon be overpopulated if appropriate actions are not explored and undertaken. Genetic planning and screening as well as eugenic programming are more rational and humane alternatives to regulation of the population than premature death, famine and war.²⁷⁸

If we approach mastery of the genetic code with a careful resolve to minimize human suffering and maximize the social good (or the maintenance of health and prevention of disease), we will approach the future with assurance that, as Daedalus, we will in fact arrive safely and meet our goal. If we set out with reckless abandon and are driven by blind instinct, we will surely be corrupted and, as Icarus, fall.²⁷⁹

Social externalities and economic costs are a crucial and, indeed, pivotal balancing point in shaping the extent to which reproductive rights will be recognized. A case-by-case or situational ethic will—of necessity—guide decision makers rather than blanket prohibitions either for or against sterilization.

It has been submitted that the concept of freedom should be viewed properly in terms of a social contract.²⁸⁰ Thus, through this contract, the citizen not only endeavors to maximize his own freedom, but assumes various social *responsibilities* which, in turn, enable society to endeavor “to maximize its collective freedom.”²⁸¹ Sterilization of the mentally handicapped as such, it has been argued further, frees the incompetent from both unnecessary and unwanted supervision.²⁸²

American society, while valuing freedom, also values equality—especially of opportunity. If sterilization serves both of these ends, it will not only make the social contract a more meaningful proposition to the mentally incompetent, but it will also serve the greater, albeit nebulous principle of justice.²⁸³

In all cases, the parent-guardian should be acknowledged as the person most able and responsible to protect and advance the best interests of the mentally handicapped or incompetent,²⁸⁴ and thus meet the conditions and duties of the social contract. As the bulwark of society, the family unit alone should be given the determinative role here, thereby preventing an intrusive and impersonal court from confronting the problem, with the physician continuing as a “conscientious and knowledgeable check on parental activity.”²⁸⁵ Reasoned analysis, not emotional passion, should be the watchword for action in this area of concern.

ENDNOTES

1. Lemonick, *What's Wrong With Our Sperm?* TIME Mag., Mar. 18, 1996, at 78. See Joffe, *Decreased Fertility in Britain compared with Finland*, 347 THE LANCET 1519 (June 1, 1996).
2. Lemonick, *id.*
3. *Id.*
4. *Id.*
5. B. FURROW, S. JOHNSON, T. JOST & R. SCHWARTZ, BIOETHICS, HEALTH CARE LAW AND ETHICS 168 (1991).
6. See generally Weiss, *Are We More Than The Sum of Our Genes*, WASH. POST HEALTH Mag., Oct. 3, 1995, at 10.
See also Beardsley, *Mutations Galore*, 280 SCIENTIFIC AM. 24 (April, 1999) (reporting how deleterious human mutations—which may cause genetic disease—are accumulating and becoming worrisome for some geneticists who fear irregularities in the gene pool if these mutations are not eliminated).
7. See S. STANLEY, THE NEW EVOLUTIONARY TIMETABLE (1981); T. DOBZHANSKY, GENETIC DIVERSITY AND HUMAN EQUALITY (1973); Muller, *The Human Future*, in THE HUMANIST FRAME 401 (J. Huxley ed. 1961); Muller, *Human Values in Relation to Evolution*, 127 SCIENCE 625-29 (1958). See also GENETICS AND HUMAN BEHAVIOUR ch. 1 2 (Nuffield Council on Bioethics ed. 2002).
8. Gorney, *The New Biology and the Future of Man*, 15 U.C.L.A. L. REV. 273, 291 (1968).
9. Robinson, *Genetics and Society*, 1971 UTAH L. REV. 487. Approximately 30,000 severely defective infants are born each year and afflicted with grave handicapping conditions that range from spina bifida to anencephaly. Ellis, *Letting Defective Babies Die: Who Decides?*, 7 AM. J. LAW & MED. 393 n.1 (1981).
More contemporary figures show that of the over 4 million babies born in 2000, one out of 33 of these children was born with birth defects. See *Kids Health, Medical Care During Pregnancy* (visited November 8, 2002), http://www.kidshealth.org/parent/pregnancy/newborn/pregnancy/medical_care/pregnancy.html.
10. See *supra* note 7 and accompanying text.
11. Waltz & Thigpen, *Genetic Screening and Counseling: The Legal and Ethical Issues* 68 NW. U.L. REV. 696-98 (1973).
12. *Id.* at 698. See Wertz, *Society and The Not-So-New Genetics: What Are We Afraid Of? Some Future Predictions from a Social Scientist*, 13 J. CONTEMP. HEALTH L. & POL'Y 299, 333-40 (1997) (noting the modern relevance of eugenics throughout the world and its goal of preventing birth defects).
13. Kass, *The New Biology: What Price Relieving Man's Estate*, 174 SCIENCE 779, 780 (1971). See also C. HEINTZE, GENETIC ENGINEERING: MAN AND NATURE IN TRANSITION (1973); R. BLANK, THE POLITICAL IMPLICATIONS OF HUMAN GENETIC TECHNOLOGY (1983).
14. *Symposium—Reflections on the New Biology*, 15 U.C.L.A. L. REV. 267 (1968).
See J. RIFKIN, THE BIOTECH CENTURY ch. 4 (1998).
15. Waltz & Thigpen, *supra* note 11, at 696; see also M. FRANKEL, GENETIC TECHNOLOGY: PROMISES AND PROBLEMS (1973); Fletcher, *Ethics and Recombinant DNA Research*, 51 S. CAL. L. REV. 1311 (1978).
Among current gene therapy applications are those for macular degeneration, non insulin dependent diabetes, dwarfism, hemophilia, anemia, Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis. Lysaght & Aebischer, *Encapsulated Cells as Therapy*, 280 SCIENTIFIC AM. 58 (April, 1999). See also Parenteau, *Skin: The First Tissue-Engineered Products, The Organogenesis Story*, 280 SCIENTIFIC AM. 59 (April, 1999).
16. See Vukowich, *The Dawning of the Brave New World—Legal, Ethical and Social Issues of Eugenics*, 1971 U. ILL. L.F. 189, 222.
See also A. BUCHANAN, D. W. BROCK, N. DANIELS & D. WINKLER, FROM CHANCE TO CHOICE: GENETICS AND JUSTICE ch. 4 (2001).

17. Frankel, *The Specter of Eugenics*, 57 COMMENTARY 25, 30 (1974).
See E. B. BRODY, BIOMEDICAL TECHNOLOGY AND HUMAN RIGHTS, ch. 5 (1993).
See also Bowman, *The Road to Eugenics*, 3 U. CHI. L. SCH. ROUNDTABLE 491 (1996).
18. *Id.*
To be justifiable, the acceptance or rejection of eugenic policies should be based upon more than one criterion. The following requisites should be a part of every eugenic program: scientific validity (*e.g.*, a demonstration of sufficient genetic variation to allow for selection of the attribute in question); moral acceptability (*i.e.*, a demonstration that the attributes chosen for selection are properly considered socially desirable); and ethical acceptability (*i.e.*, a demonstration that the programs needed to institute a eugenic program do not compromise individual rights and liberties presently sanctioned by both public policy and law). See Lappe, *Why Shouldn't We Have a Eugenic Policy?*, in GENETICS AND THE LAW 421, 425 (A. Milunsky & G. Annas eds. 1976).
See also Osborn, *Qualitative Aspects of Population Control: Eugenics and Euthenics*, 25 LAW & CONTEMP. PROBS. 406 (1960).
19. Smith, *Through a Test Tube Darkly: Artificial Insemination and the Law*, 67 MICH. L. REV. 127, 147 (1968). See generally BUCHANAN *et al.*, *supra* note 16 at ch. 5; Rifkin, *Who Will Decide Between Defect and Perfect?*, WASH. POST, April 19, 1998 at C4.
20. T. DOBZHANSKY, MANKIND EVOLVING 245 (1962); M. HALLER, EUGENICS 3 (1963). See also Green, *Genetic Technology: Law and Policy for the Brave New World*, 48 IND. L.J. 559 (1973); Dobzhansky, *Comments on Genetic Evolution*, 90 DAEDALUS, 451, 470-73 (1961); STUDIES IN GENETICS—THE SELECTED PAPERS OF HERMAN J. MULLER (1962); CLASSIC PAPERS IN GENETICS (J. Peters ed. 1959); GENETICS, MEDICINE AND MAN (H. Muller, C. Little & L. Snyder eds. 1947); Tooley, *Abortion and Infanticide*, 2 J. PHIL. & PUB. AFF. 37 (1972).
21. PLATO, THE REPUBLIC 166-70 (J. Davis & D. Vaughn trans. 1891).
22. C. DARWIN, THE ORIGIN OF SPECIES (1859).
23. C. DARWIN, THE DESCENT OF MAN 402-03 (1871).
24. Comment, *Eugenic Artificial Insemination: A Cure for Mediocrity?*, 94 HARV. L. REV. 1850, 1852 (1981).
25. F. GALTON, HEREDITY GENIUS 1 (1869).
26. See Comment, *supra* note 24 at 1852.
See generally J. H. BECKSTROM, DARWINISM APPLIED (1993).
27. Cynkar, *Buck v. Bell: Felt Necessities v. Fundamental Values?*, 81 COLUM. L. REV. 1416, 1420 (1981).
28. *Id.* See G. STINE, BIOSOCIAL GENETICS: HUMAN HEREDITY AND SOCIAL ISSUES (1977).
29. *Id.* at 1421.
See also V. McKUSICK, MENDELIAN INHERITANCE IN MAN (1978).
30. Stine, *supra* note 28, at 1422-25.
See also J. C. FLETCHER, COPING WITH GENETIC DISORDERS 3-32 (1982).
31. Stine, *supra* note 28, at 1422-25.
32. *Id.* at 1428.
33. *Id.*
See also Beckwith, *Social and Political Uses of Genetics in the United States: Past and Present*, 265 ANNALS N.Y. ACAD. SCI. 46 (1976).
34. H. LAUGHLIN, THE LEGAL STATUS OF EUGENICAL STERILIZATIONS 65 (1929); P. REILLY, THE SURGICAL SOLUTION: A HISTORY OF INVOLUNTARY STERILIZATION IN THE UNITED STATES 34 (1991). See Rothman, *Sterilizing the Poor*, 14 SOCIETY 36 (1977).
35. *Id.* at 60.
See also Walsh, *Reproductive Rights and The Human Genome Project*, 4 S. CAL. REV. L. & WOMEN'S STUD. 145 (1994); Lappe, *Moral Obligations and the Fallacies of Genetic Control*, 33 THEOLOGICAL STUD. 411 (1972).
36. Cynkar, *supra* note 27, at 1433.
See D.J. KEVLES, IN THE NAME OF EUGENICS: GENETICS AND THE USES OF HUMAN HEREDITY, ch.7 (1985).
37. Cynkar, *supra* note 27, at 1434.

38. *Id.* at 1454.

See Larson & Nelson, *Involuntary Sexual Sterilization of Incompetents in Alabama: Past, Present and Future*, 43 ALA. L. REV. 399 (1992).

39. Cynkar, *supra* note 27, at 1455.

40. *Id.* at 1456. See also REILLY, *supra* note 34, at 159.

41. *Id.*

The four-part series by Daniel J. Kevles entitled, *Annals of Eugenics*, appearing in the October, 1984, issues of *THE NEW YORKER MAGAZINE*, raises to a level of current consciousness the issue of genetic improvement through the development and application of eugenic policies. See REILLY, *supra* note 34, at 36.

42. Davis, *Ethical and Technical Aspects of Genetic Intervention*, 285 NEW ENG. J. MED. 799 (1977). See also Smith, *Manipulating the Genetic Code: Jurisprudential Conundrums*, 64 GEO. L.J. 697 (1976).

43. Waltz & Thigpen, *supra* note 11, at 700. See T. DUSTER, *BACKDOOR TO EUGENICS*, Ch.3 (1990).

44. *Id.* See also Kobrin, *Confidentiality of Genetic Information*, 30 U.C.L.A. L. REV. 1283 (1983). DUSTER, *id.* at ch.1.

45. Robinson, *Genetics and Society*, 1971 UTAH L. REV. 487, 488 n.2.

46. *Id.*

47. *Id.* See Ransey, *Screening: An Ethicist's View*, in *ETHICAL ISSUES IN HUMAN GENETICS* 154 (B. Hilton, D. Callahan, et al., eds. 1973); Lappe, *Ethical and Social Issues in Screening for Genetic Disease*, 286 NEW ENG. J. MED. 1129 (1972).

48. See Note, *A Cause of Action for Wrongful Life*, 55 MINN. L. REV. 58 (1970); Annot., 22 A.L.R. 3d 1441 (1968). See also DUSTER, *supra* note 43, at ch.1.

49. Rivers, *Grave New World*, *SATURDAY REV.*, April 8, 1972, at 23, 26.

There are four areas in which genetic disease may be classified: single gene effects; chromosomal abnormalities; congenital malformation; and serious constitutional disorders. The incidence of single gene effects—of which the most commonly known are phenylketonuria (P.K.U.), Tay-Sachs disease, and X-linked mental retardation—is 11.2 affected births per 1,000 births. Chromosomal abnormalities—which would include Down's Syndrome and Turner's Syndrome—account for 5.4 per 1,000 births. The incidence of congenital malformation is 14.1 per 1,000 births and the serious constitutional disorders—which include diabetes and epilepsy—occur in 14.8 per 1,000 births. S. HAYES & R. HAYES, *MENTAL RETARDATION: LAW, POLICY AND ADMINISTRATION* 28-29 (1982).

Usually within the first several weeks of pregnancy, between one-third and one-half of all zygotes abort spontaneously owing to the fact that forty percent of the abortuses have an abnormal chromosome complement. A rather surprising ninety-seven percent of Turner's Syndrome and sixty-five to seventy percent of Down's Syndrome abort by the eighteenth week of pregnancy. Many abnormal fetuses which do not abort spontaneously are identifiable through the use of a variety of techniques—with, in all cases, termination of the pregnancy being offered to the prospective parents. S. HAYES & R. HAYES, *id.* G. RODERICK, *MAN AND HEREDITY* 225 (1968); S. SCHEINFELD, *YOUR HEREDITY AND ENVIRONMENT* 189 (1965); H. PAPAZIAN, *MODERN GENETICS* 77 (1967).

50. Walters, *Introduction to Genetic Intervention and Reproduction Technologies*, in *CONTEMPORARY ISSUES IN BIOETHICS* 567 (T. Beauchamp & L. Walters eds. 1978); Nelson, Swint & Caskey, *An Economic Evaluation of a Genetic Screening Program for Tay-Sachs Disease*, 30 AM. J. HUM. GENETICS 160 (1978).

51. National Sickle Cell Anemia, Cooley's Anemia, Tay-Sachs, and Genetic Diseases Act, 42 U.S.C. § 300b-1-300b-6 (1982). A. CERAMI & E. WASHINGTON, *SICKLE CELL ANEMIA* (1974). See also A. ETZIONI, *GENETIC FIX* 132 (1973); Reilly, *Government Support of Genetic Services*, 25 SOCIAL BIOLOGY 23 (1978); Culliton, *Cooley's Anemia: Special Treatment for Another Ethnic Disease*, 178 SCIENCE 593 (1972).

52. See, e.g., ILL. COMP. STAT. §5/27-8.1 (8) (Smith-Hurd 1998) (exception for refusal of physical examination on religious grounds); MASS. GEN. LAWS ANN. ch. 76, §15A (1996) (mandatory only if child susceptible); N.Y. EDUC. LAW §904 (McKinney 1988) (exception for refusal based on religious beliefs). See also VA. CODE §32.1-68 (1985) (voluntary screening program).

Dr. Linus Pauling has suggested that sickle cell anemia carriers be identified by tattooing the forehead of every carrier. Other recessive genes, such as hemophilia and phenylketonuria, could be similarly identified. He opines that such identification would discourage carriers of the same defective gene "from falling in love with another" and, presumably, from procreating. Pauling, *Forward, Symposium—Reflections on the New Biology*, 15 U.C.L.A. L. REV. 267, 270 (1968).

Limited neonatal screening for phenylketonuria (PKU)—a single gene effect that produces severe mental retardation in children—was initiated in the United States and Britain during the 1950's. Today, some forty-three states have PKU screening laws; another fourteen test neonatally for a variety of screening problems other than PKU. Among such diseases may be listed: adenosine deaminase deficiency; galactosemia; homocystinuria, sickle cell anemia; tyrosinemia; histidinemia; branches chaisketonuria. Reilly, *State Supported Mass Genetic Screening Programs*, in GENETICS AND THE LAW 159, 164 (A. Milunsky & G. Annas eds. 1976).

53. N.Y. DOM. REL. LAW, §13-aa (McKinney, 1988). Other states provide for voluntary premarital testing for sickle cell anemia. See e.g., GA. CODE ANN. §193-40(2) (1982).

54. See VA. CODE § 32.1-68 (1985).

Antley, *Variables in the Outcome of Genetic Counseling*, 23 SOC. BIOLOGY 108 (1976). A genetic counselor "has freedom to persuade, according to his personal convictions, but he does not have freedom to coerce, based upon his inherent power in the counseling milieu. He must accept the counselee as the ultimate decision maker. Different parents have a variety of motives for their ultimate decisions. Thus, the outcome of their deliberations will vary. And we will preserve our genetic heterogeneity." Shaw, *Genetic Counseling*, in HUMAN GENETICS: READINGS ON THE IMPLICATIONS OF GENETIC ENGINEERING 200 (T. Mertons ed. 1975).

55. Waltz & Thigpen, *supra* note 11, at 701-02, f.n.'s 28-29.

See also President's Commission for the Study of Ethical Problems in Medicine and Behavioral Research, *Screening and Counseling for Genetic Conditions: A Report on the Ethical, Social and Legal Implications of Genetic Screening, Counseling, and Education Programs* (1983); FLETCHER, *supra* note 30 at 50-74.

But see Sontag, *Are Clinical Ethics Consultants in Danger? An Analysis of The Potential Liability of Individual Clinical Ethicists*, 151 PA. L. REV. 667 (2002).

56. Waltz & Thigpen, *supra* note 11, at 701-02, f.n.'s 30-31.

Confusion as to the significance of possessing the defective gene not only renders screening programs less effective in discouraging reproduction, but the failure to differentiate between the disease and the trait also increase the stigmatization to which carriers are subjected. *Id.*

See generally G. LAURIE, *GENETIC PRIVACY: A CHALLENGE TO MEDICO-LEGAL NORMS* (2002).

57. Frankel, *supra* note 17, at 29.

58. *Id.*

59. *Id.*

While the United States Air Force Academy ended its ban on maintaining cadets at the Academy who were carriers of sickle-cell anemia in 1981, it has been reported that some six or more major American corporations endeavor to screen prospective employees for genetic deficiencies (and particularly their sensitivity to toxic substances). In 1982, nearly five dozen other Fortune 500 firms reported that within five years, they, too, expected to follow a similar policy. "Hemophiliacs may not have a right to employment as butchers; still, in some untold fraction of cases the burden of work-place safety could well come to fall less on the company than on the employees—a circumstance that would particularly affect ethnic or racial groups among whom the incidence of, say, thalassemia or the sickle-cell trait is disproportionately high." Keveles, *supra* note 41, at 116, 117.

60. Waltz & Thigpen, *supra* note 11, at 712.

61. *Id.* at 711-12.

62. *Id.*

63. Cf. *Schmerber v. California*, 384 U.S. 757, 772 (1966) (compulsory blood test to determine intoxication of automobile driver not unreasonable search.)

64. Vukowich, *supra* note 16, at 208.

65. A. BUCHANAN, *et al.*, *supra* note 16 at 319.

66. *Id.* at 330.

67. Pauling, *supra* note 52, at 270-71.

But see examples of two state genetic screening programs which are voluntary and rule out abortion as an acceptable treatment for any genetic discovered *in utero*: MO. ANN. STAT. §191.320 (1993), TENN. CODE ANN. §68-5-504(a)(2) (1993).

68. *See* Vukowich, *supra* note 16, at 215-16.

69. *Id.* at 216.

70. *Id.*

71. *See, e.g.*, *Eisentadt v. Baird*, 405 U.S. 438, 452-55 (1972) (forbidding—on morality grounds—sale or gift of contraceptives to unmarried persons conflicts with fundamental constitutional rights); *Loving v. Virginia*, 388 U.S. 12 (1967) (state may not infringe freedom to marry person of another race); *Griswold v. Connecticut*, 381 U.S. 479, 481-86 (1965) (statute forbidding use of contraceptives violates constitutionally protected right of marital privacy).

72. *Skinner v. Oklahoma*, 316 U.S. 535, 541 (1941). Concurring in *Griswold v. Connecticut*, Justice Goldberg commented that a compulsory birth control law unjustifiably would abridge the constitutional rights of marital privacy. 281 U.S. 479, 497 (1965) (Warren, C.J., Brennan, J., *concurring*).

73. *See Roe v. Wade*, 419 U.S. 113, 153 (1973).

74. Golding & Golding, *Ethical and Value Issues in Population Limitation and Distribution in the United States*, 24 VAND. L. REV. 494, 511 (1971).

75. *Id.* at 512. The authors conclude, however, that the unrestricted freedom to procreate should be abridged only for a "good of momentous order." *Id.*

As a means of birth control, and stemming the spread of AIDS, a recent effort has been undertaken to induce men and women who are addicted to drugs and/or alcohol to be sterilized for \$200.00. Vega, *Sterilization Offer to Addicts Reopens Ethics Issue*, N.Y. TIMES, Jan. 6, 2003, at B1.

76. 274 U.S. 200 (1927).

77. *Id.* at 207. Justice Holmes, speaking for the Court stated:

We have seen more than once that the public welfare may call upon the best citizens for their lives. It would be strange if it could not call on those who already sap the strength of the State for these lesser sacrifices, often not felt to be such by those concerned, in order to prevent our being swamped with incompetence. It is better for all the world, if instead of waiting to execute degenerate offspring for crime, or to let them starve for their imbecility, society can prevent those who are manifestly unfit from continuing their kind. *Id.*

See also *In re Sterilization of Moore*, 289 N.C. 95, 221 S.E.2d 307 (1976).

Since the United States Supreme Court decision in *Stump v. Sparksman*, 435 U.S. 349 (1978)—declaring an Indiana circuit court judge immune from liability for ordering the sterilization of a "somewhat" retarded child on her mother's petition, in a suit brought subsequently by the incompetent—the vast majority of state courts before whom the question has been raised have determined their inherent equitable authority, in the absence of statute, to order sterilization of the mentally retarded. Scott, *Sterilization of Mentally Retarded Persons: Reproduction Rights and Family Privacy*, 1986 DUKE L. J. 806, 815. The full extent to which American courts will allow themselves authority to allow sterilization for contraceptive purposes is different to surmise. There is strong precedence, however, for allowing considerable judicial latitude for action here under either best interests or substituted judgment tests. *See In re Guardianship of Hayes*, 93 Wash. 2d 8, 608 P.2d 635 (1980).

78. The present statutes authorizing sterilization of persons with mental disabilities (presumably in part for eugenic purposes) are: ARK. CODE ANN. §§ 20-49-201 to 20-49-207 (1991); CAL. PENAL CODE § 645 (West 1999) (mandatory chemical castration for perpetration of sex offenses against children 13 years of age); COLO. REV. STAT. ANN. §§ 27-10.5-128 to 27-10.5-131 (West Supp. 1997); CONN. GEN. STAT. ANN. §§ 45a-691 to 45a-700 (West 1997); DEL. CODE ANN. tit. 16, §§ 5702-5716 (1995); GA. CODE §§ 31-20-1 to 31-20-6 (1996); HAW. REV. STAT. ANN. §§ 560: 5-601-612 (Michie 1997); IDAHO CODE §§ 39-3901 to 39-3910 (1998); ME. REV. STAT. ANN. tit. 34, §§ 7001-7016 (West 1998); MISS. CODE ANN. §§ 41-45-1 to 41-45-15 (1993); N.J. Stat. ANN. § 30:6D-5 (West 1997); N.C. GEN. STAT. §§ 35-36 to 36-50 (1990); OHIO REV. CODE ANN. § 5123.86 (Anderson Supp. 1997); ORE. REV. STAT. §§ 436.205 to 436.335 (1995); S.C. CODE ANN. §§ 44-47-10 to 44-47-100 (Law. Co-op. 1985); UTAH CODE ANN. §§ 62A-6-101 to 62A-6-116 (1996); VT.

STAT. ANN. tit. 18, §§ 8705-8716 (1987); VA. CODE ANN. §§ 54.1.2974 to 54.1.2980 (Michie 1997); W. VA. CODE §§ 27-16-1-5 (Michie 1992). It has been estimated that over 70,000 people have been sterilized under past statutes of this nature. STATISTICS FROM HUMAN BETTERMENT ASS'N OF AMERICA, SUMMARY OF U.S. STERILIZATION LAWS 2 (1958).

These above statutes should be distinguished from sterilization statutes which are wholly of a voluntary nature. Among such statutes are: GA. CODE ANN. § 31-20-2 (1990); N.M. STAT. ANN. §§ 24-1-14, 24-9-1 (1984); ORE. REV. STAT. § 436.205; VA. CODE ANN. § 54.1-2974 (Matthew Bender 2002). These statutes are essentially contraceptive and therapeutic and not eugenic in nature.

For a comparative law analysis of sterilization, see MEDICAL LAW, ch. 9 (I. Kennedy & A. Grubb eds.), (3d ed. 2000).

79. See, e.g., Oregon v. Cook, 9 Or. App. 224, 230, 495 P.2d 768, 771-72 (1972) (equal protection challenge based on indigency rejected); *In re Cavitt*, 182 Neb. 712-721, 157 N.W.2d 171, 178 (1968), cert. denied, 396 U.S. 966 (1970). See also Dunn, *Eugenic Sterilization Statutes: A Constitutional Re-evaluation*, 14 J. FAM. L. 280 (1975).

80. Shapiro v. Thompson, 394 U.S. 618, 638 (1969).

81. Oregon v. Cook, 9 Or. App. 224, 230, 495 P.2d 768, 771-72 (1972).

82. Buck v. Bell, 274 U.S. 200, 208 (1927).

The Court's *rationale* acquires additional significance because it became the basis for distinguishing *Buck* in the case of *Skinner v. Oklahoma* where the Supreme Court invalidated a statute providing for the sterilization of habitual criminals. The Court in *Skinner* concluded that the questioned statute violated the fourteenth amendment's equal protection clause. 316 U.S. 535, 542 (1941).

83. The statute challenged in *Buck* required only that experience demonstrate heredity plays an important role in the transmission of the mental defect. *Buck*, 274 U.S. at 206. The inmate involved, however, was the daughter of a feebleminded mother. *Id.* at 205. See Murray, *Marriage Contracts for the Mentally Retarded*, 21 CATH. LAW. 182 (1975).

84. See Waltz & Thigpen, *supra* note 11, at 721 n.131.

85. Brakel, *Family Laws*, in THE MENTALLY DISABLED AND THE LAW 507 at 529 (S. Brakel, J. Parry & B. Weiner eds. 1985).

86. *Id.*

87. *Id.*

88. *Id.*

89. *Id.*

90. *Id.*

91. *Id.* See generally McIvor, *Equitable Jurisdiction to Order Sterilization*, 57 WASH. L. REV. 373 (1982).

92. Scott, *supra* note 77.

See Wolfensbrueger, *The Principle of Normalization and Its Implication to Psychiatric Services*, 127 AM. J. PSYCHIATRY 291 (1970).

93. Scott, *supra* note 77, at 808.

94. J. WALLEN, MENTAL DEFICIENCY 43-44 (1956). But see D. SMITH, MINDS MADE FEEBLE: THE MYTHS AND LEGACY OF THE KALLIKAKS (1985).

95. WALLEN, *id.* at 44-45.

See H.H. GODDARD, FEEBLE-MINDEDNESS: ITS CAUSES AND CONSEQUENCES (1914).

H. H. Goddard, who is credited with *discovering* the Kallikak family, found a stock of paupers in the pine barrens of New Jersey and traced their ancestry back to the illicit union of an upstanding gentleman with a (supposedly) feeble-minded tavern wench. He then subsequently married a proper Quaker woman with whom he started another line who all became "upstanding" citizens. Since the progenitor had fathered both a good line and a bad line, Goddard combined the Greek words for beauty (*kollos*) and bad (*kakos*), and gave him the pseudonym, Martin Kallikak. The study of the Kallikak family has been termed, at best, "little more than guesswork" and worse, "a primal myth of the eugenic movement." S.J. GOULD, THE MISMEASURE OF MAN 198-201 (1984 ed.). For Goddard, feeblemindedness followed Mendelian rules of inheritance and—therefore—was governed by a single gene, undoubtedly recessive to normal intelligence and transmitted in true Mendelian fashion. *Id.* at 192.

See also R. J. HERRNSTEIN & C. MURRAY, THE BELL CURVE: INTELLIGENCE AND

CLASS STRUCTURE IN AMERICAN LIFE (1994) (arguing the existence of genetic, racial, and class differences in regards to intelligence). *But see* THE BELL CURVE WARS: RACE, INTELLIGENCE, AND THE FUTURE OF AMERICA (S. Fraser ed. 1995) (arguing lack of scientific documentation for the Herstein and Murray theses regarding genetic difference in I.Q. and concluding until equal educational opportunities for all races exist there will be disparities here). *See also* P. W. VERNON, INTELLIGENCE: HEREDITY AND ENVIRONMENT (1979) (posturing the gap between environment and genetic effects on intelligence is much smaller than believed originally).

96. Nat'l Inst. for Medical Sciences, 1987: Hearings Before the Subcomm. of Comm. on Appropriations of House of Reps., 99th Cong., 2nd Sess. 1093 (1987). *See* DUSTER, *supra* note 43, Appendix C.

97. U.S. Dep't of Health, Education & Welfare, WHAT ARE THE FACTS ABOUT GENETIC DISEASE?, (1987). *See also, supra* note 12; News and Notes, *The Lifetime Costs of Birth Defects*, WASH. POST, Oct. 17, 1995, at 5.

Babies born with birth defects have a lifetime cost of \$75,000 to \$503,000.00. *See* National Center on Birth Defects and Developmental Disabilities, Center for Disease Control, *News Briefs* (visited November 8, 2002) <http://www.cdc.gov/ncbddd/bd/>.

See also Waitzman *et al.*, *Economic Costs of Birth Defects and Cerebral Palsy*, MMWR Weekly (Sept. 22, 1995), available at <http://www.cdc.gov/epo/mmwr/prevew/mmwrhtml/00038946.htm>

98. Note, *The Constitutionality of Mandating Genetic Screening*, 31 CASE WES. RES. L. REV. 897, 900 n.27 (1981).

See Balz, *Sweden Sterilized Thousands of Useless Citizens for Decades*, WASH. POST, April 29, 1997, at 1 (detailing how from 1934-1974, 62,000 Swedes—mostly young females judged as rebellious, promiscuous retarded or mixed blood—were sterilized as part of a national program grounded in the science of racial biology designed to build a progressive enlightened welfare state).

See also EUGENICS AND THE WELFARE STATE: STERILIZATION POLICY IN DENMARK, SWEDEN, NORWAY AND FINLAND (G. Broberg & N. Roll-Hansen eds. 1996).

99. U.S. Dep't. of Health, Education & Welfare, *supra* note 97. *See*, G. P. SMITH, II, GENETICS, ETHICS AND THE LAW, (1981). *See generally* DARWINISM AND EVOLUTIONARY ECONOMICS (J. Laurent ed. 2001); G. RODERICK, MAN AND HEREDITY (1986).

100. Kantrowitz, King & Witherspoon, *Help for Retarded Parents*, NEWSWEEK, June 23, 1986, at 62.

101. *Id.*

102. *Id.*

103. *Id.*

For a model statute designed to provide protection of the handicapped's rights to reproductive freedom *see* B. SALES, D. POWELL & R. VANDUIZEND, *DISABLED PERSONS AND THE LAW* at 77-84 (1982).

See also Comment, *The Incompetent Developmentally Disabled Person's Right of Self-Determination: Right-to-Die, Sterilization and Institutionalization*, 15 AM. J. L. MED. 333, 352 *passim* (1989).

104. Smith, *Through a Test Tube Darkly: Artificial Insemination and the Law*, 67 MICH. L. REV. 127 at 148 (1968).

It is agreed generally that it is best for any donor inseminated baby not to know if its origins. The donor should not be told if his donation of semen resulted in a successful impregnation and birth. Attalah, *Report from a Test Tube Baby*, N.Y. TIMES Mag., April 18, 1976, at 16-17, 51.

105. Smith, *supra* note 104, at 145-46.

In 1979, the Repository for Germinal Choice became operational in Escondido, California, and is designed to make available the sperm of Nobel Prize winners and other "creative, intelligent people." *Playboy Interview: William Shockley*, PLAYBOY Aug. 1980, at 69. *See also* Broad, *A Bank for Nobel Sperm*, 207 SCIENCE 1326 (1980).

106. Smith, *supra* note 104, at 145-46.

107. *Id.*

See also S. PICKENS, EUGENICS AND THE PROGRESSIVE (1968); Medawar, *The Genetic Improvement of Man*, 4 AUSTRALASIAN ANNALS MED. 317 (1969). *See generally* HERRNSTEIN & MURRAY, *supra* note 95.

108. Brewer, *Euteleogenesis*, 27 EUGENICS REV. 121, 123, 126 (1935).
 See also Smith, *The Razor's Edge of Human Bonding: Artificial Fathers and Surrogate Mothers*, 4 WES. NEW. ENG. L. REV. 639 (1983).
109. Vukovich, *supra* note 16, at 230-31.
110. Smith & Iraola, *Sexuality, Privacy and the New Biology*, 67 MARQ. L. REV. 263 (1984).
111. Rovrik, *The Embryo Sweepstakes*, N.Y. TIMES Mag., Sept. 15, 1974, at 17.
112. *Id.*
113. *Id.*
114. TIME Mag., July 24, 1978, at 47.
115. See TEST-TUBE BABIES: A GUIDE TO MORAL QUESTIONS, PRESENT TECHNIQUES AND FUTURE POSSIBILITIES (W. Walters & P. Singer eds. 1982); Edwards & Steptoe, *Current Statutes of In Vitro Fertilization and Implantation of Human Embryos*, THE LANCET, 1265 (Dec. 3, 1983); Biggers, *In Vitro Fertilization and Embryo Transfer in Human Beings*, 304 NEW ENG. J. MED. 336 (1981).
116. MAKING BABIES: THE TEST TUBE AND CHRISTIAN ETHICS (A. Nichols & T. Hogan eds. 1984); *Symposium, In Vitro Fertilization: The Major Issues*, 9 J. MED. ETHICS 192 (1983).
 See also Annas & Elias, *In Vitro Fertilization and Embryo Transfer: Medico Legal Aspects of a New Technique to Create a Family*, 17 FAM. L. Q. 199 (1983).
117. Gaylin, *We Have the Awful Knowledge to Make Exact Copies of Human Beings*, N.Y. TIMES Mag., Mar. 5, 1972, 11, at 48; Rovrik, *supra* note 111, at 50. See also R. MCKINNEL, CLONING: NUCLEAR TRANSPLANTATION IN AMPHIBIA (1978).
 Ova transplanting might be undertaken for eugenic reasons similar to those prompting the use of AID. If it is the wife instead of the husband whose germ cells are infertile or carry the threat of transmitting some serious X-linked genetic condition, she can be implanted with eggs from a healthy donor. The results and the parentage problems would then be analogous to those in cases of artificial insemination—with one important difference: instead of the child of a couple not being the husband's genetically, the child in the ova transplant cases would *not* be the wife's. P. REILLY, GENETICS, LAW AND SOCIAL POLICY 217 (1977).
118. See Gaylin, *supra* note 117, at 48; *cf.* Rovrik, *supra* note 111, at 50 (eggs from one cow can be implanted in the womb of another).
119. Gaylin, *supra* note 117, at 48. See also R. SCOTT, THE BODY AS PROPERTY ch. 8 (1981).
120. *Id.* See also Smith, *Australia's Frozen Orphan Embryos: A Medical, Legal and Ethical Dilemma*, 24 J. FAM. L. 27 (1985).
121. D. RORVIK, BRAVE NEW BABY 109 (1971).
122. Comment, *Asexual Reproduction and Genetic Engineering: A Constitutional Assessment of The Technology of Cloning*, 47 S. CAL. L. REV. 476, 499 (1974).
 See also Robertson, *Liberty, Identity and Human Cloning*, 76 TEX. L. REV. 1371 (1998).
123. Note, S. CAL. L. REV., *supra* note 122.
124. Note, S. CAL. L. REV., *supra* note 122 at 560.
125. G. TAYLOR, THE BIOLOGICAL TIME BOMB 23-25 (1968). See Smith, *Intimations of Immortality: Clones, Cryons and the Law*, 6 U. NEW SO. WALES L. REV. 119 (1983).
126. G. LEACH, THE BIOCRATS 94 (1970).
127. J. Watson, *Potential Consequences of Experimentation with Human Eggs*, Jan. 28, 1971 (Papers 1, 3, 4, Harv. Univ. Biological Labs). See also R. COWPER, CLONE (1972); Walters, *Cloning, Ectogenesis, and Hybrids: Things to Come*, in TEST-TUBE BABIES: A GUIDE TO MORAL QUESTIONS, PRESENT TECHNIQUES AND FUTURE POSSIBILITIES 110 (W. Walters & P. Singer eds. 1982).
128. Lederberg, *Experimental Genetics and Human Evolution*, 100 AM. NATURALIST 549, 562 (1966); Watson, *Moving Toward the Clonal Man*, ATLANTIC MONTHLY at 50, 51 (May, 1971).
129. Note, S. CAL. L. REV., *supra* note 122 at 476.
130. G. TAYLOR, *supra* note 125, at 29.
131. *Id.* at 30.
132. D. RORVIK, *supra* note 121, at 95.

133. *Id.* at 94. *But see* Cibelli, Grant *et al.*, *Parthenogenetic Stem Cells in Nonhuman Primates*, 295 SCIENCE 819 (Feb. 1, 2002). *See also* Ingle, *The Ethics of Biomedical Interventions*, 13 PERSPECTIVES IN BIOLOGY & MED. 364 (1970).
134. Lederberg, *Genetic Engineering or the Amelioration of Genetic Defect*, 34 THE PHAROS 9, 12 (1971).
135. *Id.* at 12.
136. Fletcher, *Ethical Aspects of Genetic Controls*, 285 NEW ENG. J. MED. 776, 779 (1971).
137. Kiernan, *The Morality of Cloning Humans: Theologians and Philosophers Offer Provocative Arguments*, CHRONICLE HIGHER ED., July 18, 1997, at A3; Broadway, *A Rush to Judgment on Human Cloning*, WASH. POST, Feb. 7, 1998, at C8; U.S. Senate Hearings on Ethics and Theology, *A Continuation of The National Discussion on Human Cloning*, Subcomm. on Pub. Health & Safety, Comm. on Labor & Human Resources, June 17, 1997, #41-668CC.
138. J. HARRIS, CLONES, GENES AND IMMORTALITY 32 (1998).
139. Robertson, *supra* note 122 at 1446-47.
140. Orentlicher, *Cloning and The Preservation of Family Integrity*, 59 L.S.U. L. REV. 1019, 1025 (1999). *See* L. R. KASS, LIFE, LIBERTY AND THE DEFENSE OF DIGNITY ch. 5 (2002).
- The American Medical Association has taken the position that it is unethical for physicians to participate in genetic enhancement procedures unless they are able to provide a clear and meaningful benefit to either the fetus or the child. AMA Council on Judicial and Ethical Affairs, *Ethical Issues Related to Prenatal Genetic Testing*, 3 ARCH. FAM. MED. 633, 641 (1994).
141. Annas, *The Man on The Moon, Immortality, and Other Millennial Myths: The Prospects and Perils of Human Genetic Engineering*, 49 EMORY L. J. 753, 765 (2000).
142. Weiss, *Human Cloning Bid Stirs Experts' Anger*, WASH. POST, Mar. 7, 2001, at A1.
143. *Id.*
144. *Id.*
145. *Id.*
- See* Highfield, *Scientists Back Worldwide Ban on Baby Cloning*, THE DAILY TELEGRAPH, June 20, 2001, at 10 (reporting that while a clone is most likely to bear a striking resemblance to the original progenitor, it will differ at least as much as identical twins in terms of personality and other high mental attributes).
- See also*, Amer, *Breaking the Mold: Human Embryos, Cloning and Its Implications for a Right to Individuality*, 43 U.C.L.A. L. REV. 165 (1996); *Will Cloning Beget Disaster?*, WALL ST. J. May 2, 1997, at A14.
146. *Id.*
147. Orentlicher, *supra* note 140 at 1024-25.
- See also* AMA Council on Judicial and Ethical Affairs, *supra* note 140. *See generally*, Weiss, *Test-Tube Baby Born to Save Ill Sister*, WASH. POST, Oct. 3, 2000, at A1.
148. *Stanley v. Georgia*, 394 U.S. 557 (1968); *Baird v. Eisenstadt*, 429 F.2d 1398 (1st Cir. 1970), *aff'd on other grounds*, 405 U.S. 438 (1972).
149. *Id.*
150. Comment, *supra* note 122, at 561.
151. *Id.* at 550, 556.
152. *Skinner v. Oklahoma*, 316 U.S. 535, 541 (1942).
153. Lederberg, *supra* note 128, at 550-52.
- See generally* Rothstein, *Preventing the Discovery of Plaintiff Genetic Profiles by Defendants Seeking to Limit Damages in Personal Injury Litigation*, 71 IND. L. J. 877 (1996).
154. *Id.* at 556. *See* *Shapiro v. Thompson*, 399 U.S. 618, 638 n.20.
155. *Skinner v. Oklahoma*, 316 U.S. at 581-82; U.S. CONST., art. I, § 9, ch. 8; U.S. CONST. amend, XIII.
- See generally*, Smith, *Judicial Decisionmaking in The Age of Biotechnology*, 13 NOTRE DAME J. L. ETHICS & PUB. POL'Y 93 (1999).
156. *Skinner v. Oklahoma*, 316 U.S. at 556.
157. *Skinner, id.* at 579. *See also* R. BLANK, *supra* note 13, at 93-109, 117-22.

158. Vukowich, *supra* note 16, at 189, 222.

If the challenged legislation incorporated negative, rather than positive, eugenic concepts so that it only restricted carriers of recessive debilitating defects from cloning, the constitutional problems would be minimized. The legitimacy of the state interest could not be challenged on the ground that it creates an elite group and therefore violates the nobility clause of the United States Constitution. A court could find readily that such a statute is rationally related to a legitimate state interest—specifically, diminishing the propagation of inferior traits. Scientific evidence more readily can provide a rational basis for the classification of those carrying debilitating effects than for those possessing superior genetic traits. Whether the state's interest in a negative eugenics program is sufficiently compelling to sustain the validity of the statute under a strict scrutiny test, however, is uncertain. *Id.* at 198-201, 208.

159. Note, S. CAL. L. REV., *supra* note 122 at 480.

See generally Weiss, *Fertility, Innovation or Exploitation?* WASH. POST, Feb. 9, 1998, at A1. *See also* Annas, *Why We Should Ban Cloning*, 339 NEW ENG. J. MED. 118 (1998) (arguing for a federal regulatory scheme tied to a *de facto*, if not a *de jure* ban or moratorium on human cloning experiments) and Robertson, *Human Cloning and The Challenge of Regulations*, 339 NEW ENG. J. MED. 119 (1998) (arguing for the use of human cloning if undertaken according to guidelines designed to ensure safety and efficacy).

160. Weiss, *Human Clone Work Will Be Regulated*, WASH. POST, Jan. 20, 1998, at A1.

S. 368 (1997) and H.R. 922 (1997) sought a permanent ban of federal funding for human cloning, while H.R. 923 sought to impose an outright ban on human cloning.

See generally Newman, *Human Cloning and The Family: Reflections on Cloning Existing Children*, 13 N.Y. L. SCHOOL J. HUM. RTS. 523, 525 (1997).

161. Weiss, *id.*

See Gugliotta, *United Against Human Cloning, Hill Leaders Differ on Specifics*, WASH. POST, Feb. 4, 1998, at A4.

162. Weiss, *Panel Backs Some Human Clone Work*, WASH. POST, June 4, 1997, at A1.

Dr. Leon R. Kass, Chairman of President Bush's Council on Bioethics, warned congressional leaders to enact an absolute ban—or at least a prohibition for several years—on human cloning; otherwise, he predicted they would acquiesce in its eventual occurrence. Kass, *How One Clone Leads to Another*, N.Y. TIMES, Jan. 24, 2003, at A23. *See also* KASS, *supra* note 140.

In 1997, the California State Assembly became the first state to legislate a prohibition on cloning a human being as well as the purchase or selling of an ovum, zygote, embryo, or fetus for the express purpose of cloning a human (CAL. HEALTH & SAFETY CODE §24185 (Deering 1997)). A five year moratorium was placed on human experimentations in human cloning and heavy civil penalties imposed for violations thereof (\$250,000.00 to 1 million). (*Id.* at §24187).

On June 3, 1998, the Governor of Michigan approved legislation forbidding human cloning experimentation and thereby allowed Michigan to become the second state to follow California's lead. *See* MICH. COMP. LAWS §333.16274, §333.20197; §750.430a (1998).

See generally Comment, *Genetic Testing and Germ-line Manipulation: Constructing a New Language for International Human Rights*, 12 AM. U. J. INT'L. & POL'Y 687 (1997).

See also Stolberg, *As Congress Stalls, States Pursue Cloning*, N.Y. TIMES, May 25, 2002, at 1 (reporting on a complicated nationwide effort led by seven states—California, Iowa, Louisiana, Michigan, Missouri, Rhode Island and Virginia—to either ban cloning for research and reproduction, restrict state funding for such experimentation, or punish violations thereof as felonies).

163. H.R. 2505.

On January 8, 2003, Representative David Weldon introduced H.R. 234 which is designed to prohibit human cloning.

164. S. 790, Human Cloning Prohibition Act of 2001.

Senator Brownback reintroduced a similar bill in the 2002 session as S1899; and Senator Arlen Specter sponsored S.2439 as the Human Cloning Prohibition Act of 2002.

Interestingly, the American Medical Association has chosen to endorse clonal therapeutic research, but not human cloning. Reuters, *Doctors Group Backs Cloning for Research*, WASH. POST, June 18, 2003, at A4. *See* Capron, *Placing a Moratorium on Research Cloning to Ensure Effective Control over Reproductive Cloning*, 53 HASTINGS L.J. 1057 (2002).

165. Stolberg, *House Backs Ban on Human Cloning for Any Objective*, N.Y. TIMES, Aug. 1, 2001, at A1.

See Brainard, *Scientists' Partial Victory on Stem Cells May Be Undercut by Ban on Cloning*, CHRON. HIGHER ED., August 17, 2001, at 21.

See generally R.M. GREEN, THE HUMAN EMBRYO RESEARCH DEBATES: BIOETHICS IN THE VORTEX OF CONTROVERSY ch. 7 (2001).

See Pollack, *Scientific and Ethical Questions Cloud Plans to Clone for Therapy*, N.Y. TIMES, Feb. 13, 2004, at A1 (discussing the successful research efforts of South Korean scientists to successfully clone human embryos and then isolate from one of them a colony of stem cells).

166. *Id.*

167. *Id.*

See L. B. ANDREWS, THE CLONE AGE: ADVENTURES IN THE NEW WORLD OF REPRODUCTIVE TECHNOLOGY ch. 12 (1999).

168. Stolberg, *Some for Abortion Rights Lean Right in Cloning Fight*, N.Y. TIMES, Jan. 24, 2002, at A25.

See also Weiss, *Cloning Creates Odd Bedfellows*, WASH. POST, Feb. 10, 2002, at B1; Weiss, *Debate Over Cloning Puts the Political in Science*, WASH. POST, June 10, 2002, at A9; Stolberg, *Bush's Bioethics Advisory Panel Recommends a Moratorium, Not a Ban on Cloning Research*, N.Y. TIMES, July 11, 2002, at A21.

169. Cooperman, *HHS Proposes Insurance for Fetus*, WASH. POST, Feb. 1, 2002, at A1.

See Wetzstein, *New Poll Shows Tilt to Protect Unborn*, WASH. TIMES, Jan. 16, 2003, at A4 (reporting that a poll of 1,000 adults showed 66% said they favored "restoring legal protection for unborn children"; and from this comes the conclusion that nearly 70% of all American support this position).

170. *Id.*

See Goldstein, *Bush to Extend Health Care Benefits to Fetuses*, WASH. POST, Sept. 28, 2002, at A4. The final rule was promulgated October 2, 2002. *See* 67 C.F.R. 61956-01.

171. *Supra* note 169.

In order to make this proposal moot, some congressmen endeavored, later unsuccessfully, to extend the State Children's Health Insurance Program to prenatal care. *Supra* note 169.

Interestingly, President Bush signed The Born Alive Infants Protection Act in August, 2002, requiring that if a fetus survives an abortion procedure, it must be considered a person under federal law. 1 U.S.C. § 8 (2002).

See generally Silverstein & Speitel, "Honey, I Have No Idea": Court Readiness to Handle Petitions to Waive Parental Consent for Abortion, 88 IOWA L. REV. 75, 77-79 (2002) (observing that while 32 states mandate parental involvement when pregnant minors seek abortions, with 18 requiring parental consent before the termination of a minor's pregnancy, the statutes include a bypass mechanism whereby a minor may petition a judge to waive parental participation).

172. Stolberg, *Bush Makes Fervent Bid to Get Senate to Ban Cloning*, Research, N.Y. TIMES, April 11, 2002, at A28.

173. *Id.*

In one national survey of 800 adults, 63 percent agreed with the President's position and 29 percent disagreed. Novak, *The People vs. Cloning*, N.Y. POST, April 22, 2002, at 31.

174. Connolly, *Waging the Battle for Stem Cell Research*, WASH. POST, June 9, 2002, at A6; Stolberg, *Total Ban on Cloning Research Appears Dead*, N.Y. TIMES, June 14, 2002, at A31 (observing that various opposing proposals are stalled, if not dead, in the Senate this year).

See also Fagen, *For Now, Daschle Concedes Defeat on Human-Cloning Bill*, WASH. TIMES, June 14, 2002, at A5 (observing the Brownback bill banning all forms of cloning will not be brought to a vote and how Senator Brownback plans to offer human-cloning amendments to other pieces of proposed Senate legislation).

175. Weinberg, *Of Clones and Clowns*, 289 THE ATLANTIC 54 at 57 (June 2002).

176. *Id.* at 59.

See also Mishra, *Clone Research Quietly Builds in World's Labs*, BOSTON GLOBE, June 21, 2002, at A1.

177. Stolberg, *Total Ban on Cloning Research Appears Dead*, N.Y. TIMES, June 14, 2002, at A31; Dewar, *Human Cloning Bill Sidetracked*, WASH. POST, June 19, 2002, at A4.
178. See Stolberg, *supra* note 162.
179. Carlson & Stimeling, *Will Genetic Medicine Make Us Happier?* ORLANDO SENT., June 16, 2002, at G1.
180. Weiss, *Human Clone Work Will Be Regulated*, WASH. POST, Jan. 20, 1998, at A1; Schwartz, *FDA Sets Safety Framework For Cell & Tissue Therapies: Rules Would Cover Attempted Human Cloning*, WASH. POST, Mar. 1, 1997, at A3.
181. Weiss, *Legal Barriers to Human Cloning May Not Hold Up*, WASH. POST, May 23, 2001, at A1.
182. *Id.*
183. Past legislative efforts have not succeeded—with one of the foremost problems being uniform enforcement and the unpleasantness associated with convicting an individual for creating life. For a listing of failed federal attempts here see fn 126 in Mehlman, *infra* note 187.
- See Weiss, *Scientists Testify on Human Cloning: Some House Members Vote to Seek a Legislative Ban on Controversial Procedure*, WASH. POST, Mar. 29, 2001, at A10.
- But see Abboud & Regalado, *Scholars, Lawmakers Question FDA's Power to Regulate Cloning*, WALL ST. J., Dec. 31, 2002, at A4.
184. *Supra* note 181.
185. *Id.*
186. See e.g., *Griswold v. Connecticut*, 381 U.S. 479 (1965); *Roe v. Wade*, 410 U.S. 113 (1973); *Carey v. Population Services International*, 431 U.S. 678 (1977).
- See also G. P. SMITH, II, *FAMILY VALUES AND THE NEW SOCIETY* ch. 4 (1998).
187. Mehlman, *The Law of Above Average: Leveling the New Genetic Enhancement Playing Field*, 85 IA. L. REV. 517, 519 *passim* (2000).
188. *Id.* at 559, 560 *passim*.
189. *Id.* at 568.
190. *Id.* at 571.
191. *Id.* at 573.
192. *Id.*
193. *Id.* at 574.
194. *Id.*
- See Rakowski, *Who Should Pay for Bad Genes?*, 90 CAL. L. REV. 1345 (2002) (arguing for the imposition of a compulsory insurance plan taken out by the conceiving parents who choose to bear genetically disadvantaged children determined to be as such by genetic screening—designed, accordingly, to provide compensation to their genetically disadvantaged children).
195. See Soares, *Virtually Human*, NEW SCIENTIST 26 (June 16, 2001) (discussing the creation of the most complex computer model ever attempted—a virtual human being—at the Oak Ridge National Laboratory in Tennessee).
- See also Weiss, *What is Patently Offensive?* WASH. POST, May 11, 1998, at A21 (discussing the extent to which moral criteria may or should be applied in deciding to grant a patent for animal-human hybrids).
196. See Morgan, *Babe the Magnificent Organ Donor? The Perils and Promises Surrounding Xenotransplantation*. 14 J. CONTEMP. HEALTH L. & POL'Y 127 (1997).
- See also Commentary, *The Trials of Xenotransplantation*, NATURE 661 (Aug. 17, 2000).
197. *Supra* note 141 at 778.
198. Highfield, *Scientists Ban Worldwide Ban on Baby Cloning*, THE DAILY TELEGRAPH, June 20, 2001, at 10.
- Interestingly, therapeutic cloning is essentially the same as reproductive cloning—but without the final step of implantation in a woman's uterus. For therapeutic cloning, however, experimentations must cease within fourteen days. Park, *Just Press Print*, THE ECONOMIST, Mar. 3, 2001, at 76.
199. Weiss, *British Panel Urges Allowing Human Embryo Cloning*, WASH. POST, Aug. 17, 2000, at A26.
200. See generally, Kennedy & Grubb, *supra* note 78 at 1243 *passim*.
201. *Supra* note 187.

202. *Supra* note 141 at 778.

203. *Id.* at 780.

For some countries, therapeutic cloning is not differentiated from reproductive cloning and is thus not considered a valid scientific procedure. Park, *supra* note 198.

The United Nation's voted to postpone, for two years, consideration of a ban on human cloning. N.Y. TIMES, Nov. 7, 2003, at A5. *See also* Semple, *U.N. to Consider Whether to Ban Some, or All, Forms of Cloning of Human Embryos*, N.Y. TIMES, Nov. 3, 2003, at A11.

204. P. KITCHER, *THE LIVES TO COME: THE GENETIC REVOLUTION AND HUMAN POSSIBILITIES* 193-95 (1996). *See* THE NAZI DOCTORS AND THE NURENBERG CODE (G.J. Annas & M.A. Grodin eds. 1992).

It is estimated that from 1933-1945, the Nazis sterilized 3,500,000 individuals. P. REILLY, *THE SURGICAL SOLUTION: A HISTORY OF INVOLUNTARY STERILIZATION IN THE UNITED STATES* 109 (1991). In America, during the period of eugenic sterilization, 60,000 Americans were subject to sterilization. *Id.* at 49, 165.

See BUCHANAN, BROCK *et al.*, *supra* note 16 at ch. 2.

205. KITCHER, *id.* at 199.

See generally Nat'l. Res. Council, *EVALUATING HUMAN GENETIC DIVERSITY* (1997).

206. KITCHER, *id.* at 199-203.

See M. RUSE, *MONAD TO MAN: THE CONCEPT OF PROGRESS IN EVOLUTIONARY BIOLOGY* (1997).

207. KITCHER, *supra* note 204 at 202.

208. *Id.* at 204.

209. *Id.* at 209.

210. *Id.* at 204.

211. *Id.* at 326.

See generally Symposium, *The Genetics Revolution: Conflicts, Challenges and Conundra*, 28 AM. J. L. & MED. 145 (2002).

212. *See generally* P. KITCHER, *THE ADVANCEMENT OF SCIENCE* (1993); D. HEYD, *GENETICS: MORAL ISSUES IN THE CREATION OF PEOPLE* (1992); RIFKIN, *supra* note 14.

213. Cockburn, *Social Cleansing*, NEW STATESMAN & SOCIETY, Oct. 5, 1994, at 16.

But see Plambeck, *Divide Loyalties: Legal and Bioethical Considerations of Physician-Patient Confidential and Prenatal Drug Abuse*, 23 J. LEGAL MED. 1 (2002).

214. Cockburn, *id.*

See generally R. SCOTT, *RIGHTS, DUTIES AND THE BODY: LAW AND ETHICS OF THE MATERNAL-FETAL CONFLICT* (2002).

215. *Id.*

216. *Id.*

See also Vega, *supra* note 75 regarding financial inducements for sterilization.

217. *See* C. MURRAY, *LOSING GROUND: AMERICAN SOCIAL POLICY: 1950—1980*, (1984).

Another effort to screen or curb maternal use of drugs, here cocaine, through urine testing, was held unconstitutional because it violated the patients 4th Amendment right to be free from unreasonable search and seizure. *Ferguson v. City of Charleston*, 532 U.S. 67 (2001).

218. Wilson, *Foreword* to *THE SOCIOBIOLOGY DEBATE* at xi (A. Caplan ed. 1978).

See generally, Jones, *Reproductive Autonomy and Evolutionary Biology: A Regulatory Framework for Trait-Selection Technologies*, 19 AM. J. L. & MED. 187 (1993).

219. E. WILSON, *SOCIOBIOLOGY: THE NEW SYNTHESIS* 595 (1975).

220. *Id.*

221. Peterson, *Sociobiology and Ideas Become Real: Case Study and Assessment*, 4 J. SOC. BIOL. STRUCT. 125 (1981).

222. Wilson, *supra* note 218 at xiii, xiv.

223. *See supra* notes 22—28.

See also G. HARDIN, *NATURE AND MANS FATE* 4 (1959).

224. Hardin, *id.* at 214-215. *See also* Hardin, *id.* ch. 13.

See Kevles, *Annals of Eugenics*, THE NEW YORKER MAG., Oct. 8, 1984, at 51; Oct. 22, 1984, at 92; Oct. 29, 1984, at 51.

225. G.P. SMITH, II, GENETICS, ETHICS AND THE LAW 20, 21, 35 (1981); *supra* note 224.
226. HARDIN, *supra* note 223 at 224.
227. Gould, *Biological Potential vs. Biological Determinism*, in THE SOCIOBIOLOGY DEBATE 343 (A. Caplan ed. 1978).
 See also S. GOLDBERG, SEDUCED BY SCIENCE 121-22 (1999).
 Biological reductionism ignores the fundamental importance of the social event determined by family, social history, language and culture (including religion) in shaping the total identity of a human organism. J.R. NELSON, ON THE NEW FRONTIER OF GENETICS AND RELIGION (19994).
228. Dobzhansky, *Anthropology and the Natural Sciences—The Problem of Human Evolution*, 4 CURRENT ANTHROPOLOGY 138 (1963). *See generally* Nuffield Council on Bioethics, *supra* note 7.
229. K. BOULDING, ECODYNAMICS: A NEW THEORY OF SOCIETAL EVOLUTION (1978). Other attacks on Darwin's principle of organic evolution have been made. *See, e.g.*, S.M. STANLEY, THE NEW EVOLUTIONARY TIMETABLE ch. 4 (1981).
230. Caplan, *Introduction to THE SOCIOBIOLOGY DEBATE* at 5 (A. Caplan ed. 1978).
231. *See* Boulding, *Sociobiology or Biosociology?*, SOCIETY, Sept.-Oct. 1978, at 28. *See also* P. SINGER, THE EXPANDING CIRCLE 27, 28 (1981); Frankel, *Sociobiology and Its Critics*, COMMENTARY, July 1979, at 39.
232. *Sociobiology Study Group of Science for the People, Sociobiology—Another Biological Determinism*, in the THE SOCIOBIOLOGY DEBATE 280, 287 (A. Caplan ed. 1978).
233. *See supra* note 230 at 3.
234. SINGER, *supra* note 231, at 11.
235. *Id.* at 12.
236. *Id.*
237. *Id.* at 128.
238. *Id.* at 11.
239. J. BECKSTROM, SOCIOBIOLOGY AND THE LAW 13 (1985).
240. SINGER, *supra* note 231, at 14.
241. *Id.*
242. *Id.* at 42.
243. *Id.*
244. Elliott, *The Evolutionary Tradition in Jurisprudence*, 85 COLUM. L. REV. 38 (1985).
245. *Id.* at 71 n. 222.
246. O. W. HOLMES, Jr., THE COMMON LAW 5 (M. Howe ed. 1963).
247. *Id.* at 32. *See* Holmes, *Law in Science and Science in Law*, 12 HARV. L. REV. 443 (1899).
248. Beckstrom, *Behavioral Research in Aid-Giving That Can Assist Lawmakers While Testing Scientific Theory*, 1 J. CONTEMP. HEALTH L. & POL'Y 25 (1985).
249. Beckstrom, *Sociobiology and Intestate Wealth Transfers*, 76 NW. U. L. REV. 216 (1981).
250. Rodgers, *Bringing People Back: Toward a Comprehensive Theory of Taking in Natural Resources Law*, 10 ECOLOGY L.Q. 205 (1982). Professor Rodgers attempts to use sociobiology as a foundation for development of a prescriptive theory of law based on positive rights, as opposed to the more traditional reliance upon economic vectors of force. Rodgers, *Building Theories of Judicial Review in Natural Resources Law*, 53 U. COLO. L. REV. 213, 214-15 (1982).
251. Hirshleifer, *Privacy: Its Origins, Function, and Future*, 9 J. LEGAL STUD. 649 (1980).
252. Rodgers, *supra* note 250 at 218.
253. *Id.* at 221.
254. *See, e.g.*, Epstein, *A Taste for Privacy? Evolution and the Emergery of a Naturalistic Ethic*, 9 J. LEGAL STUD. 665, 670 (1980).
255. BECKSTROM, *supra* note 239, at 2. The sociobiologist, being a pragmatic biologist who has been trained in both physiology and evolutionary history, posits that the emotional control centers in the hypothalamus and limbic system of the brain both constraints and shape self-knowledge; and furthermore that these two centers flood the consciousness with all the emotions, including love, guilt, fear and hate. WILSON, *supra* note 219 at 3.
256. BECKSTROM, *supra* note 239, at 2.

257. *Id.*
258. *Id.*
259. *Id.*
260. *Id.* at 3.
261. *Id.*
262. *Id.*
263. *Id.*
264. *Id.*
265. Davis, *A Middle Course Between Irrelevance and Scientism*, in *THE SOCIOBIOLOGY DEBATE* 315, 316 (A. Caplan ed. 1978).
266. WILSON, *supra* note 219, at 526. See Gustafson, *Sociobiology: A Secular Theology*, 19 *HASTINGS CENTER REP.*, Feb. 1979, at 44. See generally Smith, *Intrusions of a Parvenu: Science, Religion, and the New Biology*, 3 *PACE L. REV.* 63 (1982).
267. SINGER, *supra* note 231, at 149. Accordingly, the sociobiological perceptive analysis of ethics should be regarded as being on the same level as either anthropological or sociological accounts of ethics. *Id.* at 81 & ch. 3. See generally Rosen, *Classical Sociology and The Law*, 5 *OX. J. LEGAL STUD.* 61 (1985); Hyde, *The Concept of Legitimation in the Sociology of Law*, 1983 *WISC. L. REV.* 379.
268. Schwartz, *On the Prospects of Using Sociobiology in Shaping the Law: A Cautionary Note*, 5 *J. SOC. BIOL. STRUCT.* 325 (1982).
269. *Id.* at 326.
270. *Id.* at 332.
271. *Id.*
272. See G. P. SMITH, II, *Monograph*, GENETIC ENHANCEMENT OR EUGENIC IMPROVEMENT: CONTROLLING THE BRAVE NEW WORLD (1999). See also Nossal, *The Impact of Genetic Engineering on Modern Medicine*, *QUADRANT*, Nov. 1983, at 22; Smith, *Uncertainties on the Spiral Staircase*, 41 *THE PHAROS* 10 (1978).
273. McGarity & Bayer, *Federal Regulation of Emerging Genetic Technologies*, 36 *VAND. L. REV.* 461 (1983); Comment, *Governmental Control of Research in Positive Eugenics*, 7 *MICH. J. L. REF.* 615 (1974).
274. BUCHANAN *et al.*, *supra* note 65 at 325.
275. *Id.*
276. *Id.* at 328-29.
See Malinowski, *Choosing the Genetic Makeup of Our Children: Our Eugenics Past-Present, and Future?* 36 *CON. L. REV.* 125 (2003).
277. *Id.* at 333.
NELSON, *supra* note 227.
See Ridley, *The New Eugenics*, *NAT'L REV.* July 31, 2000, at 34.
278. See generally Smith, *Pathways to Immortality in the New Millennium: Human Responsibility, Theological Direction or Legal Mandate*, 15 *ST. LOUIS UNIV. PUB. L. REV.* 447 (1996).
One prominent scholar in the field encourages the creation of healthier genetically balanced babies so long as the choice is an individual—as opposed to governmental—choice. A. CAPLAN, *AM I MY BROTHER'S KEEPER: THE ETHICAL FRONTIERS OF BIOMEDICINE* ch. 8 (1997).
279. SMITH, *supra* note 224 at 164, 165.
See Smith, *Biotechnology and the Law: Social Responsibility v. Freedom of Scientific Inquiry*, 39 *MERCER L. REV.* 437 (1988). See generally KEVLES, *supra* note 36, at ch. 17.
280. Comment, *Sterilization Technology and Decisionmaking: Rethinking the Incompetent's Right*, 2 *J. CONTEMP. HEALTH L. & POL'Y* 275, 301 (1986).
281. *Id.*
282. *Id.*
See Baron, *Voluntary Sterilization of the Mentally Retarded in GENETICS AND THE LAW* 267 (A. Milunsky & G. Annas eds. 1976).
283. *Id.*
See generally J. RAWLS, *A THEORY OF JUSTICE* (1971). Compare Michelman, *In Pursuit of Constitutional Welfare Rights: One View of Rawls' Theory of Justice*, 121 *U. PA. L. REV.* 962, 989

(1973).

284. *Comment, supra* note 280, at 303.

285. *Id.* *Parham v. J.R.*, 442 U.S. 584, 607-10 (1979).

CHAPTER 6

A COMPASSIONATE DEATH

The Eighth Amendment to the Constitution prohibits cruel and unusual punishment being administered to prisoners.¹ This prohibition originated in Magna Carta and was carried through in the English Declaration of Rights of 1688 and was later adopted as part of the American Bill of Rights.² While the Eighth Amendment has been used only in the context of criminal incarceration, it has contemporary or expanded relevance to the issue of determining when in providing medically futile treatment, it results in cruel and unusual punishment to a patient.

Historically, a prisoner did not have rights and was once considered a “slave of the state.”³ This is analogous to the paternalistic role played by physicians until recent years where the patient merely followed doctor’s orders with very little recourse if the patient objected to or disagreed with the prescribed treatment. Initially, the Eighth Amendment served only to bar torture and barbarous methods of execution.⁴ It is also similar to the view that the doctrine of futility should only be used to prevent treatment that can only harm the patient. The early interpretation of the Eighth Amendment and this limited use of futility did not protect sufficiently prisoners and patients. Over a span of ninety-five years, the Supreme Court expanded prisoners’ protection under the Eighth Amendment.⁵

From an international law perspective, the extended administration of futile medical treatment also, arguably, comes within the meaning of The United Nation’s Convention Against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment—with torture being defined as “any act, causing severe mental or physical pain or suffering, intentionally inflicted upon a person”⁶ Such actions would be—additionally—violative of the United Nation’s Declaration of Human Rights for they would rob the dying patient of the “inherent dignity” granted to “all members of the human family.”⁷

As early as 1890, the United States Supreme Court held in the case of *In re Kemmler* that prisoners could not be subjected to punishment which subjected them to “torture or a lingering death.”⁸ Twenty years later, the Court declared that “unnecessary and wanton infliction of pain was also proscribed by the Eighth Amendment.”⁹ In 1958, Chief Justice Earl Warren, writing for the plurality in *Trop v. Dulles*, presented a contemporary interpretive gloss for claims here by stating the relevance of the Eighth Amendment “must draw its meaning from the evolving standards of decency that mark the progress of a maturing society.”¹⁰ It had been held previously that acts which shock the general conscience or are thought to be intolerable to notions of fairness were violative of the Amendment’s guarantees.¹¹

Twentieth century court holdings have sought to restrict the length and character of sentences under the Eighth Amendment.¹² With the case of *Wilson v. Seiter* in 1991, Justice Antonin Scalia, writing for the majority, sought to structure a two part inquiry for challenges to the Amendment by stating there must be first an objective inquiry into the “seriousness” of the alleged conduct or omission and then a subjective one made regarding the state of mind of the responsible person officially charged with violating Eighth Amendment protections.¹³ The baseline standard for the objective inquiry is to be the “minimal civilized measure of life’s necessities.”¹⁴ More specifically on the issue of the standard of medical care to be provided within a prison, the court has required petitioners to allege and prove that acts or omissions are sufficiently harmful to show a deliberate indifference to serious medical needs—with the level of indifference being of such a degree that offends evolving standards of decency.¹⁵

Contemporary Medico-Legal Applications

Several factors dictate that administering futile treatment is “cruel and unusual” within the society’s evolving standards of decency. If a physician treats a patient when the physician knows that such treatment is futile, the physician implies that there is a possibility, if not a likelihood, that such treatment will be effective. In this case, the physician is knowingly deceiving the patient by offering both him and his family false expectations of recovery; and this deception violates clearly the principle of self-determination or autonomy for the patient himself.

The primary obligation of health care providers is to “Do no harm.”¹⁶ Thus, physicians must—stated simply—minimize or prevent mental and physical suffering—for such is harmful to patients. They must endeavor to demonstrate levels of compassion which check or counter an all too pervasive indifference within the medical profession itself to allow terminally ill patient to die lingering deaths; deaths the manner of which defy the minimally civilized goal of all individuals to die with humanness and dignity. What real value is there to pain management if death is imminent and the added days of life provided are of inferior quality?¹⁷ Indeed, physicians are under a moral obligation to neither offer nor provide treatments considered unnecessary—especially those taken to be futile. Economic reasoning here, while important, is not determinative. Rather, it is morally wrong as well to administer unnecessary treatment simply because such actions violate the obligatory canons of good medicine in that they not only impose unnecessary costs without reason but expose patients to a level of risk-taking which is without proportional benefits.¹⁸

Administering futile treatment ignores this primary obligation by exposing the patient to additional risks of that treatment. If a physician prescribed a course of treatment knowing that it was futile, he would be needlessly exposing the patient to additional risks associated with the treatment such as infection, adverse reaction, etc. Even if the futile treatment did not adversely effect the patient, the mere exposure to the risk is cruelty. Moreover, some interventions such as cardiopulmonary resuscitation (CPR) inflict severe physical trauma.¹⁹

Administering CPR when there is no medically reasonable chance that the patient will recover from the underlying illness amounts to knowing physical torture. For these reasons, the physicians should be under a duty not to administer futile treatment because by doing so they are inflicting “cruel and unusual punishment” on the patients and his family.

It is similarly cruel and unusual punishment to sustain patients who exist in a persistent vegetative state. This is equivalent to giving a life sentence to an innocent person. The remedy for this sentence, however, is not an executive pardon but rather, a death sentence (*i.e.*, the physicians should withdraw treatment that merely maintains the unconscious nonsapient condition). When the diagnosis is persistent vegetative state there is agreement among physicians that such a condition is not “living” and that preservation on “life” in that state is not a proper goal for medicine.²⁰ This is supported by the “traditional and modern view that expert physicians should not prescribe therapies which cannot restore health to a dying person”²¹ and all medical decision making should have as its goal the benefit of the human person.²² Clearly, physicians have no duty to preserve mere biological “existence” *per se*.²³

Wanton Acts Freakishly Imposed

In 1975, the Supreme Court held in *Gregg v. Georgia* that “Death as a punishment is unique in its severity and irrevocability. . . . The Eighth and Fourteenth Amendment cannot tolerate the infliction of sentence of death. . . . to be wantonly and freakishly imposed.”²⁴ All too often, as a “benefit” of advances in medical technology, the prolongation of non-sapient “life” becomes truly a kind of unjust punishment which may be viewed realistically as grossly disproportionate to the ideal of a good and dignified death that all seek.²⁵ And, sadly, this extension of life is imposed and dictated all too frequently under freakish conditions in a medical hospital—which for all intents and purposes—is but little more than a prison. The futile maintenance of “life” under artificial conditions of this nature more often than not offends human dignity and “transgresses...civilized standards of humanity and decency.”²⁶

While technology has given the health care profession a vast ability to preserve the existence of life, the ability to preserve and restore cognitive, sapient life pales in comparison.²⁷ Ignoring the considerations of the latter would mean that there is “no real difference between medicine and horticulture.”²⁸ Sustaining persons in a persistent vegetative state and other terminal conditions is worse than horticulture, it is cruel to the patient because it denies the patient the right to die with dignity and cruel to the family because of the emotional and financial drain.²⁹

In a decision issued by the Supreme Court of Canada on September 30, 1993, it was held a forty-two year old woman suffering from amyotrophic lateral sclerosis (Lou Gehrig’s disease) could not, under Canadian law, have medical assistance to install an intravenous line containing an effective agent that—at the appropriate time—could be activated by the petitioner thus ending her life. Among the arguments made to sustain the appeal from the lower court’s adverse finding was

that Section 12 of The Canadian Charter of Rights and Freedoms accorded all citizens a right not to subject to any cruel and unusual punishment. While conceding “treatment” by the state may include acts other than those of a penal or quasi penal nature, Justice Sopinka, writing for the majority, held that a state prohibition (as here, against assisted suicide) could not constitute “treatment” within the context of Section 12 of The Charter. In order for the state action to constitute “treatment,” it must involve an active state process “involving and exercise of state control over the individual.” Simply because a particular state prohibition impacts negatively upon an individual and causes suffering does not subject such a person to “treatment” by the state. “The starving person who is prohibited by threat of criminal sanction from ‘stealing a mouthful of bread’ is likewise not subjected to ‘treatment’ within the meaning of Section 12. . . .”³⁰

On April 29, 2002, the European Court of Human Rights held that—under the European Convention on Human Rights—no right to assisted suicide is recognized.³¹ Diane Pretty, a 43-year-old United Kingdom national, paralyzed and suffering from motor neurone disease, a degenerative incurable illness, sought an immunity from prosecution to her husband if he assisted her in committing suicide. She also sought to have the prohibition in domestic law on assisted suicide (as a crime punishable by up to 14 years in prison) invalidated because of its infringement upon her rights under the European Convention which is incorporated in the United Kingdom by the Human Rights Act of 1998.³² Previously, the appeal from the Divisional Court’s refusal of Mrs. Pretty’s application was disallowed by the House of Lords.³³

Pretty was not dissimilar to the situation in the Rodriguez case—for both test the principle of personal autonomy as it shapes and validates the right of individuals to make choices about their bodies. While sympathetic to the concerns of Mrs. Pretty that the domestic law of Britain prevents her from exercising her choice to avoid what to her is seen as an undignified and distressing conclusion to her life, the European Court concluded nonetheless—as was seen did the Canadian Supreme Court in Rodriguez, and the House of Lords in Pretty—that neither the Human Rights Convention was violated nor was the British Suicide Act of 1961 making it a crime to assist another to commit suicide illegal.³⁴

The European Court acknowledged the essence of the Human Rights Convention was respect for human dignity and human freedom. Yet, it was unwilling to conclude that Britain’s domestic law was an improper exercise in regulating, through the criminal law, activities deemed detrimental to both the life and safety of society. Referencing specifically Article 8, § 1 of the Convention protection of “private and family life” and forbidding state interference with the exercise of this right, the Court held that the right relates to the way in which one conducts his life—not the manner of his departure from it.³⁵ Interpreting the guarantee of “private life” to accommodate Mrs. Pretty would—the Court opined—present too many cases for exceptions which, in turn, would allow or general abuse of the safeguards for life of the weak and vulnerable. It was because of the concern for the “vulnerability of the class” that Mrs. Pretty was denied an individual right to have assistance in ending her life.³⁶

Had Mrs. Pretty been on life-supporting equipment, she would have been entitled legally to refuse such treatment. Indeed, by making her plight so public, Mrs. Pretty made what could have been a discrete act of humanness (done commonly in hospitals) by administering terminal sedation, an impossibility. Under the Principle of Double Effect, certain medical actions indirectly producing certain negative consequences (here, death) are justified when—among other things—there is a proportionate reason for action.³⁷ Since Mrs. Pretty's medical condition was futile, utilization of the Principle would have been justified. As well, if she and her family had chosen to seek assistance for her death outside the medical system, sufficient public information is available freely which enumerates various procedures for effecting this end.³⁸ Again, by being so public, she almost assured an invasion of her familial privacy with a police investigation if her death had been assisted quietly at home.³⁹

One month before the Pretty case opinion was issued by the European Court, in another related landmark case from Britain's High Court, Dame Elizabeth Butler-Sloss held on March 22, 2002, that a 43-year-old tetraplegic woman—identified as B—had an individual right to withdraw life sustaining ventilator treatment. B argued that, as a competent individual, she could make her autonomous choice regarding the discontinuance of her health care treatment. Continued treatment at an intensive care unit would, as such, be an unlawful trespass. The court held that she indeed had the necessary mental capacity to refuse further medical treatment and, furthermore, was entitled to nominal damage for the unlawful trespass committed against her over seven months. Dame Elizabeth acknowledged the case was about “choice” and the right of all patients with capacity—regardless of the severity of physical disability—to accept or forego medical treatment. She found support for this right in “the Human Rights Act which enshrines our right to respect for private life and the prohibition of degrading treatment.”⁴⁰

In *Rodriguez, Pretty and B*, all three plaintiffs were competent and thus able—in the first instance—to refuse life sustaining medical treatment. The central difference among the parties was that B—acting through her agents, the health care providers—could order an omission of treatment thus “permitting” death to occur ultimately in a passive manner. With *Rodriguez* and *Pretty*, direct assistance was needed to “cause” their death. All three of the individuals required assistance to effect their wishes and all three was classified properly as medically futile cases. Yet, for one, the action is a treatment decision and for the other two, the assistance is viewed as actions facilitating suicide. The legal and philosophical subtleties (and inconsistencies) in this line of reasoning will be explored subsequently.⁴¹

Assistance at the end-of-life always forces—inevitably—a consideration of whether such actions promote or advance suicide, assisted suicide or euthanasia. Accordingly, when any critical analysis of this topic is undertaken, two sets of arguments are propounded: the theological and deontological.⁴²

Teleological and Deontological Arguments Regarding Suicide

In essence, there are two sets of arguments propounded when any critical analysis of suicide is undertaken: the teleological and the deontological. The teleological arguments—or arguments *against* suicide—are grounded in a simple syllogism:

1. Actions that tend to maximize good are right and those that tend to evil are wrong.
2. Suicide is an action that tends to maximize evil.
3. Therefore, suicide is wrong.⁴³

It is readily seen that while each of the three arguments assert suicide tends to maximize evil and is thus wrong, they differ not only in the definition of evil but in the scope of the consequences considered therefrom. Each of the arguments also differ regarding what good or goods are the more decisive.⁴⁴ In order to determine the significance of the goods, they must be weighed or balanced according to a hierarchical value system that measures their significance in each case under consideration.⁴⁵

The central teleological argument is that suicide is an act resulting in external damnation.⁴⁶ To sustain the intellectual validity of this supposition another syllogism is structured which asserts:

1. The deity is displeased by heinous acts that result in eternal damnation.
2. Without question, suicide is a heinous act.
3. Therefore, the deity is displeased by such acts of suicide that result in eternal damnation.⁴⁷

The fatal flaw in this argument is that there is no verifiable evidence that suicide is either damnable or displeasing to the deity.⁴⁸ Since neither the Old nor the New Testament explicitly condemns suicide,⁴⁹ for it to be taken as a heinous act, substantiation of this fact must derive from the Sixth Commandment—“Thou shalt not kill.” Yet, by way of reply, one could assert simply that it is quite an arbitrary posture to assume, without more, that this was the full import of this Commandment.⁵⁰

A second and far more compelling argument against suicide is presented when it is asserted that the act, itself, is harmful to both family and friends.⁵¹ If familial and collegial relations are so significant to the efficacy of this argument, if one had neither family nor friends, the act would be without criticism.⁵² If negative consequences flowing from an act of suicide to family and friends are the pivotal issues of the act’s rightness or wrongness, “suicide would be right (and possibly even mandatory) if it would benefit one’s family and friends rather than burden them!”⁵³ A balancing mechanism might well have to be employed that would attempt to weigh the pain caused both the family and the friends of the suicide

against the possible benefits to them as well as the possible benefits accruing to others and to the society at large.⁵⁴

Suppose, for example, that an individual is suffering with an incurable disease and that the costs of his maintenance are considerable. While his family may not want him to die and his suicide might well cause them considerable pain and anguish, his suicide could also benefit other hospital patients needing the hospital resources allocated currently to his care. An argument could thus be made that in order to decide whether an act of suicide maximizes evil or—contrariwise—maximizes good, the consequences to a wider range of persons and a wider range of goods must be considered. Accordingly, it is submitted that where an act of suicide produces more good than evil for the whole society, it would be right and proper and not wrong.⁵⁵

Since suicide is a form of killing human life, it is arguable that it is morally similar to all other forms of killing human life and—furthermore—to either allow or condone it paves the way to the use of not only voluntary and involuntary euthanasia and infanticide, but other forms of destroying human life that might, under a given set of circumstances, be considered undesirable.⁵⁶

To refute this position merely involves an understanding that suicide is the *voluntary* taking of *one's own life*, while infanticide is the *involuntary* taking of *another's life*. Thus, allowing suicide would not by any means establish an infanticide precedent. As to voluntary euthanasia—regarded as a type of “assisted” suicide—an argument could be maintained “that the involvement of another agent is morally relevant, and thus that allowing suicide would not establish a precedent for voluntary euthanasia.”⁵⁷

Acknowledging that the suicide of an eighty year old woman in ill health is morally permissible would not necessarily establish a precedent for allowing the suicide of a twenty year old healthy woman. It might well set a precedent for allowing suicide in similar elderly people suffering from ill health. It should be stressed, however, that not only are an individual's life *circumstances* morally relevant, but the *reasoning* advanced in support of an action is equally significant for the establishment of a precedent.⁵⁸

In sum, it is seen that on the basis of teleological reasoning it is improper to conclude that suicide is—in all cases—*wrong*. Under this basis of analysis, where an act of suicide results in more good than harm, it is right and not wrong.⁵⁹

Deontological arguments have their bases not in assertions that suicide is wrong because it produces adverse consequences, but—rather—because the very act not only violates and degrades both the meaning and purpose of human life but destroys the very dignity of human nature.⁶⁰ Thus, the results of the action do not make it wrong, but rather something inherent in its nature. It is far beyond the purpose of this analysis to probe exhaustively the philosophical and ethical underpinnings of these deontological arguments against suicide—many of which duplicate and overlap. Suffice to mention in passing the major ones and select several for more probing consideration.

Suicide, it is argued, is unnatural and cowardly for it runs counter to the dignity of the person.⁶¹ This in turn draws upon the Kantian thesis that all persons

are ends in and of themselves and are held accountable to an absolute and universally applicable set of moral values and standards.⁶² These moral arguments can be questioned as essentially but a series of unproven assumptions regarding the moral structure of the universe, the value of individual life as well as about refusals to take risks. These arguments are coupled with yet a further assumption of dubious generality: namely, that it is always wiser to err on the side of quantitative life than one standards of qualitative living.⁶³

To judge suicide as a cowardly act is to, in reality, judge the actor's character—and not the action itself. An assessment of the character of the actor would only be relevant to judgments concerning moral *blameworthiness*, or when to assign blame or guilt, but not the *rightness* of an act.⁶⁴

An act may be wrong but the actor blameworthy—for example, if there is some excusing condition or extenuating circumstance to explain why the actor did what she did. The assessment that an act was done out of cowardice does not, therefore, render the act wrong.⁶⁵

Suicide is regarded as wrong, intrinsically, because it is an irrevocable act that prevents an individual's future quest for happiness.⁶⁶ This argument is obviously highly paternalistic and seeks to protect the long-term best interests of the at-risk individual,⁶⁷ and at the same time make an obviously premature or futuristic judgment about an individual's pursuit and obstinance of communal happiness over the long run. The future state of an individual's action is purely speculative at best.

Indeed, since every action is based on an evaluation of certain probabilities that in turn foreclose future possibilities of one sort or another, this is an insufficient basis for suggesting a particular course of action should never be undertaken.⁶⁸

It is argued that as a gift from God—life cannot be disposed of by humans, for suicide violates the commandment not to kill.⁶⁹ Since life *and* human freedom are coequal gifts from God, lacking specific injunctions regarding the use of these gifts, “it is not clear that the giftedness of life *per se* constitutes an argument against suicide.”⁷⁰ An unconventional approach to the “giftedness of life” argument would mandate no human intervention be taken at all throughout life—either to destroy or save it.⁷¹ As to the biblical commandment argument, sophisticated biblical scholars are in agreement that the commandment not to kill should be interpreted as, “Thou shalt do no murder”—with “murder” being interpreted as not mere killing but wrongful killing.⁷² Construed thusly, the controlling question is whether suicide is considered, under the individual facts of each case, murder, (*e.g.*, self murder) or wrongful killing.⁷³

Finally, the deontologist argues that suicide is wrong because it is a renunciation of one's duty to himself to preserve his own life⁷⁴ and against a general duty to preserve life.⁷⁵ As to this Kantian assertion of a personal duty to oneself, it is suggested that a less cumbersome way of approaching this argument is to posture a re-definition of the concept of duty. Thus, those things which we have tended to call duties *to* oneself may actually be duties to others *regarding* oneself.⁷⁶ Accordingly, one may owe a duty to others to preserve his life, especially if he is

the sole financial support of a family unit, but not a personal duty to self preserve it.⁷⁷ With this re-interpretation, what is seen then is that this so-called duty to preserve one's life is more properly viewed as a general duty to mankind as a whole.⁷⁸

This interpretation thus leads to the last argument that holds suicide is prohibitive because it derives from this generalized social duty.⁷⁹ Accordingly, the view taken here is that suicide is wrong because—quite simply—it violates the principle of the sanctity or sacredness of all human life that holds life should never be taken directly by one's own actions or by others.⁸⁰ To adhere, logically, to such a position requires an opposition to *all* forms of destruction of human life, including capital punishment and “just” wars.⁸¹ Interestingly, no such exceptionless stand is taken by most opponents of suicide.⁸² “Unless the destruction of human life is to be condemned altogether, any principle by which some destruction of human life is permitted is likely to make room for at least some cases of suicide.”⁸³

What escapes the persuasiveness of the deontological and teleological arguments is that they neglect to recognize that as rational free moral agents, individuals should be respected in whatever choice of action they pursue in order to give their life meaning and substance—so long as that choice does not compromise the freedom of others. Regarding suicide, when individuals have chosen rationally to take their own lives—or in other words without coercion or under mental duress—and there are no overriding or contrary social-moral duties blocking this exercise of autonomy, they should be permitted to take their own lives without being censured or prohibited from exercising a morally “wrong” act. To posture this, does not mean that one is always *justified* morally in so acting. What it means is that one has a right to take his life “until a contravening moral obligation obtains.”⁸⁴

No doubt the most convincing reason against a recognition or condonation of suicide is that it comprises “certain *prima facie* duties of covenant fidelity—such as gratitude, promise-keeping, and reparations,” one is thought of as owing to his family unit.⁸⁵ Again, in cases where there is no immediate family unit—parents, brothers and sisters, wife or children—it could be argued that such covenant duties are therefore non-existent and not binding on acts of self determination such as suicide. What is seen in the final analysis, then, is that the root question of suicide or its “rightness” is tied to one of distributive justice—and, more specifically, of the achievement of a *balance* between the benefits of an individual's exercise of self-determination and personal good or satisfaction against the burdens, social obligations or claims of others that militate against such an act.⁸⁶

Objections to the Use of Euthanasia

The central objections to the use of euthanasia parallel—to a very great degree—those raised regarding suicide. There are certain refinements that bear further analysis, however.

While recognizing the fact that death is not the greatest of all evils and that at some point in time “extreme measures of resistance are neither necessary nor

appropriate,”⁸⁷ the concern has been expressed that increased interest and discussion of euthanasia is but a sad reflection of a spiritually bankrupt society.⁸⁸ What has been termed as a “contraceptive mentality,” conditions the members of modern society to view life that is inconvenient as of no value and to seek its end through a merciful release.⁸⁹ Thus, human choice is given greater purpose and direction than divine planning.⁹⁰ Stated otherwise, terminating life is violating God’s property rights! Terming this objection as a form of “religious, biologicistic determinism,” that holds that organic collapse—or deterioration of the body and its processes—is the manner through which the will of God is manifested, would—taken to its logical extreme—paralyze the practice of medicine since, for example, by prescribing medicine, man’s death is postponed.⁹¹

Men who believe that God’s will is manifested through the physical facts and events of life would have to sit back and await the good pleasure of nature. All efforts to step in and take over by reshaping the earth in accord with our designs would be blasphemous. . . . The mentality of this objection is utterly at odds with genuine Christian theology. According to the Christian view, man is created in the image of the creator God. He is thus himself commissioned to creativity, a co-creator with God. . . . He is not a pawn of the earth’s forces, but a participator in God’s providence. . . . This, of course, is not to say that Christian theology is committed to death by choice. It is, however, to say that the presuppositions of the “playing God” objection are not Christian. . . .⁹²

The Domino Theory or, never-forget-the-ghost-of-Nazi-Germany-and-the-Holocaust, cautions that legalization of voluntary euthanasia would be but the first move to not only mass euthanasia but to genocide.⁹³ Fear, rather than rationality, is the operative force here.

The differences between contemporary American society and those of Nazi Germany are of such dramatic significance that a simple and humane acceptance of voluntary euthanasia could never become the small beginning or wedge for a mass, and indiscriminate use of the act, itself. Several points substantiate this conclusion. First, the idea or principle of individual human rights—so inherent in modern society—had no place at all in Nazi Germany.⁹⁴ “Mercy killing for the benefit of the patient was not the point in Germany,” and was rejected. People were killed because their life was deemed to be of no value to the German society.⁹⁵ The forced homogeneity of the Nazi society does not exist in America today.⁹⁶ Indeed, various conflicting cultures both validate and strengthen pluralistic values.⁹⁷ Thus, before death by choice could ever become a national policy, extensive debate would be undertaken.⁹⁸ The Nazi experience has been so engrafted on the consciousness of contemporary society that this “deeply ingrained knowledge of human wickedness” serves as a strong symbol of a national resolve to exercise extreme caution in approaching and resolving issues of human, fundamental rights.⁹⁹

Other salient concerns tie to the fact that if voluntary euthanasia were accepted, physicians would be but tools or servants to their patient’s desire to end their lives;¹⁰⁰ that the possibility of an erroneous diagnosis of a patient’s condition may

mean a premature if not needless death;¹⁰¹ that since modern pain relieving drugs mean an almost total elimination of pain (believed, by many, to be the worst aspect of dying), euthanasia should not be performed *carte blanche*;¹⁰² and, finally, that the hope of a new medical discovery or surgical technique that would assist the incurable patient would be forthcoming.¹⁰³

It is very difficult to imagine—short of financial coercion—how a physician would succumb to a non-terminal patient’s direction to administer euthanasia on demand. As structured presently, the ever-knowing fear of criminal prosecution for homicide or manslaughter would surely be a severe deterrent.¹⁰⁴ That, plus professional censure, would hold in check the “mad” physician who might seek to hire himself out as a doctor of death.¹⁰⁵ Erroneous diagnoses may be avoided by having a requirement enforced that directs an euthanee to be examined, and his prognosis confirmed by a panel of physicians.¹⁰⁶ Although drugs are available to neutralize pain for most diseases (cancer of the throat and emphysema being notable exceptions), not only does the use suffer the problems of addiction but—more importantly—harsh side effects to the usage such as unremitting vomiting, nausea and semi-consciousness.

The Principle of Double Effect

The principle of Indirect or Double Effect, one of the basic principles of Catholic medical ethics,¹⁰⁷ and one also intuited by many others not necessarily members of the Roman Church, is best tested and seen in context when, for example, the administration of a potentially lethal narcotic which would relieve the intractable pain of a cancer patient is considered in some very different—morally—than from a knowing act that would murder the very same patient.¹⁰⁸

The principle is intended to provide a halfway ground between a straightforward utilitarianism, which would simply consider the relative weights of the good and bad consequences of an action in order to make a moral judgment of it, and a variety of sterner moral positions, which would either deny the moral relevance of consequences to actions altogether or would judge immoral any action with bad consequences, no matter what other good consequences it had.¹⁰⁹

The net result of recognizing and applying the Principle of Double Effect is that certain actions *indirectly* producing certain evil consequences are justified—so long as four conditions are met: the action undertaken, independent of its effect, must not itself be held inherently to be morally evil; the evil effect must not be utilized as a means to produce the good effect; the evil effect is merely tolerated and not sincerely intended and, finally, regardless of its evil consequences, there is a proportionate reason for undertaking the action.¹¹⁰ Utilization of this principle provides the justification, for example, of removing a cancerous fetus-bearing uterus and the administration of pain-relieving narcotics that may—in turn—produce

respiratory depression.¹¹¹ The Principle's legitimacy has been attacked, alternatively, because it leads to discriminations that are wrongful by excusing acts (or thought to be killings, by some) it should not and forbidding other such acts it should allow.¹¹²

A principle of such ambivalence is open to these and other logical deficiencies. It has been suggested however, that its validation is recognized because of its "psychological validity."¹¹³ Amplification of the initial hypothetical introducing the cancer patient will bring into focus this point more clearly.

Faced with a patient's intolerable pain and his pleas for relief that cannot be mitigated by lesser doses of non-lethal drugs, a physician chooses to administer a dose of an analgesic that will likely cause death. A crucial contrast is then undertaken between the attitude and the manner that the motive for relieving pain engenders compared with attitudes and manner pursued when a premeditated act to kill is pursued.¹¹⁴

If the purpose explicitly were to kill, would there not be profound difference in the very way one would grasp the syringe, the look in the eye the words that might be spoken or withheld, those subtle admixtures of fear and hope that haunt the death-bed scene? And would not the consequences of the difference be compounded almost geometrically at least for the physician as he killed one such patient after another? And what of the repercussions of the difference on the nurses and hospital attendants? How long would the quality and attitude of mercy survive death-intending conduct? The line between the civilized and savage in men is fine enough without jeopardizing it by euthanasia. History teaches the line is maintainable under the principle of double effect; it might well not be under a regime of direct intentional killing.¹¹⁵

Whether the lessons of history substantiate the alleged "psychological validity" of the principle and establish that it is efficacious—that it merits its ready use and retention—seem dubious, at best. Rather than continue to enshrine and awkward concept, it should be replaced by the relatively simple and enduring standard of what is, under a given set of facts, *reasonable*. Guided or supported by the principle of *triage* and a consideration of what actions are in the best interests of the at-risk patient, a cost/benefit analysis should be undertaken in order to decide whether one modality of treatment or non-treatment should be pursued.¹¹⁶ Thus, reasonable, humane and cost-effective actions should be both the procedure utilized and the goal sought here.

The intensive care unit found within the average hospital in the United States not only seeks to treat and to return patients suffering from serious injuries or acute diseases to their original working or stabilized environments but also to serve as a sophisticated, state-of-the-art hospice.¹¹⁷ Even when there is no hope of recovery, studies have shown that approximately nineteen percent of patients in ICU's are nonetheless admitted and stay.¹¹⁸ It would seem to be a reasonable and sensible idea for at-risk patients to decide not to be treated in an intensive care unit; this choice not being made necessarily with the idea of dying sooner, but rather with the

view in mind that access to family and friends will be more easily facilitated as well as family and social economic resources conserved.¹¹⁹

Choices of this nature should not be confused or tied to the Principle of Double Effect. Rather, when tragic choices are simply not between different chances of survival with different treatments but only between extending the process of suffering and death or shortening it, the principle has little pertinence or significance.¹²⁰ Patients may very well sensibly decide to forego treatment or ICU care so that they may in fact finally die and end their travail. They may directly *will* their deaths and thus within one strict interpretation of moral theory, commit suicide passively.¹²¹

Legal Distinctions

The legal distinction between acts and omission is made thusly:

In the determination of the existence of a duty, there runs through much of the law a distinction between action and inaction. . . . There arose very early a difference, still deeply rooted in the law of negligence, between 'misfeasance' and 'nonfeasance'—that is to say between active misconduct working positive injury to others and passive inaction or a failure to take steps to protect them from harm. The reason for the distinction may be said to lie in the fact that by 'misfeasance' the defendant has created a new risk of harm to the plaintiff, while by 'nonfeasance' he has at least made his situation no worse, and has merely failed to benefit him by interfering in his affairs. . . .

Liability for 'misfeasance' . . . may extend to any person to whom harm may reasonably be anticipated as a result of the defendant's conduct, or perhaps even beyond; while for 'nonfeasance' it is necessary to find some definite relation between the parties, of such a character that social duty justifies the imposition of a duty to act.¹²²

It is argued, accordingly, that the distinction between assisting with the death of a patient and allowing him to die has a distinct parallel within the American legal system itself by the ways in which culpability is assigned for either "causing" or "permitting" harm to be inflicted upon others.¹²³ For, in those instances where an act can be found that caused a wrong or harm, once the agent who has brought about the harm is identified, liability is assessed.¹²⁴ Interestingly, with cases of omission, however, liability will not be imposed unless a "relationship" between the parties is established.¹²⁵

The act of turning off an artificial respirator in use by a patient may be classified traditionally as either an act of commission or an act of omission.¹²⁶ Though a distinction may not be drawn easily here—because either action stems through the activity—the physician, if found to have committed an affirmative act of commission, may be held liable for murdering the patient.¹²⁷ Crucial to the determination of the nature of the action would be a characterization of whether the act, itself, caused life to be terminated or was more properly considered as an

omission to render aid to sustain life—thus permitting it to end. The operative verbs here are “caused” and “permitting.”¹²⁸ In “acting” or “causing,” an act of intercession is made to terminate life; while with acts of “omitting” or “permitting,” a simple failure to intercede in a course of action to preserve life is recognized with the end-result that death is permitted to occur.¹²⁹ In determining legally whether the act of turning off a hypothetical respirator is one of commission or omission, consideration must also be given to the very doctor-patient relationship (as opposed to a non-associated one), patient reliance, and reasonable exception as well as the actual physical act of turning off the respirator, itself, and the circumstances surrounding it.¹³⁰

It could be argued that the most crucial of all elements—motive—is the testing rod in aiding a determination of whether acts are those of commission or omission.¹³¹ Accordingly, a deliberate act of killing—but one not done with a particularized motive or evil will—that is designed to allow the ending of life for a terminally ill patient and thus thereby relieve a life of suffering, should *not* be classified as murder.¹³² Inasmuch as no personal gain or good inures to the actor—but rather to the recipient of the immediate action—this would be another reason not to recognize the act as murder.¹³³ Noble intentions, however, are not always exculpatory. For example, if one subscribed to the belief of metempsychosis and decided to hasten another along toward the road to ultimate perfection before he became either tempted or corrupted with moral guilt, this act would be held surely to be murder.¹³⁴

Under one line of philosophical reasoning, acquiescing to a request for murder made by one fully conscious, who for physical or psychological reasons finds life unbearable and finds no other act suitable to bring a resolution to the quandary would *not* be an act of murder; homicide, rather obviously. But, for a murder to be committed, there must be an infringement of rights. Here is seen but a simple and volitional release of the right to life.¹³⁵

... if something is a right at all, then it can be given up; just as a gift, if it is a gift, can be renounced. Therefore, in cases where the quality of life has reached a certain subjective minimum, the individual has a right to give up that life, to request euthanasia. Consequently, in such cases euthanasia would be morally acceptable.¹³⁶

Fr. John F. Kavanaugh, a Jesuit, cautions that general moral principles should be understood as always prohibiting a presumption of evil intent. Accordingly, it is incorrect to assume a physician’s actions in recommending the withdrawal of medical treatment are tantamount to an intentional killing of his patient. “Those who equate withdrawal of treatment with intentional killing misunderstand health care and caregivers” and, further, distort moral reasoning altogether.¹³⁷ Prudential medical judgment is both the *modus operandi* and the goal for achieving a compassionate death.¹³⁸

Toward a Working Definition of Futility

In the United States, approximately 1.6 million persons die in hospitals or long term care facilities each year and approximately 70 percent of those die as a result of someone's decision to withdraw or withhold life sustaining treatment.¹³⁹ Physicians often make these decisions without clear guidelines and without informing the patient or family.¹⁴⁰ As a result, extraneous factors such as race, wealth, gender, and age of the patient, as well as judgments on the quality of the patient's life and concerns with cost containment, may cloud the physician's determination to withhold or withdraw treatment.¹⁴¹ A clear working definition of futility is needed so that physicians can not only inform patients and families treatment is being withdrawn, but allow the patients and families to have objective criteria against which they may judge the medical decision to withhold or withdraw life-sustaining treatment, and thereby provide courts with a standard by which they may judge the physicians action in the context of civil, or even criminal, law.¹⁴²

Common Understandings and Clinical Uses

While the word, futility, may be understood generally as denoting useless, ineffectual actions lacking in purpose,¹⁴³ in the profession of medicine, common understandings of the word are missing. Indeed, more often than not, four *uses* of futility are posited by way of explaining the term and thereby crafting working definitions.¹⁴⁴ Even though definitional problems exist, it is recognized, when a medical treatment or intervention is deemed futile, the physician is freed from the moral and the legal duty to provide it.¹⁴⁵

The four clinical uses of futility are recognized as being: when a cure is physiologically impossible;¹⁴⁶ when the treatment is non-beneficial, or unlikely to produce a desired benefit,¹⁴⁷ and—finally—describing a course of treatment that is plausible but not yet validated.¹⁴⁸

Physiologically Impossible

The following definition of futility adopts the “physiologically impossible” use of the term. A treatment is futile only “when the patient is moribund and will die within hours or days regardless of treatment given.”¹⁴⁹ This definition is clearly inadequate. While it is not difficult to justify a decision to withhold or withdraw treatment on such grounds, it is far too narrow and does not cover many situations where withholding or withdrawing care on the ground of futility would be justifiable. It only bars treatment when all treatment will undoubtedly fail; it is too narrow to permit withholding or withdrawing treatment from a body doomed to existence in a persistent vegetative state. For these reasons the physiologically impossible use of the futility is inadequate.

Nonbeneficial or Unlikely to Produce a Benefit

The second and third uses of futility in the medical profession, that the treatment is futile if it is nonbeneficial or that it is unlikely to produce a desired benefit, acknowledge the difference between *effect* and *benefit*. The goal of medicine is to benefit the patient, not merely to affect him physiologically.¹⁵⁰ “Physicians should distinguish between an effect, which is limited to some part of the patient’s body, and a benefit, which the patient has the capacity to appreciate and which improves the patient as a whole.”¹⁵¹ For example, nutritional support could have the *effect* of preserving a host of organ systems in a patient in persistent vegetative state, but fail to *benefit* the patient because this treatment could not restore the patient to a conscious and sapient state.¹⁵² Another example that demonstrates the point more explicitly is when a doctor refuses to honor a patient’s demand that he be given a blood transfusion for a simple cold. While the transfusion would certainly have a physiological effect on the patient’s body, it would not cure his cold and, therefore, the blood transfusion would not offer him any benefit. Thus, within this framework a treatment that does not offer the patient a benefit, regardless of whether it affects the body, should be withheld on the grounds of futility.

When using this distinction between effect and benefit, it is important to note that giving comfort and palliative care to patients for whom there is no possibility of recovery is beneficial and should not be withheld as futile unless such treatment in fact does not comfort or alleviate pain.¹⁵³ Palliative care does not seek to cure a person’s ailment or reverse a terminal prognosis. However, palliative care offers the benefit of alleviating or moderating the patient’s pain or discomfort and allows the patient to live out his remaining time in dignity.

The two uses for futility just cited share the same goal of withholding treatment when there is no benefit. Nonetheless, there are differences worth noting. Withholding treatment on the grounds of futility when the treatment is nonbeneficial is another way of phrasing the physician’s duty not to prescribe treatment that will harm the patient. No balancing is involved—there is merely a prohibition against prescribing harmful treatment.

When the physician wishes to withhold treatment on the ground of futility because the treatment is very unlikely to produce a desired benefit, however, the physician must balance the possible harm against the possible good.¹⁵⁴ The factors in the balance will not be logical absolutes but rather statistical probabilities of success or harm derived through experimentation and analysis of hospital data.¹⁵⁵ “Futility refers to an expression of success that is neither predictably or empirically so unlikely that its exact probability is often incalculable.”¹⁵⁶ Medicine is a science but not an exact science. Thus, by limiting futility to instances when it can be stated to a logical certainty that the treatment will be more harmful than beneficial would restrict unduly its usefulness.

Plausible But Not Validated Treatment

The last use of futility describes the situation when the treatment has not been validated as an appropriate treatment for a given diagnosis. This, however, is not an appropriate ground for withholding treatment. In fact, such experimentation—where there is a reasonable likelihood of success—should be encouraged. If a physician prescribed a treatment that was not yet validated, however, the physician should inform the patient that the patient is, in essence, the subject of an experiment and follow the appropriate procedures of medical experimentation.¹⁵⁷ Where there is a plausible likelihood that the treatment could benefit the patient, experimentation and documentation should be encouraged so that physicians could assess whether the treatment was futile or not.

The Schneiderman and Jecker Proposal

Schneiderman and Jecker have proposed the most practical working definition of futility. According to these authors, futility may be defined both quantitatively and qualitatively. Under their definition, if the treatment is either quantitatively or qualitatively futile, no duty exists for physician to administer it.¹⁵⁸ They offer criteria for determining both quantitative and qualitative futility that are examined below.

The quantitative definition focuses on the probability that an intervention will effectuate a particular outcome and assesses whether that probability falls below the minimum threshold.¹⁵⁹ Indeed, it is concluded that if in the last 100 cases a given treatment for a given condition has proved to be useless, it is futile, and therefore, need not be administered.¹⁶⁰ While very little support for deciding on the number 100 is offered, any number would inevitably be arbitrary and 100 seems reasonable because it is of sufficient quantity to discount any unknown variables and minimize the margin of error. Record keeping in all cases is encouraged so that treatments that offer no relief in over 100 cases may be deemed futile and need no longer be prescribed. Implicit rejection of the use of futility for withholding treatment that is plausible but not yet validated is thus seen, because a treatment is not deemed quantitatively futile until it has been tried at least 100 times and failed every time.

Qualitative futility is defined as, “Any treatment that merely preserves permanent unconsciousness or that fails to end total dependence on intensive medical care” is qualitatively futile and should be withheld.¹⁶¹ The scope of this definition is narrow and appropriately so because its primary focus is the person in a persistent vegetative state. Since such a person has no chance of regaining consciousness, any treatment that merely sustains him would be qualitatively futile and thus withheld. The quality of life of a person in a persistent vegetative state is minimal—if existent at all. By virtue of this diagnosis, there is no chance of recovery. Keeping that person from his destiny and depriving him of a right to die with dignity does not further the goals of medicine.

It is impossible to discuss qualitative futility without discussing quality of life;¹⁶² however, extra care should be given to ensure that decisions of qualitative futility do not extend beyond the limited definition suggested herein. For example, qualitative futility should not be invoked to justify not performing curative eye surgery merely because the patient has Down's syndrome. Such a quality of life decision is inappropriate for the medical profession to make. If it is possible to restore the patient to a sapient state or free the patient from total dependence on intensive medical care, the physician has a duty to offer the treatment because that treatment would benefit the person regardless of the existence of a handicap or disability.

Who Decides?

There are two questions in the debate over "who decides." The first is who decides the objective standard of futility? Once the standard is established, it must then be determined who makes the actual bedside decision to withhold treatment based on the objective criteria.

The Objective Standards

Objective standards of futility should be decided in the public forum.¹⁶³ The medical profession, perhaps through the American Medical Association, should initiate the process by proposing guidelines to initiate discussion of this important issue. Once the medical profession presents a proposal, society would have a chance to respond and thereby express their opinions through the electoral process.¹⁶⁴ State legislatures and Congress would either accept the guidelines as proposed by the medical profession or with modifications expressed by their constituencies. Either way, the country would have standards of futility arrived at through a democratic process that, at least in accepted theory, represent the social values of the nation. The difficult and elusive nature of futility would of necessity mandate those standards be both reasonable and flexible.

Decisionmaking at The Bedside

Once objective criteria for futile treatment have been established, a three tiered decision and appeal structure would be established. The treating physician would have the primary responsibility for determining when to withhold treatment on the grounds of medical futility. Once such a decision is made, the patient and/or family would have the right to take a *de novo* "appeal" to the hospital ethics committee. If the patient and family were not satisfied with the decision of the ethics committee, a limited appeal could be taken to the judiciary.

Physicians would have the primary responsibility for determining whether a given situation calls for withholding or withdrawing care on the ground that it falls within the established guidelines.¹⁶⁵ The physician's expertise in the field of medicine and intimate knowledge as the patient's treating physician favor the

physician as the ideal primary decision maker.

Some argue that the patient or family should be able to decide when treatment is futile.¹⁶⁶ However, placing the decision with the physician would avoid unnecessary suffering for the patient and family.¹⁶⁷ The physician is trained to make such decisions and is further insulated from emotional burdens of the patient or family which may make such a determination more difficult or impossible.¹⁶⁸

The fact that the physician is responsible for making the primary futility decision does not free him from his duty to inform the patient. While some authors argue that futility removes both the duty to treat *and* the duty to inform,¹⁶⁹ preclusion of a duty to inform infringes too greatly on patient autonomy.¹⁷⁰ Informing the patient and family of the decision *not* to administer treatment on the grounds of futility helps patients and families cope with the inevitability of death.¹⁷¹

Furthermore, by informing the patient that the physician has made a decision that the treatment is futile permits the patient and family to seek a second opinion or alternative medical care.¹⁷² Moreover, informing the patient and documenting the decision makes the physician accountable¹⁷³ for futility decisions negligently made; and those the basis of which that are not documented carefully would expose the physician to liability.¹⁷⁴ To protect patient's rights adequately, the physician must be under a duty to inform the patient of the decision to withhold or withdraw treatment on the grounds of medical futility.

The Basis of Appeal

When a physician charged with the duty of making the primary futility decision informs a patient and family that such treatment will be withheld or withdrawn, the physician must also inform the patient and family of their right to "appeal" such a decision. In the construct proposed, the physician must inform the patient and family that they have a right to *de novo* review of the physician's primary decision with the hospital ethics committee. In this proceeding, the physician would make his case and the patient and family theirs. The ethics committee would then discuss the issues and issue a written decision stating the grounds for its decision. If the ethics committee held for the primary physician, the patient and family would have to seek judicial redress. The basis of appeal would be limited to seeking judicial review of the reasonableness of the decision to withdraw or withhold treatment.¹⁷⁵ Ideally, the standard of reasonableness would—in turn—be both shaped and tested by particular state legislatures and administrative agencies in question by guidelines of the type discussed previously.¹⁷⁶

The Duty Not to Administer Futile Treatment

Jecker and Schneiderman offer three compelling reasons why physicians should have a duty *not* to provide futile treatment. The authors first argue that physicians will use the term as a "subterfuge for rationing, cost containment, or refusals to treat vulnerable patients."¹⁷⁷ If each physician were given the discretion to provide treatment deemed to be futile, patients with the means—either independent wealth

or superior insurance—could by-pass the doctrine altogether by simply changing physicians. This would limit drastically its effect by relegating it to a device for developing treatment for those who cannot afford it.

The second argument advances the proposition that since the public looks to the medical profession to set medical standards, making *ad hoc* assessments of futility by individual physicians rather than enforcing objective criteria developed by the medical profession would be an abdication of professional responsibility.¹⁷⁸ Here, both the burden and the responsibility to take action in order to preserve its stature and credibility by mandating uniform treatment for all patients in a given condition is imposed directly upon the medical profession.

Lastly, it is maintained that offering futile treatment exploits the public's fear of death and exaggerates what medicine and science can achieve.¹⁷⁹ This leads to false expectations and inevitable disappointment which in turn undermines the confidence of the public at large. These arguments support clearly the proposition that physicians should have an affirmative duty *not* to administer futile treatment.

Resolving Complexities in Decisionmaking

There is need in the country for a clear, objective working definition of futility. Whatever definition is settled upon, it will arise and be shaped inevitably as a consequence of free and open discourse among legal, medical, ethical and public policy decision makers.

In the final analysis, what must be understood is that in whatever form a construct for decision making is utilized in shaping the contours of a contemporary and functional definition of medical futility, exceedingly complex value judgments must be seen as underlying any contention that life extending intervention is futile. Thus, the central issue to be raised “is the dispensability of a human life and the relevant standard for that judgment”¹⁸⁰ Ultimately, this complex medico-socio-legal-philosophical-ethical issue can only be resolved by the courts and legislatures.

The constant vector of force in all deliberations of this nature, however, should be human compassion and the need to show it at all levels in dealing with cases of medical futility.¹⁸¹

Terminal Sedation: a Mechanism for a Good Death

Not everyone finds a “salvific meaning” in suffering.¹⁸² Indeed, even those who do subscribe to this interpretation, however, recognize the responsibility of each individual to show not only sensitivity and compassion but render assistance to those in distress.¹⁸³ Pharmacologic hypnosis, morphine intoxication and terminal sedation provide their own type of medical “salvation” to the terminally ill patient suffering unremitting pain.¹⁸⁴ Indeed, the first national survey in 1998 of physician-assisted suicide found that six percent of front-line physicians who responded (1,902 out of a population of 3,102 who were sent questionnaires for the survey) have hastened patients' death with lethal injections or prescriptions. Further, one-

third of the doctors responding to the survey said they would write prescriptions for deadly drug doses and one quarter would give lethal injections if they were legal.¹⁸⁵

More and more states are enacting legislation which recognizes this need of the dying to receive relief through regulated administration of controlled substances.¹⁸⁶

Wider legislative recognition of this need would go far toward allowing physicians, in the exercise of their reasonable medical judgment, to administer a range of narcotics and barbiturates to the terminally ill without fear of legal sanctions being imposed upon them. Sadly, social attitudes and governmental concerns about the spread of drug addiction provide an undeniable policy *nexus* here which impedes unduly a rational approach or use-exception for the treatment of pain experienced by the dying.¹⁸⁷

In a truly remarkable decision made by the then Attorney General Janet Reno in June, 1998, the Justice Department decided that it would not use federal drug-control laws to punish physicians who assist their dying patients commit suicide. The effect of this new policy is to remove the risk physicians—and especially those in Oregon working under the state’s assisted suicide law—have of the government revoking their ability to write prescriptions if they prescribe lethal doses to those who are terminally ill.¹⁸⁸

This new direction taken by the Department of Justice overrules effectively the federal Drug Enforcement Administration’s previous determination that Oregon physicians who assisted their patients died were in violation of the Federal Controlled Substances Act. Certain members of Congress served notice, however, that they would work to amend current federal laws in order to penalize Oregon physicians for their humane actions in end-of-life care.¹⁸⁹

The Ashcroft Initiative

On November 6, 2001, Attorney General John Ashcroft issued a memorandum to the Chief of the Drug Enforcement Administration advising that suicide is not a “legitimate medical purpose” under federal law. Accordingly, Oregon physicians who prescribe federally controlled drugs to assist terminally ill patients die under the state Death With Dignity Act will be subject to the revocation of their licenses to prescribe to patients powerful medications such as narcotics. Arrest and detention will not be sought for violators. This memorandum overturns effectively a ruling by Ashcroft’s predecessor, Attorney General Janet Reno, who determined the federal Controlled Substances Act (CSA) did not authorize the administration of discipline for physicians assisting in a patient suicide in compliance with the Oregon law.¹⁹⁰ Relying upon the United States Supreme Courts unanimous decision in *United States v. Oakland Cannabis Buyers’ Cooperative* holding a medical use exception is not a legally cognizable defense to violations of the CSA, General Aschcroft held that the need for uniformity in regulating controlled substances must override state action.¹⁹¹

The Governor of Oregon and the State Attorney General were successful in obtaining from the U.S. District Court in Oregon a temporary restraining order barring implementation of the Ashcroft policy. At a subsequent hearing, it was

determined that the issues would be litigated in the Spring of 2002. The Governor is concerned that this new policy, if implemented, will have a chilling effect on the manner in which state physicians will act toward their patients when attempting to treat pain for their dying patients. Fear of government prosecution will, it is thought, foreclose aggressive pain management treatments.¹⁹²

While the American Medical Association has always advocated a policy consistent with the new Ashcroft policy, it has supported—nevertheless—the right of physicians to “aggressively relieve patient pain.”¹⁹³ The dilemma thus becomes: who is to determine the extent to which the best interests of a dying, competent patient are served by the administration of controlled substances—the patient and his physician or the U.S. Attorney General and the Federal Drug Enforcement Administration?

The Court Ruling

On April 17, 2002, Judge Robert E. Jones of the Oregon Federal District Court, determined that Attorney General Ashcroft was, by his actions, attempting to usurp the rights of the state by enunciating a policy designed to prosecute physicians who prescribe—under state law—lethal dosages of drugs to terminally ill and dying patients.¹⁹⁴ While acknowledging General Ashcroft lacked the authority to decide what the legitimate practice of medicine included, the Court left open the question of whether Congress has the authority to enact legislation the effect of which would override a state’s determination of what actions constitute the legitimate practice of medicine.¹⁹⁵ It nonetheless observed that there were no indications in any federal statute, including the Controlled Substances Law, that Congress had in fact delegated any grants of authority to federal prosecutors to define what the legitimate practice of medicine included.¹⁹⁶

Pain Management

One report has suggested that more than 50% of patients with terminal cancer have physical suffering the last days of their controlled, as such, only be sedation.¹⁹⁷ Another report shows 40% of all dying patients within the United States die in pain.¹⁹⁸ Recently, the Institute of Medicine found that anywhere from 40% to 80% of patients with terminal illness report their treatment for pain is inadequate and prolongs the very agony of death.¹⁹⁹

The Emancipation Principle of palliative care states clearly that no scientific or chemical efforts should be spared to enable dying persons to escape from pain which “shrivels their consciousness” and prevents them from maintaining dignity in their final days.²⁰⁰ Indeed, the goal of continually adjusted care demands those who are hopelessly ill be given whatever medication which is needed to control pain.²⁰¹ While there can be little disputation of the validity of this principle, there is a widening gap between what *can* be done and what in fact *is* done to implement the Emancipation Principle.²⁰² Stated otherwise, although pain can be managed, the central problem remains how to deal with situations where pain management is

merely palliative and the disease symptomatology giving rise to the pain, itself, continues a malignant progression toward terminality—resulting in an exceedingly low or even non-qualitative existence for the patient and unendurable and refractory episodes of dyspnea, delirium, myoclonus, vomiting and intractable pain.²⁰³

An Alternative or a Continuum of Care

While it has been argued that palliative care is the principal alternative to euthanasia, others contend palliation and euthanasia are but a continuum of medical treatment.²⁰⁴ Indeed, some physicians maintain that providing final assistance for the hopelessly ill is a professional responsibility and sound medical practice rendered as such upon request.²⁰⁵ Still others suggest in specific context, terminal sedation “is covert physician assisted suicide or euthanasia.”²⁰⁶

The very integrity of acceptance and use of sedating pharmacotherapy is tied inextricably to two principles: informed consent and double effect. Before sedation is prescribed and initiated for control of refractory symptoms or those which include a terminal disease with impending death, all other types of palliative treatment should be exhausted. Additionally, there should be mutual agreement by the affected patient and his or her family of the need for terminal sedation, a full knowledge of the double and ultimate effect of the actions together with the execution of a valid do-not-resuscitate order.²⁰⁷

Others have suggested that intravenous barbiturate administration is a preferable alternative to extended use of narcotics which always runs a risk of severe toxicity (*e.g.*, depression, constipation, nausea, dysphoria and drug tolerance). By use of a single hypnotic agent, somnolence or pharmacologic hypnosis may achieve the same sedating effect thereby dissociating patient consciousness from refractory symptomatology.²⁰⁸ Benzodiazepines may be used as a second drug to alleviate noxious side effects or used simply as singular agents in these circumstances.²⁰⁹

More and more, as palliative care management develops a national—if, indeed, international—praxis, it can be hoped that terminal sedation will in time be understood as but a continuum of proper treatment. Efforts must be undertaken to assure that terminal sedation does not fall into a quagmire of taxonomical confusion. If viewed as but an action which validates personal autonomy or self-determination, this type of palliative care will no longer be seen incorrectly as either euthanasia or physician assisted suicide. Rather, with this re-classification or clarification in terminology will come an understanding of a medically proper way to assure a modicum of dignity at death.

A New Medico-Legal Right

Although a unanimous United States Supreme Court held in June, 1997, that there was no federal or fundamental right to commit suicide or, thus, to have assistance in effecting it,²¹⁰ two concurring opinions would appear to validate legally the medical right to terminal sedation as an efficacious form of palliative

treatment for intractable pain. Indeed, Justice Sandra Day O'Connor opined that those individuals suffering from a terminal illness accompanied with great pain may presently—in the states of New York and Washington—obtain whatever level of medication determined professionally by a physician, “to alleviate that suffering, even to the point of causing unconsciousness and hastening death.”²¹¹

Justice John Paul Stevens went further in his concurring analysis to probe the full extent of one's liberty interest in defining a personal concept of existence. He concluded that since palliative care cannot alleviate every degree of pain and suffering for all patients, there may be situations where a competent person could make an informed judgment or “a rational choice for assisted suicide.”²¹² Legal approbation was given specifically to the unequivocal AMA endorsement of the policy allowing pain-killing medication for terminally ill patients—through use of terminal sedation—even if death is hastened.²¹³

For Justice O'Connor, the central issue in this area of consideration is finding a definition of terminal illness and, similarly, safeguarding the voluntariness of patient decisions which have the effect of hastening death.²¹⁴ Although sound, reasonable judgment will always be the touchstone for a determination of terminality—which each disease etiology shaping this decision—recognition of the validity of the tests for determining medical futility would go far in resolving this conundrum. With this would come—hopefully—an additional realization that wider use of terminal sedation as sound palliative care would provide a more acceptable patient choice for self-determination than recourse to both the idea and practice of assisted suicide or euthanasia.²¹⁵

Norms or Standards of Conduct

Legislative definitions may be proffered for what is a terminal medical condition and include incurable and irreversible conditions “within reasonable medical judgment” which will either cause death “within a reasonable period of time” or merely extend the dying process.²¹⁶ Depending again, of course, upon individual patient profiles and disease etiologies, medical judgment will vary regarding when conditions are terminal.

One approach to resolve this quandary is to be found in wider acceptance of the doctrine of medical futility. By utilizing one of five operative standards analyzed previously under this doctrine, a physician could conclude a patient's condition is indeed terminal and proceed to search a wide range of palliation options—with terminal sedation being a first order consideration. Accordingly, in cases where a cure is physiologically impossible, continued treatment is non-beneficial, a desired or positive benefit is unlikely to be achieved, a particular treatment option, although regarded as plausible, has yet to be validated, or a determination is made that a course of treatment is either quantitatively or qualitatively futile, a physician is freed ethically from pursuing further medical treatment.²¹⁷

A Patient's Bill of Rights

In an attempt to offer “universally accepted guidelines” for physicians treating patients at the end of life, ten nationally prominent doctors have proposed a bill of rights for patients of this type. Central to the guidelines is the need for physicians to respect a patient’s right to refuse treatment and not have this decision regarded as a sign of incompetency. Coupled with this is a responsibility of the physicians to explain all of the medical or surgical options available to patients and not leave them adrift in an unfathomable morass of medical facts and opinions. Truth should seldom, if ever, be denied to patients. Medically appropriate and/or compassionate care should be the goal of all physicians in their treatment of patients at the end of life rather than unnecessary fears of criminal or civil liability.²¹⁸

If family members agree and the patient would have also, nasogastric or tube-feeding of the irreversibly demented or vegetative patients should be withdrawn or, for that matter, never commenced. Indeed, for the severely and irreversibly demented and those patients merely passably accepting food and care, it is justifiable under these guidelines to withhold antibiotics and artificial nutrition if the patient—by the prior expression of his wishes—would have agreed and the family presently agrees with this course of action. Finally, even among elderly patients taken to be “pleasantly senile” and suffering from a permanent mild impairment of competence, emergency resuscitation and intensive care may be applied sparingly—guided not only by the wishes of the patient and his family but by the patient’s prognosis.²¹⁹

Some seventeen years since the effort to establish these guidelines, the concerns raised and the principles enunciated still are valid aspirational goals and models. Sadly, they are just that—and no more. A unanimously accepted framework to assist end of life care has yet to be built.

The need for frameworks or guidelines of this nature could be lessened significantly—if not alleviated altogether—by simple advance planning which, as such, seeks to set out those conditions under which a patient declines or accepts medical treatment. When dealing with individuals lacking decisional capacity who, additionally, have failed to execute health care directives of this nature, families all too often—because of indecisiveness and emotionalism—actually impede the operation of the medical delivery system. Contentious debate erupts, inevitably, over whether certain treatments are in a patient’s best interest, would have been chosen or declined if the patient were competent and are, under present circumstances, efficacious. Safeguarding the right of autonomy or self-determination requires mature, responsible actions be undertaken *before* an actual medical emergency arises. This can best be done by executing advance health care directives, living wills, and selecting appropriate surrogate decision makers.

AMA Guidelines

Although in actuality a terminal illness may well last months or even years, the actual dying process takes anywhere from but a few days to a week or two to

complete.²²⁰ It is through the dying process that one may seek to learn that a good death should be but a complement to a life well lived.²²¹

Guidelines for good patient care in end-of-life cases are indispensable to the whole educative process here. Initiating an educational dialogue between health care professionals and the public at large on this very topic was commenced at the June, 1997, meeting of the House of Delegates of the American Medical Association. At this meeting, eight guidelines entitled, “Elements of Quality Care of Patients in the Last Phase of Life,” were adopted.²²² These guidelines, which provide not only for the assurance of opportunities to discuss and plan terminal care but additional assurance that preferences for withholding or withdrawing life-sustaining supports will be honored, underscore the central importance of patient dignity and will surely go far in educating the medical professional to the legitimate fears of the terminally ill.²²³

A British Approach

In an attempt to allow “death with compassion,” the British Medical Association (BMA) issued a set of guidelines in 1999 to be used by physicians as a framework to assess whether to withhold or withdraw treatment from the terminally ill ranging from chemotherapy to tube feeding. Stated succinctly, when treatment is no longer beneficial, it is not—under the guidelines—in a patient’s best interests to be treated. These new policies are aimed particularly at patients in a permanent vegetative state. If patients exhibit no awareness of self or their surroundings and are, furthermore, unable to interact with others or exhibit a capacity for self-directed action, treatment may be withheld or withdrawn by the physicians.²²⁴

Regarding the very contentious issue of nutrition and hydration, the BMA suggests doctors make all the ultimate decisions regarding tube feeding—with such artificial efforts being allowed if qualitative benefits are conferred and, similarly, withdrawn when none occur. Before the final decision is made of cases of this nature, a second opinion should be sought from a senior clinician with experience in the condition from which the patient is suffering who has no personal connection with the case. Subsequently, input should be obtained from the patient’s whole healthcare team as well as from the immediate family—all in an attempt to discern what, if any, form of medical assistance the incompetent patient would have preferred. If disagreement occurs over a final decision of withdrawal or withholding, a family may appeal to the courts. Physicians, however, under the BMA guidelines, should not seek judicial support for their decisions.²²⁵

Interestingly, the House of Lords ruled in 1993 that in all cases involving patients in a permanent vegetative state or similar condition, before the withdrawal of artificial feeding was allowed, reference was to be made to the courts for their final determination. Patients requiring tube feeding because they are suffering from such conditions as a consequence of the effects of a serious stroke or advanced Alzheimer’s disease are exempted from this ruling. In Scotland in 1995, however,

this procedure was held inapplicable—with the judiciary deciding that they would defer to clinical judgments regarding such conditions.²²⁶

The BMA guidelines seek to diffuse the controversial nature of medical decisions required in treating the terminally ill by returning to the physicians the sole responsibility for decisionmaking in cases of this nature. These guidelines are to be seen, then, as safeguards to be followed in order to assure that fairness, medical objectivity and compassion are followed in treating the seriously ill and hopeless.²²⁷

New Directions

Cicero said reportedly, “All philosophy only talks about one thing, death.”²²⁸ More and more, contemporary—society finds itself pondering the manner in which its members will be allowed to depart their mortal existence.²²⁹ It has been suggested that the principle of medical futility has been and is being used improperly as the foundation for that departure policy.²³⁰ Instead, it is argued here that this practice should be viewed more correctly as but a descriptive frame of analysis which, in turn, facilitates a process for discussion among physicians, affected patients and their families of futility and—specifically—the conditions under which further treatment would not be beneficial *before* actual clinical circumstances give rise to a crisis concerning futile treatment. Viewed, thusly, futility then becomes not only a construct or template for decisionmaking but a catalyst for developing hospital and regional policies for resolving conflicts here as well as a means for validating an alternative strategy of transferring patient care to other physicians or institutions if no resolution of particular futility issues can be reached.²³¹

Regardless of the posture taken with the doctrine of medical futility, it is understood that there is both a moral imperative and a political mandate for national health policies to provide more humane end-of-life care for the dying.²³² In particular, the extent to which palliative medicine can and should provide a type of quality care insurance for those who are dying appears at last to be within public acceptability—with various palliative care teams in fact becoming more popular in health care centers throughout the country. Most normally, such a team is composed of a physician, a nurse, a pharmacist, a social worker and a chaplain—all acting as basic consultants to those consigned to terminal care. The work of these teams has a salutary effect on broader efforts to show by individualized example that palliative care is not solely about preventing pain to those who are dying, but—as well—seeking to deal forthrightly with a plethora of psychological, social, and spiritual problems confronting the patients and their families. Palliative medicine can, in many cases, fill the void of hopelessness in the lives of the terminally ill and thereby lift the veil of despair which has forced a demand for assisted suicide because of the very real fear that there is not quality in end-of-life care.²³³

To those disposed to tendentiousness, the suggestion of a taxonomical change of assisted suicide terminology to thereby afford recognition of the right of

competent—yet terminally ill—individuals to exercise a right of autonomy or self-determination through use of terminal sedation in palliative management, would be viewed as but a shallow ruse.²³⁴ The process of public education needed to effect a significant change here is admittedly complex. Indeed, society may not be equipped to grasp the full consequences of such an educative dialogue on this topic. It therefore remains the primary responsibility of the medical profession—supported by law—to provide the necessary leadership to re-think the standards of humane care for treatment at the end of life.²³⁵

A pre-existing, ethically sound, religiously validated and balanced template which recognizes the very principle of autonomy or self-determination is already in place for shaping the extent to which humane treatment should be undertaken or delimited in cases of terminal illness. Stated simply, Principle 56 and Principle 57 of The Ethical and Religious Directive for Catholic Health Care Services authored by The National Conference of Catholic Bishops in 1994, acknowledge that while one is bound, morally, to use proportionate care in preserving life, the patient—himself—is the one to determine whether there is sufficient reasonable hope of benefit coming from treatment which does not involve the imposition of excessive expense or burden on him or his family.²³⁶ Thus, in situations where the patient judges the benefits flowing from medical assistance are so negligible as to be unwarranted and, indeed, unreasonable (*e.g.*, futile), then—morally—it is proper to decline the treatment.²³⁷

Uncertainty about the continuance of this policy has arisen as a consequence of an address Pope John Paul II made on March 20, 2004, at an International Congress on Life-Sustaining Treatments and The Vegetative State in Rome. In his address, the Pope held that artificial hydration and nutrition must be thought of as ordinary care—with their cessation, and the removal of necessary feeding tubes, being considered “*euthanasia by omission.*”²³⁸

This Vatican position runs counter to the board consensus among ethicists and health care workers that hydration and nutrition tubes are seen correctly as medical technology and not basic care.²³⁹ Indeed, Rev. Kevin O’Rourke, a Dominican priest teaching at Loyola University, Chicago, is organizing an effort among bioethicists to question the validity of the position, itself.²⁴⁰

Inasmuch as there are 565 American hospitals in the Catholic Hospital Association (CHA), this new statement from the Holy Father is bound to create uncertainty as to its implementation—especially since the hospitals within the Association may not provide medical services forbidden by church doctrine to Catholic and non-Catholic patients alike.²⁴¹ This new policy, which will have to be construed and implemented by the U.S. Conference of Catholic Bishops, is—presently—going to prompt considerable confusion over the validity of advance directive by patients who express their autonomous wishes to forego extraordinary medical treatments in order to prolong their life under specified circumstances.²⁴² For the present, however, the current CHA guidelines remain and allow for the termination of treatment in cases of hopelessness.²⁴³

It is speculated that if this new papal policy is sought to be implemented in its present form by the Catholic Bishops, one of two consequences will result: it will

be largely ignored because of its “regressiveness” or, it will give rise to a “schism” between the Vatican and the CHA.²⁴⁴

By accepting and applying standards of medical futility, however shaped and from whatever sources, and pursuing efforts to come to grips with a more uniform approach to and understanding of terminal illness, a ready willingness—in turn—will be seen to accept the use of terminal sedation as but a part of palliative treatment. It may then be recognized as a central part of a more comprehensive right to die with dignity and without intractable pain and suffering.²⁴⁵ Indeed, as has been argued, this form of care can be viewed truly as part of a continuum of health care to which every individual should be entitled.²⁴⁶

With the recent efforts undertaken by Justice O’Connor and Justice Stevens in the U.S. Supreme Court,²⁴⁷ the Nation is now being led in a re-evaluation of the ethical validity, medical propriety and legal correctness of terminal sedation as a normative standard of humane conduct and palliative treatment at the end-of-life. The work thus far of the Catholic Bishops Conference on humane health care can surely both enlighten and shape this new national debate if, that is, it maintains its present course.

ENDNOTES

1. U.S. Const., amend. VIII provides that “excessive bail should not be required, nor excessive fines imposed, nor cruel and unusual punishment inflicted.”
2. See Friedman, *Cruel and Unusual Punishment in the Provision of Prison Care: Challenging the Deliberate Indifference Standard*, 45 VANDERBILT L. REV. 921 (1992).
3. *Ruffin v. Commonwealth*, 62 Va. 790, 796 (1871). It is interesting to note that the Thirteenth Amendment of the U.S. Constitution, enacted 6 years prior to this decision, provided an exception to the ban on slavery for slavery “as a punishment for crime whereof the party shall have been duly convicted.” U.S. Const. amend. XIII. See generally Granucci, *Nor Cruel and Unusual Punishments Inflicted: The Original Meaning*, 57 CAL. L. REV. 839 (1969).
4. Terry, *Constitutional Law—Prisoner’s Rights—Recognition That Involuntary Exposure to Environmental Tobacco Smoke May Constitute Cruel and Unusual Punishment—Avery v. Powell*, 11 CAMPBELL L. REV. 363, 366 (1989). See generally Note, *The Cruel and Unusual Punishment Clause and The Substantive Criminal Law*, 79 HARV. L. REV. 635 (1966).
5. *Id.*
6. G.A. Res., 39/46, U.N. GAOR, 39th Sess., Supp. No. 51, at 197, U.N. Doc. A/39/51 (1984).
7. G.A. Res. 217, U.N. GAOR, 2d Sess., pt. 1, at 71, U.N. Doc. A/810 (1948).
See also Perry, *Is The Idea of Human Rights Ineliminably Religious?*, 27 U. RICH. L. REV. 1023 (1993); Rabkin, *What We Can Learn About Human Dignity from International Law*, 27 HARV. J.L. & PUB. POL’Y 145 (2003).
See generally Magee, *The United Nation’s Convention Against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment: The Bush Administration’s Stance on Torture*, 25 GEO. WASH. J. INT’L L. & ECON. 807 (1992).
8. 136 U.S. 436, 437 (1980).
9. *Weems v. United States*, 217 U.S. 349, 381 (1910).
10. *Trop v. Dulles*, 356 U.S. 86, 101 (1958).
11. See, e.g., *Rochin v. California*, 342 U.S. 165, 172 (1952); *Blakey v. Sherrif of Albermale County*, 370 F. Supp. 814, 816 (W.D. Va. 1974).
12. See *Solem v. Helm*, 463 U.S. 277 (1983); *Hutto v. Davis*, 454 U.S. 370 (1982); *Rummel v. Estelle*, 445 U.S. 263 (1980).
13. 111 S.Ct. 2321, 2323-25 (1991).
14. *Id.*
15. *Supra* note 2, at 929.
16. Paris *et al.*, *Physician’s Refusal of Requested Treatment: The Case of Baby L*, 322 NEW ENG. J. MED. 1012, 1014 (1990).
See generally, E. D. PELLEGRINO & D. C. THOMASMA, FOR THE PATIENT’S GOOD: THE RESTORATION OF BENEFICIENCE IN HEALTH CARE (1988).
17. See Smith, *Reviving the Swan, Extending The Curse of Methuselah or Adhering to the Kevorkian Ethic?*, 2 CAMB. Q. HEALTHCARE ETHICS 49 (1993), *Death Be Not Proud: Medical, Ethical and Legal Dilemmas in Resource Allocations*, 3 J. CONTEMP. HEALTH L. & POL’Y 47 (1987).
18. Pellegrino, *Managed Care at The Bedside: How Do We Look in the Moral Mirror?*, 7 J. KENNEDY INST. ETHICS 321, 323 (1997).
See also Wildes, *Conserving Life and Conserving Life and Conserving Means: Lead Us Not into Temptation* in CRITICAL CHOICES AND CRITICAL CARE: CATHOLIC PERSPECTIVES ON ALLOCATING RESOURCES IN INTENSIVE CARE MEDICINE at 105-18 (K. W. Wildes, S. J., ed. 1995).
19. The physical dangers of CPR are not widely known to the public. Ribs can be broken, trachea damaged, and chance that the brain will never completely recover from oxygen deprivation. Jecker & Schneiderman, *Medical Futility: The Duty Not to Treat*, 2 CAMB. Q. HEALTHCARE ETHICS 151, 154 (1993).
20. “Many physicians now feel that preservation of ‘life’ is defined only in terms of vegetative functions of heartbeat, respiration, etc., is not and never was a fundamental goal of medical treatment when all possibility of restoring conscious life has been extinguished.” Cranford & Gostin, *Futility: A Concept in Search of a Definition*, 20 LAW, MED. & HEALTHCARE 307, 308 (1992).

21. Miles, *Medical Futility*, 20 LAW, MED. & HEALTHCARE 310, 311 (1992).
22. Grant, *Medical Futility: Legal and Ethical Aspects*, 20 LAW, MED. & HEALTHCARE 330, 331 (1992).
23. Stell, *Stopping Treatment on The Grounds of Futility: A Role for Institutional Policy*, 11 ST. LOUIS U. PUB. L. REV. 481, 489 (1992).
24. 428 U.S. 153, 187-88 (1975).
25. *See, e.g., Estelle v. Gamble*, 429 U.S. 97, 103 (1976), (citing *Gregg v. Gamble*, 428 U.S. 153, 173 (1976)).
26. *See, e.g., Hutto v. Finney*, 437 U.S. 678, 685 (1978) (quoting *Estelle v. Gamble*, 429 U.S. at 102).
Many think that a constitutional right to die was first recognized by the U.S. Supreme Court in 1990 with the decision of *Cruzan v. Director, Missouri Dept. of Health*, 497 U.S. 261 (1990). Stated otherwise, they contend the Court found a constitutionally protected liberty interest in a competent person to refuse unwanted medical treatment. Others note that the majority opinion by Chief Justice Rehnquist limits any such interest to the specifics of the case, itself. B.R. FURROW, T.L. GREANEY, S.H. JOHNSON, T.S. JOST & R.L. SCHWARTZ, *BIOETHICS: HEALTH CARE LAW & ETHICS* 243 (4th ed. 2001).
27. Stell, *supra* note 23, at 489.
28. *Id.*
29. If physicians were not under a duty not to administer futile treatment the family could intervene and out of a sense of guilt demand that “everything be done.” Boozang, *Death Wish: Resuscitating Self-Determination for the Critically Ill*, 35 ARIZ. L. REV. 23, at 73 n. 277(1993).
Using the tort analogy of wrongful life, an argument has been put forward to impose tort liability upon physicians when unconsented life supports are imposed. This new action would be termed the tort of wrongful living. Peters, *The Illusion of Autonomy at The End of Life: Unconsented Life Support and The Wrongful Life Analogy*, 45 U.C.L.A. L. REV. 673 (1998).
30. *Rodriguez v. Attorney General of British Columbia & Attorney General of Canada*, 7 WESTERN WEEKLY RPTS. 641 at 670 (Sup. Ct. Canada 1993).
But see Somerville, Euthanasia by Confusion, 20 UNIV. NEW SO. WALES L. J. 550, 569 *passim* (1997); *Chesterman, Last Rights: Euthanasia, the Sanctity of Life, and the Law in the Netherlands and the Northern Territory of Australia*, 47 INT’L. & COMP. L. Q. 362 (1998).
See generally, Smith, Re-thinking Euthanasia and Death with Dignity: A Transnational Challenge, 12 ADELAIDE L. J. 480 (1990).
31. *Pretty v. United Kingdom*, App. No. 2346/02, [2002] 2 FCR 97.
32. *See G. P. SMITH, II, HUMAN RIGHTS AND BIOMEDICINE* 8-11 (2000).
33. *Pretty v. DPP* [2001] 3 WLR 1598, [2002] 1 ALL ER 1.
34. *Pretty, supra* note 31.
35. *Id.* at 33 *passim*.
36. *Id.*
37. *See infra* note 107 *passim* for a discussion of the Principle of Double Effect.
38. D. HUMPHRY, *FINAL EXIT* (1991).
39. *Obituary: Diane Pretty—Campaigner for The Right to Die*, THE INDEPENDENT (LONDON), May 14, 2002, at 18.
See J. KEOWN, EUTHANASIA, ETHICS AND PUBLIC POLICY 282-289 (2002).
40. *Re B*, [2002] EWHC 429 (Fam.), [2002] 2 ALL ER 449.
See Paralyzed Woman Wins Right to Die, THE (LONDON) TIMES, Mar. 22, 2002, at 1.
41. *Infra* note 122 *passim*.
See also Verkaik, Diane Pretty Loses Case, While Miss B Dies With Dignity, THE INDEPENDENT (LONDON), April 30, 2002, at 3.
42. G. P. Smith, II, *Monograph, THE LAST RIGHT: EUTHANASIA, SUICIDE, OR SELF-DETERMINATION—ETHICAL, LEGAL AND PHILOSOPHICAL CONCERNS* (1999).
43. Lebacqz & Englehardt, *Suicide in DEATH, DYING AND EUTHANASIA* at 669, 673 (D. Horan & D. Mall eds. 1977).
44. *Id.*
45. *Id.*
46. *Id.* at 674.

47. *Id.*
48. *Id.*
See also, R. BRANDT, *ETHICAL THEORY* 106, 182 (1959).
49. Baelz, *Voluntary Euthanasia: Some Theological Reflections*, 75 *THEOLOGY* 283, 244 (1959).
50. Lebacqz & Engelhardt, *supra* note 43 at 675.
51. *Id.*
52. *Id.*
53. *Id.* at 676.
54. *Id.*
55. *Id.*
See also, Childress, *Who Shall Live When Not All Can Live?* 43 *SOUNDINGS* 339 (1970).
56. Lebacqz & Engelhardt, *supra* note 43 at 677.
See Arras, The Right to Die on the Slippery Slope, 8 *SOCIAL THEORY & PRACTICE* 285 (Fall, 1982).
57. Lebacqz & Engelhardt, *supra* note 43 at 680.
58. *Id.*
59. *Id.*
60. *Id.* at 681.
61. *Id.* at 680-682.
62. E. KLUGE, *THE PRACTICE OF DEATH* 141 (1975).
63. *Id.* at 147.
64. Lebacqz & Engelhardt, *supra* note 43 at 682.
65. *Id.*
66. *Id.* at 622.
67. *Id.*
68. *Id.* at 683.
69. *Id.* at 685.
70. *Id.*
71. *Id.*
72. *Id.*
73. *Id.* at 686.
 The definition of suicide as murder can only have efficacy if an act of murder is sought to be defined as a direct and intentional killing of an innocent human life—independent of any consideration of what determines the wrongness of murder and whether, as a consequence of this, a taking of human life may be justified under some circumstances “If the evil in murder is the radical subversion of another’s freedom, then it is morally significant when the actor and the ‘victim’ are the same—*i.e.*, when no one’s freedom is being subverted. In short, what holds *prima facie* in the case of taking the life of another may not hold in the case of taking one’s life.” It has been suggested that “if suicide is murder then ‘by parity of reasoning, marriage is really adultery—’ own wife ‘adultery.’” *Id.*
74. *Id.* at 687.
75. *Id.* at 688.
76. *Id.* at 687.
77. *Id.*
78. *Id.*
79. *Id.* at 688.
80. *Id.*
See M. KOHL, *THE MORALITY OF KILLING* 3 (1974).
81. Lebacqz & Engelhardt, *supra* note 43 at 688.
82. *Id.*
83. *Id.*
84. *Id.* at 689.
85. *Id.* at 690.
86. KLUGE *supra* note 62 at 289, 292; I.N. OLVER, *IS DEATH EVER PREFERABLE TO LIFE* ch. 4 (2002).

87. C. RICE, BEYOND ABORTION: THE THEORY AND THE PRACTICE IN A SECULAR STATE 119 (1979).
88. *Id.* at 129.
89. *Id.*
90. D. MAGUIRE, DEATH BY CHOICE 141 (1975).
91. *Id.* at 142.
See generally, Hardwig, *Spiritual Issues at the End of Life: A Call for Discussion*, 30 HASTINGS CENTER RPT. 28 (2000).
92. Maguire, *supra* note 90 at 143.
93. *Id.* at 131, 132; OLVER, *supra* note 86 at 114-119.
94. Maguire, *supra* note 90 at 134.
95. *Id.*
96. *Id.*
See Somerville, *supra* note 30 at 550 (1997).
97. MAGUIRE, *supra* note 90 at 134.
98. *Id.*
99. *Id.*
See generally, R. VEATCH, DEATH, DYING AND THE BIOLOGICAL REVOLUTION, ch. 3 (1976), for a discussion of the *pro* and *con* arguments regarding euthanasia; Louisell, *Euthanasia and Bianthanisia: On Dying and Killing*, 22 CATH. U.L. REV. 723, 742 (1973).
100. J. CHILDRESS, WHO DECIDES? PATERNALISM IN HEALTH CARE 178 (1982).
101. Kamisar, *Some Proposed Non-Religious Views Against Proposed Mercy Killing Legislation*, 42 MINN. L. REV. 469 (1958).
102. CHILDRESS, *supra* note 100 at 179.
See also, Sharma, *Euthanasia in Australasia*, 2 J. CONTEMP. HEALTH L. & POL'Y 131, 145 (1986).
103. Sharma, *supra*, *id.* at 143.
104. *But see* Smith, *Reviving the Swan, Extending the Curse of Methuselah or Adhering to the Kevorkian Ethic*, 2 CUMB. Q. HEALTHCARE ETHICS 49 (1993).
See generally, The Oregon Death with Dignity Act, ORE. REV. STAT., tit. 13, 127.800—127.897 (1999).
105. Smith, *id.*
106. *Id.*
107. R. VEATCH, A THEORY OF MEDICAL ETHICS 37, 39 (1981).
 The Principle is attributed to St. Thomas Aquinas. *See generally*, NATURAL LAW AND PRACTICAL REASON: A THOMIST VIEW OF MORAL AUTONOMY (G. Malsbury, trans. 2000); OLVER, *supra* note 86 at 51 *passim*.
108. *Id.* at 39.
109. Martin, *Suicide and Self Sacrifice* in SUICIDE: THE PHILOSOPHICAL ISSUES 48 at 58 (M. Battin, D. Mayo eds. 1980).
110. *Supra* note 107 at 39.
 Stated more specifically, the action from which evil results is good or indifferent in itself (*e.g.*, administering a pain killer); only the good consequences of the action must be intended (*e.g.*, relief of the patient's suffering)—the evil effect (*e.g.*, the possible death of the patient due to the administration of a sufficiently large dose will *surely* kill the pain but *might* cause death) is sincerely not intended; the good effect must not be produced by means of the evil effect (the relief of the patient's suffering must not be produced by the patient's death); therefore, the dosage of pain-killers must sincerely be thought of as sufficient to ease the pain without also surely causing the patient's death—the question then becomes how certain can one be about the possible occurrence of the evil effect before the principle is violated. R. McCORMICK, HOW BRAVE A NEW WORLD? 412-429 (1981).
See also, President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research, DECIDING TO FOREGO LIFE-SUSTAINING TREATMENT: ETHICAL, MEDICAL, AND LEGAL ISSUES IN TREATMENT DECISIONS at 80, n. 10 (1983).
111. VEATCH, *supra* note 108.

112. *Id.* at 235.

Where treatment offered to extend life would be unreasonably burdensome or simply useless to a terminally ill patient, the Principle would permit non treatment. *Id.* at 40.

113. Louisell, *supra* note 99.

114. *Id.*

115. *Id.*

116. Smith, *Triage: Endgame Realities*, 1 J. CONTEMP. H. L. & POL'Y 143 (1985).

117. Engelhardt, *Suicide and The Cancer Patient*, 36 CANCER J. CLINICIANS 105, 108 (1986).

118. *Id.*

119. *Id.*

120. *Id.*

Death results—ultimately—from cardiopulmonary failure, death of the whole brain or of the higher brain (neo cortex). Bernat, Culver & Gert, *Defining Death in Theory and Practice*, 12 HASTINGS CENTER RPT. 6 (1982).

See Lynn & Cranford, *The Persisting Perplexities in The Determination of Death* in THE DEFINITION OF DEATH: CONTEMPORARY CONTROVERSIES ch. 6 at 112 (S.J. Younger, R.M. Arnold *et al.*, eds. 1999) (criticizing the binary criterion of death as confusing and calling for a unitary standard holding that irreversible cessation of all functioning of the entire brain results in death).

Inasmuch as the Brain Death Standard does not threaten respect for human dignity, the Roman Catholic Church accepts its efficacy. Norton, *Pope Endorses Organ Donations, Condemns Human Embryo Research*, CATHOLIC STANDARD, Sept. 7, 2000, at 15.

Philosophers have reached a near consensus that it is really the irreversible cessation of all brain functions that define death—whether measured through tests of the brain function itself or tests for cardiopulmonary activities. FURROW *et al.*, *supra* note 26 at 205. See Smith, *Legal Recognition of Neocortical Death*, 71 CORNELL L. REV. 850 (1986).

121. *Supra* note 106. See also Re B, *supra* notes 40, 41.

See Wheat, *The Law's Treatment for The Suicidal*, 8 MED. L. REV. 182, 207 *passim* (2000) (arguing that refusal of medical treatment cases should be seen as genuine suicides—this because there is no real distinction and no decisive moral differences between positive acts of suicide and the refusal cases since both produce the same result).

122. W. PROSSER, THE LAW OF TORTS §56 AT 373-74 (15th ed. 1984)

123. Fletcher, *Prolonging Life*, 42 WASH. L. REV. 909 (1967).

124. *Id.* at 1009, 1012.

125. *Id.*

126. See R. WILLIAMS, TO LIVE AND TO DIE: WHEN, WHY AND HOW (1973); Fletcher, *Legal Aspects of the Decision Not to Prolong Life*, 203 J.A.M.A. 65 (1968).

127. Comment, *The Right to Die*, 7 HOUSTON L. REV. 654, 659 (1970).

See Schwartz, Curry, Black *et al.*, *Physician-assisted Suicide or Voluntary Euthanasia: A Meaningless Distinction for Practicing Physicians?*, 12 J. CLIN. ETHICS 51 (2001).

128. Fletcher, *supra* note 123.

129. *Id.*

130. *Supra* note 123.

See generally, Sulmasy & Pellegrino, *The Rule of Double Effect: Cleaning Up The Double Talk*, 159 ARCH. INTERN. MED. 545 (1999). Bresnahan, *Catholic Spirituality and Medical Interventions in Dying*, 164 AMERICA 670 (June 29, 1991).

131. E. KLUGE, THE PRACTICE OF DEATH 171 (1975).

132. *Id.*

133. *Id.*

134. *Id.*

135. *Id.*

136. *Id.*

137. Kavanaugh, *Killing and Letting Die*, AMERICA at 23 (Sept. 23, 2000).

Indeed, it has been suggested by another Jesuit scholar, Fr. Kevin S. Wildes, that the very distinction between ordinary and extraordinary medical treatment “turns on an assessment of medical treatment relative to the patient”—with the obligation to sustain life extending to the use of means

which do not cause “an undue burden or moral impossibility that offer some reasonable expectation of health.” The *usefulness* of treatment, then, is crucial to the determination of whether to allow or disallow it. Wildes, *Ordinary and Extraordinary Means and The Quality of Life*, 57 THEOLOGICAL STUD. 500, 511 (1996). See also Paris & McCormick, *The Catholic Tradition on the Use of Nutrition and Fluids*, AMERICA at 356 (May 2, 1987).

See generally, Dunne, *Spiritual Care at The End Of Life*, 31 HASTINGS CTR. RPT. 22 (Mar.-April 2001).

138. Kavanaugh, *id.*

See E.D. PELLEGRINO & D.C. THOMASMA, THE CHRISTIAN VIRTUES IN MEDICAL PRACTICE 108 (1996). (observing that, for Christians, illness and death become ennobling experiences and can serve as sources of reconciliation with God and atonement for past sins).

See generally, THE ETERNAL PITY: REFLECTIONS ON DYING (R. J. Neuhaus ed. 2000).

Interestingly, active euthanasia is classified, in the Jewish tradition, as murder even though the perpetrator’s motivation is benign. When a medical cure is not possible, however, passive euthanasia is allowed. CARING AND CURING: HEALTH AND MEDICINE IN THE WESTERN RELIGIOUS TRADITIONS at 33 (R. L. Numbers & D.W. Anundsen eds. 1986).

139. See Cotler & Gregory *Futility: Defining the Problem?* 2 CAMB. Q. HEALTHCARE ETHICS 219, 220 (1993); Stell, *supra* note 23 at 493.

A TIME/CNN poll taken in 2000 found 7 out of 10 Americans want to die in their homes yet three-fourths die in medical institutions. More than a third of all the dying spend at least ten days in intensive care units, often enduring inhumane attempts to maintain or revive them. Cloud, *A Kinder, Gentler Death*, TIME Mag., Sept. 18, 2000, at 60.

140. Stell, *id.* at 493.

141. Schneiderman & Jecker, *Futility in Practice*, 153 ARCH. INTERN. MED. 437, (1993).

142. Futility may be used both defensively and offensively. Futility is defensive when a physician or hospital raises it as a defense to civil charges of malpractice or criminal charges of homicide. Grant, *Medical Futility: Legal and Ethical Aspects*, 20 LAW, MED. & HEALTH CARE 330, 333 (1992). Futility is offensive when physicians and hospitals employ it deny a request for continued treatment for continued treatment by the patient or family. *Id.*

143. VI THE OXFORD ENGLISH DICTIONARY 294 (2nd ed. 1989).

144. Miles, *supra* note 21 at 310.

145. Schneiderman & Jecker, *supra* note 141 at 440.

146. Miles, *supra* note 21 at 310.

147. *Id.*

148. *Id.*

149. Cotler & Gregory, *supra* note 139.

150. Schneiderman *et al.*, *Medical Futility: Its Meaning and Ethical Implications*, 112 ANN. INTERN. MED. 949, 950 (1990).

151. Schneiderman & Jecker, *supra* note 141 at 437.

152. *Supra* note 150.

153. *Supra* note 117. G.P. SMITH, II, FINAL CHOICES: AUTONOMY IN HEALTH CARE DECISIONS 24 (1990).

154. Schneiderman & Jecker, *supra* note 141 at 438.

155. Miles, *supra* note 21 at 311.

156. Schneiderman, *supra* note 150 at 950.

157. G. P. SMITH, II, BIOETHICS AND THE LAW: MEDICAL, SOCIO-LEGAL AND PHILOSOPHICAL DIRECTIONS FOR A BRAVE NEW WORLD 81, 86, 116, 130-131 (1993).

158. Schneiderman, *supra* note 150 at 951; Callahan, *Medical Futility, Medical Necessity: The Problem Without a Name*, 21 HASTINGS CENTER RPT. 30, 32 (1991).

159. Jecker & Pearlman, *Medical Futility: Who Decides?* 152 ARCH. INTERN. MED. 1140 (1992).

160. Schneiderman, *supra* note 150 at 951.

161. *Id.* at 952.

162. *Supra* note 148; Smith, *Quality of Life, Sanctity of Creation: Palliative or Apotheosis?*, 63 NEB. L. REV. 709 (1984).

163. *Supra* note 159.

164. Schneiderman & Jecker, *supra* note 141 at 437.

165. *Id.*

Interestingly, one recent study shows that the strongest determinants of withdrawing ventilation for critically ill patients is a physician's perception his patient would not wish to use life support mechanisms *and* the physicians' predictions of law survival possibilities in the intensive care unit itself. Cook, Rocher *et al.*, *Withdrawal of Mechanical Ventilation in Anticipation of Death in the Intensive Care Unit*, 349 N. ENG. J. MED. 1123 (2003).

166. Massie, *Withdrawal of Treatments for Minors in a Persistent Vegetative State: Parents Should Decide*, 35 ARIZ. L. REV. 137 (1993).

167. Younger, *Futility in Context*, 264 J.A.M.A. 1295 (1990); Murphy, *Do Not Resuscitate Orders: Time for Reappraisal in Long-Term Care Institutions*, 260 J.A.M.A. 2098 (1988).

It was not until 1984 in the California case of *Bartling v. Superior Court*, that what legal commentators had acknowledged for years was recognized judicially: namely, *competent* adult patients — with decisional capacity to make life and death decisions—have the right to refuse any form of medical treatment even if that refusal is certain to cause death. In *Bartling*, the court concluded a dying patient was entitled to adequate support (from a health care facility) during the dying process. *Bartling v. Superior Court*, 163 Cal. App. 3d 186, 209 Cal. Rptr. 220 (1984). *See also* *Bouvia v. Superior Court*, 179 Cal. App. 3d 1127, 225 Cal. Rptr. 297 (1986).

In *Cruzan v. Director, Missouri Dept. of Health*, the Supreme Court assumed the existence of a constitutionally protected right of a competent person to refuse lifesaving hydration and nutrition. 497 U.S. 261 at 279. *Supra* note 26. And, in *Washington v. Glucksberg*, it recognized that the long tradition of protecting a decision to refuse unwanted medical treatment is found within the Due Process clause. 521 U.S. 702 at 720, 725. *Infra* notes 210, 211.

168. Grant, *supra* note 142 at 331.

169. Younger, *supra* note 167.

170. Smith, *Stop, in The Name of Love!*, 1990 ANGLO-AMERICAN L. REV. 55.

171. Younger, *supra* note 167.

172. *Supra* note 23 at 493.

But see Helft, *Siegler et al., The Rise and Fall of the Futility Movement*, 343 NEW ENG. J. MED. 293 (July 27, 2000) (noting what is perceived as a trend toward discussing futility options fully with individual patients and their families rather than implementing decisions about futility by some uniform policy).

173. Younger, *supra* note 167 at 1296.

174. *Supra* note 23 at 493.

175. *Supra* note 150 at 950.

176. *Supra* note 158 *passim*.

177. *Supra* note 123 at 1009, 1012.

178. *Id.*

179. *Id.*

180. N.L. CANTOR, *ADVANCE DIRECTIVES AND THE PURSUIT OF DEATH WITH DIGNITY* 93 (1993).

See also J.D. LANTOS, *THE LAZARUS CASE: LIFE AND DEATH ISSUES IN NEONATAL INTENSIVE CARE* ch. 5 (2001).

Human compassion and the limits of medical science have been ignored totally in a recent case being played out in the multi-media; the case of a 39-year-old woman in Florida, Terri Schaivo, in a persistent vegetative state for thirteen years, being kept alive artificially. The Florida state legislature's decision to overturn a judicial determination that Ms. Schaivo was to be withdrawn from all artificial feeding, as requested by her husband, smacks of high political drama and is a direct assault on the principle of autonomy and right to personal dignity at death. *See* McNeil, *In Feeding-Tube Case, Many Neurologists Back Courts*, N.Y. TIMES, Oct. 26, 2003, at A18; Goodnough, *Victory in Florida Feeding Case Emboldens the Religious Rights* N.Y. TIMES, Oct. 24, 2003, at A1.

181. *Supra* note 170.

See G. P. Smith, II, *Monograph*, *FINAL EXITS: SAFEGUARDING SELF-DETERMINATION AND THE RIGHT TO BE FREE FROM CRUEL AND UNUSUAL PUNISHMENT* (1997).

182. Pope John Paul II, Apostolic Letter, *Salvifici Doloris*, On The Christian Meaning of Human Suffering, Feb. 11, 1984, U.S. Cath. Conf. 1—40 (1996).

But see Hawryluck, Harvey *et al.*, *Consensus Guidelines on Analgesia and Sedation in Dying Intensive Care Unit Patients*, 3 BMC Medical Ethics 3 (Aug. 12, 2002).

See generally J. NEUBERGER, CARING FOR DYING PEOPLE OF DIFFERENT FAITHS (2d ed. 1994); Grollman, *Death in Jewish Thought*, ch. 3 and Ryan, *Death: Eastern Perspectives* ch. 6 in DEATH AND SPIRITUALITY (K. J. Doka ed. 1993); Mandziuk, *Easing Chronic Pain with Spiritual Resources*, 32 J. REL. & HEALTH 47 (1993); Bresnahan, *Catholic Spirituality and Medical Interventions in Dying*, 164 AMERICA 670 (June 29, 1991).

183. *Id.*

See generally, L. RICHARD, WHAT ARE THEY SAYING ABOUT THE THEOLOGY OF SUFFERING? (1992); Dunne, *Spiritual Care at The End of Life*, 31 HASTINGS CTR. RPT. 22 (2001); Clark & Heindenreich, *Spiritual Care for the Critically Ill*, 4 AM. J. CRIT. CARE 77 (1995); Kalb, *Faith and Healing*, NEWSWEEK, Nov. 10, 2003, at 14.

184. Stiefel & Morant, *Morphine Intoxication During Acute Reversible Renal Insufficiency*, 7 J. PALLIATIVE CARE 45 (1991); Green & Davis, *Titrated Intravenous Barbiturates in the Control of Symptoms in Patients with Terminal Cancer*, 84 SO. MEDICAL J. 332 (1991).

See also Bernabei *et al.*, *Management of Pain in Elderly Patients with Cancer*, 279 J.A.M.A. 1877 (1998) (concluding pain management is all too frequently reported to be poor).

185. Meir *et al.*, *A National Survey for Physician Assisted Suicide and Euthanasia in The United States*, 338 NEW ENG. J. MED. 1193 (1998). *See* R. MAGNUSSON, *infra* note 229.

186. *See* Cal. Bus. & Prof. Code § 2241.5 (West 1994); Fla. Stat. Ann. § 458.326 (West 1995); Mo. Ann. Stat. § § 334.105 et seq. (Vernon 1995); Nev. Rev. Stat. § 630.3066 (1995); N.D. Cent. Code § § 19-03.3-01 et seq. (1995); Or. Rev. Stat. § § 677.470 et seq. (1995); Tex. Rev. Civ. Stat. Ann. Art. 4495c (West 1996); Va. Code Ann. § 54.1-3408.1 (Michie 1995).

187. *See* Annas, *Reefer Madness—The Federal Response: California's Medical-Marijuana Law*, 337 NEW ENG. J. MED. 435 (1997).

The American Bar Association House of Delegates adopted Policy Position #102 in 2000 which calls upon the state and federal governments to construe and—when necessary—amend the laws regarding controlled substances so as not to allow them to impose barriers to quality pain and symptom management. 8 A.B.A. BIOETHICS BULL. 2 (Spring/Summer 2000).

188. Goldstein, *No Drug Law Penalty for Assisted Suicide*, WASH. POST, June 6, 1998, at A3. *See* Peters, *supra* note 29, *The Oregon Death with Dignity Act*, *supra* note 104.

See generally, Johnson, *Disciplinary Actions and The Pain Relief Act*, 24 J. L. MED. & ETHICS 319 (1996).

189. Goldstein, *id.*

See e.g., The Advance Planning and Compassionate Care Act, H.R. 1149, S. 628 (1999); The Conquering Pain Act, H.R. 2188, S. 941 (1999); Pain Relief Promotion Act, H.R. 2260, S. 1272 (1999).

Under the Federal Controlled Substances Act the states have primary responsibility for the prescription, dispensing, and administration of opioid drugs, the federal government focuses primarily on drug trafficking and diversion. 21 U.S.C. §800 *et seq.* (1970). Interestingly, the state of Texas has strong legislation promoting the regulated use of opioids for the management of intractable pain. TEX. REV. CIV. STAT., Art. 4495c §2(3) (1996).

For a Model Pain Relief Act, *see* Project or Legal Constraints on Access to Effective Pain Relief, *The Pain Relief Act*, 24 J. L. MED. & ETHICS 317 (1996).

On May 14, 2001, the U.S. Supreme Court held that the Federal Controlled Substances Act's prohibition against the manufacture and distribution of marijuana—with express exception for government-approved research projects—is not subject to an implied exception based on medical necessity. Effectively, the ruling restores the threat of criminal prosecution not only in California, but seven other states as well, that have enacted laws allowing possession and use of marijuana for medical purposes when authorized by a physician. *United States v. Oakland Cannabis Buyers' Cooperative*, 532 U.S. 483 (2001).

Interestingly, on October 29, 2002, the U.S. Court of Appeals for the Ninth Circuit held the federal government is not free to revoke a physician's license to prescribe drugs or begin an investigation to that end simply because the physician recommends the medicinal use of marijuana to a patient. *Conant v. Walters*, 309 F.3d 629 (9th Cir 2002). The Supreme Court refused to hear the appeal, thus sustaining

the 9th Circuit's decision. 72 U.S. LAW WK. 3092 (Oct. 14, 2003). See Lane, U.S. Appeal of Marijuana Case Rejected, WASH. POST, Oct. 15, 2003, at A1.

190. Verhovek, *U.S. Acts to Stop Assisted Suicide*, N.Y. TIMES, Nov. 7, 2001, at A20.

191. 70 U.S. LAW WK. 2293 (Nov. 13, 2001).

The 1997 Assisted Suicide Funding Restriction Act is designed to underscore the resolve of Congress to withhold funds to pay for items and services which assist the suicide, euthanasia or mercy killing of an individual. 42 U.S.C. § 14401 *passim* (1997). See also *supra* note 189.

See Nieves, *In Calif., Medical Marijuana Collective Loses Hope*, PATIENTS, WASH. POST, Feb. 7, 2003, at A3 (reporting on a San Francisco case where a man was convicted by a federal jury of growing marijuana for medical purposes and thus cultivating drugs—all without having the benefit of a claim that the due process rights of terminally ill people to have access to medicine is a meritorious defense).

192. Ritter, *Ashcroft's Crackdown Outrages Many in Oregon*, USA TODAY, Nov. 12, 2001, at 14.

Ninety-eight Oregonians have been allowed under the present law—between 1998 and 2000—to obtain prescriptions for legal doses of drugs. U.S. LAW WK., *id.*

See also Lowenstein & Wanzer, *The U.S. Attorney General's Intrusion Into Medical Practice*, 346 NEW ENG. J. MED. 447 (2002).

193. See *supra* note 187, and *infra*, note 201.

Interestingly, as proposed by Congress in 1998, the Lethal Drug Abuse Prevention Act would have expanded the authority of the Drug Enforcement Agency to investigate lethal uses of controlled substances which cannot be used with the intent of causing death.

See Hawryluck, Harvey *et al.*, *supra* note 182 (where 16 guidelines are proposed in order to draw a clear distinction between palliative care and euthanasia which emphasize the centrality of the intensivists intent—documented carefully in their patients' charts—in administering narcotic/sedatives to palliate, as opposed to killing, dying patients as the crucial distinction between euthanasia and assisted suicide).

194. Oregon & Rasmussen *et al.*, v. Ashcroft *et al.*, 192 F. Supp. 2d 1077 (D. Or. 2002).

See Liptak, *Judge Blocks U.S. Bid to Ban Suicide Law*, N.Y. TIMES, April 18, 2002, at A16.

See generally, Bix, *Physician-Assisted Suicide and Federalism*, 17 J. L. ETHICS & PUB. POL'Y 53 (2003) (concluding the federal government has little real power to limit the abilities of the states to legalize physician-assisted suicide).

195. *Id.*

196. *Id.*

The U.S. Department of Justice appealed the decision of this case to the 9th Circuit Court of Appeals on May 25, 2002, L.A. TIMES, May 25, 2002, at 17.

See Bix, *Physician-Assisted Suicide and Federalism*, 17 J. LAW ETHICS & PUB. POL'Y 53 (2003) (concluding the federal government has little power to limit states' abilities to legalize physician-assisted suicide).

197. Fainsinger, *et al.*, *Symptom Control During The Last Week of Life on a Palliative Care Unit*, 7 J. PALLIATIVE CARE 5 (1991).

In the first comprehensive review of end-of-life care provided throughout the United States, it was found that a substantial number of Americans die within a hospital setting which, in reality, prolongs their suffering because—primarily—hospitals and their staff physicians have neither the programs nor adequately trained physicians to provide necessary care (*e.g.*, pain management) for dying patients. The full report may be found at www.lastacts.org. Fackelmann, *Dying Patients in USA Often Suffer Too Much, Report Says*, USA TODAY, Nov. 19, 2002, at D7.

198. Lynn *et al.*, *Perceptions by Family Members of The Dying Experience of Older and Seriously Ill Patients*, 126 ANN. INTERN. MED. 97 (1997).

In one of the first U.S. cases in which a doctor has gone on trial for *undertreating* a patient's pain, the children of William Bergman—who died in 1998—sued their late father's physician, Wing Chin, for failing to prescribe enough drugs to relieve their father's suffering. Since under California law, no damages could be sought by a family for a patient's pain and suffering once he is dead, the lawsuit was maintained under a law prohibiting elder abuse—where the standard for conviction is a showing of reckless negligence. Okie, *Doctor's Duty to Ease Pain at Issue in California Lawsuit*, WASH. POST, May 7, 2001, at A3. On June 13, 2001, an Alameda County Superior Court jury awarded

\$1,500,000.00 to the surviving children of Mr. Bergman for the claim of elder abuse against Dr. Chin. (No. H-205732-1). See 8 HEALTH L. LITIGATION RPTR. 10 (No. 12, July 2001). Judge David Hunter ruled the Bergman award was to be slashed to \$250,000.00—this in keeping with the California law limiting general damages in medical malpractice cases to this amount. Hendricks, *Judge Cuts Big Award in Pain Case*, S. F. CHRON. Aug. 21, 2001, at A11.

See generally, J. MAYERFIELD, SUFFERING AND MORAL RESPONSIBILITY ch. 5 (1999). 199. APPROACHING DEATH: IMPROVING CARE AT THE END OF LIFE, Nat'l. Academy Press, (1997).

The five end-of-life issues that patients care about most are: an adequate level of pain and symptom management; avoiding inappropriate prolongation of dying; achieving a sense of control; relieving family burdens together with strengthening relationships with loved ones. Singer, *et al.*, *Quality End-of-Life Care: Patients' Perspectives*, 281 J.A.M.A. 163 (1999).

In addition to the avoidance of pain, most Americans fear—with terminal illness—the loss of their capacities to think and feel, ambulate and emote, control their bowels and bladders and severe disability (*e.g.*, loss of cognitive functions and self-esteem). A.L. CAPLIN, AM I MY BROTHER'S KEEPER: THE ETHICAL FRONTIERS OF BIOMEDICINE 82 (1997).

200. Roy, *Need They Sleep Before They Die?*, 6 J. PALLIATIVE CARE 3 (1990).

201. Wanzer, *et al.*, *The Physician's Responsibility Toward Hopelessly Ill Patients*, 320 NEW ENG. J. MED. 844 (1984).

The American Bar Association's House of Delegates recorded its support of the right of individuals suffering from pain to receive effective pain management and ongoing monitoring as a *part of basic medical care* even if these actions result in analgesic tolerance, physical dependence or—as an unintended consequence—shorten one's life. *Supra* note 187.

202. Mount, *A Final Crescendo of Pain?*, 6 J. PALLIATIVE CARE 5 (1990).

See Meisel, *Pharmacists, Physician-Assisted Suicide, and Pain Control*, 2 J. HEALTH CARE L. & POL'Y 211 (1999).

203. *Id.*

See Goodman, *Easing Pain: A Doctor's Duty*, WASH. POST, Sept. 11, 1999, at A21 (reporting on the first physician in the country disciplined by an Oregon state board of medical examiners for *undertreating* pain in his patients).

204. Ogden, *Palliative Care and Euthanasia: A Continuum of Care?*, 10 J. PALLIATIVE CARE 82 (1994).

But see Shepard, *A Right to Palliative Care?*, 16 J. PALLIATIVE CARE 48 (2000).

Terminal sedation is defined as sedation with continuous intravenous narcotics and/or sedatives until the patient becomes unconscious and death ensues from the underlying illness. Hawryluck, Harvey, *et al.*, *supra* note 182 at 6. In terminal sedation, a physician places a dying patient under general anesthesia and withholds nutrition and hydration. Within a week, the patient dies commonly from either dehydration or pneumonia or from respiratory failure or other complications. West, *Sedation and Death*, ARIZ. REPUBLIC, Mar. 8, 1998, at 1.

Specific clinical protocols are needed to guide the administration of terminal sedation and thereby seek to distinguish it clearly from euthanasia. Cowan & Walsh, *Terminal Sedation in Palliative Medicine — Definition and Review of The Literature*, 9 SUPPORT CARE CANCER 403 (2001).

205. *Supra* note 201 at 848; Schwartz, Curry *et al.*, *supra* note 127.

See generally M. OTLOWSKI, VOLUNTARY EUTHANASIA AND THE COMMON LAW (1997).

206. Rousseau, *Terminal Sedation in The Care of Dying Patients*, 156 ARCH. INTERN. MED. 1785 (1996).

But see Orientlicher, *The Supreme Court and Physician-Assisted Suicide: Rejecting Suicide but Embracing Euthanasia*, 337 NEW ENG. J. MED. 1236 (1997); R. A. EPSTEIN, MORTAL PERIL: OUR INALIENABLE RIGHT TO HEALTH CARE 300, 301 (1997) (arguing for a limited right to assisted suicide).

207. *Id.*

See Craig, *On Withholding Nutrition and Hydration in The Terminally Ill: Has Medicine Gone Too Far?*, 20 J. MED. ETHICS 139 (1994).

208. Green & Davis, *supra* note 184.

209. *Supra* note 206.
210. *Washington v. Glucksberg*, 521 U.S. 702 (1997), *Vacco v. Quill*, 521 U.S. 793 (1997).
 See *Cruzan v. Director, Missouri Dept. of Health*, *supra* note 26 regarding recognition of an “alleged” constitutional right to die.
211. *Washington v. Glucksberg*, 521 U.S. at 737 (agreeing with the conclusion “that there is no generalized right to ‘commit suicide.’” *Id.* at 736). See Tucker, *The Death with Dignity Movement: Protecting Rights and Expanding Options after Glucksberg and Quill*, 82 MINN. L. REV. 923 (1998).
 Both *Glucksberg* and *Quill* have been viewed as endorsements of the Principle of Double Effect. Brody, *Physician-Assisted Suicide in The Courts: Moral Equivalence, Double Effect and Clinical Practice*, 82 MINN. L. REV. 939 (1998).
212. *Washington v. Glucksberg*, 521 U.S. at 748.
 Interpreting *Cruzan* through *Glucksberg*, Chief Justice Rehnquist acknowledges the Constitutional guarantee to all competent persons to refuse life saving hydration and nutrition. 521 U.S. at 725. Interestingly, both these two cases remain open to interpretation not only by the Chief Justice but by Justices O’Connor and Stevens, B.F. FURROW *et al.*, *supra* note 26 at 244. See McStay, *Terminal Sedation: Palliative Care for Intractable Pain, Post Glucksberg and Quill*, 29 AM. J. L. & MED. 45 (2003); Quill & Byock, *Responding to Intractable Terminal Suffering: The Role of Terminal Sedation and Voluntary Refusal of Food and Fluids*, 132 ANN. INTER. MED. 408 (2000).
 See also Angell, *The Supreme Court and Physician-Assisted Suicide—The Ultimate Right*, 336 NEW ENG. J. MED. 50 (1997).
213. *Washington v. Glucksberg*, 521 U.S. at 751.
214. *Washington v. Glucksberg*, 521 U.S. at 737.
215. Stolberg, *Cries of The Dying Awaken Doctors to a New Approach*, N.Y. TIMES, June 30, 1997, at A1; Orientlicher, *supra* note 206.
216. *Cf.* Rev. Code Wash. Ann § 70.122.020(9) (West 1996-97).
217. Smith, *Utility and The Principle of Medical Futility: Safeguarding Autonomy and The Prohibition Against Cruel and Unusual Punishment*, 12 J. CONTEMP. HEALTH L. & POL’Y 16 (1996); Cantor, *Glucksberg, the Putative Right to Adequate Pain Relief and Death with Dignity*, 34 J. HEALTH L. 301 (2001).
 See M.B. ZUCKER & H.D. ZUCKER, *MEDICAL FUTILITY AND THE EVALUATION OF LIFE-SUSTAINING INTERVENTIONS* (1997).
218. *Supra* note 201.
 See generally Meisel, Jernigan *et al.*, *Prosecutors and End-of-Life Decision Making*, 159 ARCH. INTER. MED. 1089 (1999).
219. *Supra* note 201.
 In 1975, a Dying Patients Bill of Rights was proposed as an informal guide to health care providers. Among the sixteen enumerated rights are the right to be free from pain, to die in peace and dignity and the right to be cared for by caring, sensitive people who understand the personal needs of the dying. G.P. SMITH, II, *LEGAL AND HEALTHCARE ETHICS FOR THE ELDERLY* (1996), Appendix E at 157.
220. Trafford, *The Act of Dying, The Art of Living*, WASH. POST HEALTH, July 1, 1997, at 6.
 See Lynn *et al.*, *Defining the Terminally Ill: Insights from SUPPORT*, 35 DUESQUENE L. REV. 311 (1996); McGivney & Crooks, *The Care of Patients with Severe Chronic Pain in Terminal Illness*, 251 J.A.M.A. 1182 (1984).
221. *Id.*
 See S.B. NULAND, *HOW WE DIE: REFLECTIONS ON LIFE’S FINAL CHAPTER* (1994); Ardwig, *Is There A Duty to Die?*, 27 HASTINGS CENTER RPT. 32 (1997).
222. Woolley, *AMA Issues Bill of Rights for Dying*, THE DETROIT NEWS, June 23, 1997, at A1.
 See *infra* notes 236, 237 (regarding the National Conference of Catholic Bishops directive on end-of-life care).
223. *Id.*
 See, *Doctors Design Rules for Care for The Dying*, N.Y. TIMES, June 23, 1997, at A12.
224. Br. Medical Assoc., *WITHHOLDING AND WITHDRAWING LIFE-PROLONGING MEDICAL TREATMENT* (1999).

225. *Id.*

Originally taken as short-term treatments for post surgical patients, nutrition and hydration were used subsequently for any patient unable to eat or drink—no matter what the medical prognosis was. Thereafter, it was seen as *basic care* rather than treatment—this, in spite of the fact that in the past (as well as it is still today in most parts of the world) the process of dying is accompanied by the inability to take food and water. D. CALLAHAN, *THE TROUBLED DREAM OF LIFE* 80-81 (1993).

226. Murray, *Doctors Want Final Say Over Patients' Lives*, THE (LONDON) TIMES, June 24, 1999, at 12.

The 1993 controlling Lords case was *Airedale NHS Trust v. Bland* [1993] AC 789 and held it was the function of the judiciary to *verify the diagnosis* of any patient said to be, medically, in a permanent vegetative state, and to decide whether nutrition and hydration could be withdrawn subsequently. *See* PRINCIPLES OF MEDICAL LAW § 4.214 (I. Kennedy & A. Grubb eds. 1998).

See generally, Parks, *A Right to Die with Dignity: Using International Perspectives to Formulate a Workable U.S. Policy*, 8 TULANE J. INT'L & COMP. L. 447 (2000).

227. *Id.*

228. H. BENSON, *TIMELESS HEALING: THE POWER AND BIOLOGY OF BELIEF* 198 (1996).

229. *See* R.S. MAGNUSSON, *ANGELS OF DEATH: EXPLORING THE EUTHANASIA UNDERGROUND* (2002).

230. Sulmasy & Lynn, *End of Life Care*, 277 J.A.M.A. 1854 (1997).

See Cassell, *The Nature of Suffering and The Goals of Medicine*, 306 NEW ENG. J. MED. 639 (1982).

231. Heft, Siegler, *et al.*, *The Rise and Fall of The Futility Movement*, 343 NEW ENG. J. MED. 293 (2000).

It has been suggested that the real problem is not defining futility but, rather, an “absence of trust between doctor and patient when it comes to weighing odds and ends,” and thus the need to validate the moral authority of physicians when they order cessations of medical treatment in end-stage illness. CAPLIN, *supra* note 199 at 90-92.

232. Heft, *id.*

See THE CASE AGAINST ASSISTED SUICIDE: FOR THE RIGHT TO END-OF-LIFE CARE (K. Foley & H. Hendin eds. 2002) (arguing that intractable end-of-life suffering can be eliminated by palliative comfort care).

233. Stolberg, *supra* note 215.

It has been suggested that—as a practical matter—a right to passive euthanasia was recognized and granted in the *Cruzan* case when the Supreme Court acknowledged a right to refuse life sustaining treatment and to active euthanasia through the administration of terminal sedation. The crucial concern then becomes whether to recognize a right to assisted suicide which, arguably, not only enhances patient welfare but reduces the inherent risks of allowing euthanasia. *Cruzan v. Director, Missouri Dept. of Health, et al.*, 497 U.S. 261 (1990). Orientlicher, *The Alleged Distinction Between Euthanasia and the Withdrawal of Life-Sustaining Treatment: Conceptually Incoherent and Impossible to Maintain*, 1998 ILL. L. REV. 837.

See also D. ORIENTLICHER, *MATTERS OF LIFE AND DEATH: MAKING MORAL THEORY WORK IN MEDICAL ETHICS AND THE LAW* (2001).

234. *See* Smith, *All's Well That Ends Well: Toward A Policy of Assisted Rational Suicide or Merely Enlightened Self-Determination?*, 22 U. CAL. DAVIS L. REV. 275 (1989).

See Emanuel, Fairclough & Emanuel, *Attitudes and Desires Related to Euthanasia and Physician-Assisted Suicide Among Terminally Ill Patients and Their Caregivers*, 284 J.A.M.A. 2460 (Nov. 15, 2000) reporting on a survey of 988 terminally ill patients—a majority (or 60.2%) of whom expressed the opinion that euthanasia and physician-assisted suicide should be available to all Americans. Yet, of this group, only 10.6% reported seriously considering either of these options for themselves. *Id.*

235. Quill, *Death and Dignity—A Case of Individualized Decision Making*, 324 NEW ENG. J. MED. 691 (1991).

See Hamel & Lysaught, *Choosing Palliative Care: Do Religious Beliefs Make a Difference?*, 10 J. PALLIATIVE CARE 61 (1994).

236. Principle 56, *The Ethical and Religious Directions for Catholic Health Care Services* (1994), Nat'l. Conf. Cath. Bishops.
See Cook, Rocher *et al.*, *supra* note 165.
237. *Id.*, Principle 57.
See Wheat, *supra* note 121.
238. Grossman, *Pope Declares Feeding Tubes a 'Moral Obligation': Directive Applies to Vegetative Patients*, USA TODAY, April 2, 2004, at 1A.
239. Tammeus, *Pope's Stance Puts Pressure on Hospitals*, KANSAS CITY STAR, April 3, 2004, at A1.
240. *Id.*
241. *Supra* note 238.
242. *Id.*
See G.P. SMITH, II, LEGAL AND HEALTH CARE ETHICS FOR THE ELDERLY ch. 7 (1996); *supra* note 237.
243. *Supra* note 239.
244. *Id.*
245. *Supra* note 186.
See Symposium: *Appropriate Management of Pain*, 24 J. L. MED. & ETHICS 285 (1996).
See also Burt, *The Supreme Court Speaks—Not Assisted Suicide—But a Constitutional Right to Palliative Care*, 337 NEW ENG. J. MED. 1234 (1997) (arguing such a right is to be found within the “liberty” provided by the Due Process Clause of the 14th Amendment to the Constitution and is comparable to the right to abortion and the right to refuse unwanted medical treatment understood as such to be derived from this same liberty). Shepard, *supra* note 204 at 49.
See also L. R. KASS, LIFE, LIBERTY AND THE DEFENSE OF DIGNITY ch. 7 (2002).
246. Shepard, *supra* note 204.
See generally, Quill *et al.*, *Care of The Hopelessly Ill—Proposed Clinical Criteria for Assisted Suicide*, 327 NEW ENG. J. MED. 1380 (1992); Baron, Bergstresser, *et al.*, *A Model State Act to Authorize and Regulate Physician Assisted Suicide*, 33 HARV. J. LEGIS. 1 (1996).
247. *Supra* notes 210, 211.
See the American Bar Association's position on pain management and its unintended consequences, *supra* notes 187, 201.

Conclusion

Society's relationship to the new Age of Biotechnology is shared—to one degree or other—by both religion and law. Whether these two forces are reactive to or directive of the scientific advances of biomedical science is largely an open question. There can be no uncertainty, however, that religion—with faith as an inextricable value within it—and law, as the bulwark of civilized action in contemporary society, form a framework for principled decisionmaking in this new Age. The extent to which this framework presents itself as one, unyielding *a priori* reference point for analysis, contemplation and action or—alternatively—sets normative values or constructs shaped more directly by each situation giving rise to an issue of concern—remains a contentious matter of current debate.

With either approach—*a priori* or situational—the formative process of application that seeks to lessen personal suffering and achieve the greatest sustained level of social good (or the maintenance of health and the prevention of disease) and which, in turn, is guided by a spirit of humanity and love, is the preferred norm to be applied in the decisional process. The process applies equally to all aspects of the biotechnology—from the development of an ethic of free scientific investigation, the passage of laws which shape or define acceptable normative conduct within the New Biology, the placement of limits on procreational autonomy through uses of reproductive biology such as cloning and other genetic enhancements such as stem-cell research and—finally—the development of policies regarding the necessity of life supports for terminally ill patients.

In a fundamental way, the ethical and—admittedly—situational principles of fairness, justice, and love shape the framework for principled decisionmaking in applications of genetic knowledge, medicine, and biotechnology. Common sense is, as well, an important operational value.

The epistemologies and taxonomies of religion, biotechnology and law are—to be sure—separate, yet they are equal as approaches to reality. Indeed, all three share a synergetic relationship—for, they seek to understand and improve the human condition. Law sets normative standards of conduct for social discourse while religion, although building on tradition, advances sets of intellectual beliefs, not abstract ideas, and presents a way of life for its adherents. Thus, within every religious denominational community, are found communal rituals, ethical values and distinctive forms of individual experiences. At the core of the religious inquiry within these faith communities is exploration of the purpose of human life and of destiny. Today, the challenge for religion is to link these traditional areas of concern with a new relevance to the wonders of biomedical technology.

While it may be thought, initially, that faith is the capstone of religion, upon reflection, it is seen that central to religious belief is knowledge. Thus, although speaking different languages, both science and theology—when translated—are seen as seeking truth and wise judgment. The scientific experience seeks to explicate the unknown and make it reality. In spirituality, the foundational experiences tie to meaning, purpose and teleology.

The new molecular science is requiring a complete re-thinking of the scheme of the universe and of humanity's role within it. It is forcing a re-evaluation of, heretofore, accepted theological issues including determinism versus free will, the limits of reproductive biology, the meaning of personhood from its early formation to its conclusion, and distributive justice. Within this context, scriptural texts appear outdated and impractical.

Precise and concrete directives for bioethical decisionmaking are seldom found in theology. Rather than structuring specific norms, fundamental values are affirmed. The Roman Catholic Church more than any other Christian faith, has—historically—led, and often shaped, the critically important ethical, moral, and social issues of the day. Definitive teachings of the Magisterium—from the Pope and the Bishops—allow the faithful to know with certainty the position of their Church on all aspects of the New Biology. Other Christian denominations do not speak with one voice. Certainly, for example, the World Council of Churches equates in no way with the National Conference of Catholic Bishops in scope or significance of authoritative teachings and guidance.

If religion in general is to have contemporary relevance to medical science, it must offer as, observed, guidelines which shape a balanced and reasonable common sense response to it—a response which infuses religious, moral, and ethical insights and values into present scientifically-based ethics rooted in evolution and reproductive biology and even seeks to restyle itself, perhaps, as “biotheology.” Although morality and religion are not identifiable with each other, there is no question that imbedded within religion is a code of values. The extent to which modern society receives its moral compass from religion becomes the pivotal issue.

Whether deliberative democracy is a practical, as opposed, to aspirational goal in the total decisional process of the biotechnological revolution is an open question—this, because of the unwillingness of the average citizen to become educated and informed on the critical issues of the day. If freedom is seen in terms of a social contract, citizens must realize that the validity of the contract can only be sustained over the long term if they assume social responsibilities to participate in their governance; for, the more who enter the public debate of the New Biology, the greater the opportunity for biological science to become “democratized” and the more representative the whole process becomes.

On May 26, 2004, a bold, decisive step was taken by the United States Court of Appeals for the Ninth Circuit—one that affirms a lower court determination, discussed in Chapter 6, which validates the democratic principle of self governance. By sustaining the constitutional integrity of the Oregon Death with Dignity Act—passed by a 1994 voter referendum and, after a failed challenge to it, re-approved again in 1997, the Appeals Court acknowledges, unequivocally, that the federal government cannot encroach upon state authority in order to regulate medical practice at the end of life. Thus, Attorney General John Ashcroft's 2001 Directive to the Drug Enforcement Administration to pursue, and possibly revoke the licenses of physicians who prescribe lethal prescriptions for the terminally ill, is an impermissible intrusion on the very tenets of deliberative democracy. The national debate will continue and—by no means—is settled by this case. The

wisdom of the judicial holding, however, will serve to both inform and shape a new enlightened discourse on the broader right of self-determination and the primacy of state sovereignty in resolving fundamental issues of this nature. (*Oregon v. Ashcroft et al.*, 368 F.3d 1118 (9th Cir. 2004)).

The ultimate goal of law should be to promote and effect decisions which not only can be placed within the boundaries of scientifically sound knowledge, but thus reflect, approximately, the scientific state of the art. Law all too often reacts to science rather than directs it. It would be better if both became full partners in the enterprise of the new Age of Biotechnology. If law is to regulate, adequately, the progeny of the new sciences, it must begin—in the first instance—to understand more fully science and technology.

The problem of human suffering, and the task of minimizing it, is an issue of major—if not central—significance to all the religions of the world. The new genetic medicine—indeed, the underlying tenets of the new reproductive biology—may be seen, then, as a response to the very enigma of human suffering; for, both medical scientists and physicians endeavor to ameliorate it.

In the final analysis, it remains for law to serve as a mechanism or a framework for principled decisionmaking and thereby effect this duality of purpose between religion and medical science. Ideally, this goal can be realized through wise and humane legislation, administrative policies and judicial precedents designed to assume both distributive and corrective justice in the delivery of health care and the advancement of science. If achieved, this goal—in turn—will have the effect of improving the human condition by safeguarding personal dignity and upholding the value and the dignity of all persons.

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