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advantages of Cryonics and how it will affect our legal structure.

For the interest of my colleagues, I am inserting Professor Smith's analysis:

CRYONIC SUSPENSION: A PROSPECT FOR IMMORTALITY

(By George P. Smith, II, professor of law, Catholic University Law School)

By* lowering the body temperature of a cancer patient 32 degrees from the usual 98.6 degrees for 41 minutes—stopping his heartbeat and inducing a state of hypothermia approximating suspended animation while performing surgery to remove a kidney growth which had spread through the vena cava into his heart—a group of physicians unwittingly advanced the possibility of at some time in the future allowing medical science of achieving a total body suspension in order to combat physical degeneration caused by such occurrences as cancer, heart disease, etc.¹

Popular interest in cryonic suspension, or "deep-freeze" burial, was highlighted recently in a news story which reported a jury award of \$928,594.00 in damages for breach of contract and fraud against a cryotorium—or place where the suspension of the cryon is conducted—for its failure to provide continuous suspension of two "dead" individuals. The cryons were thawed and their family maintained this legal action.²

The NBC television network, in a segment of its program, "Prime Time Saturday," broadcast on March 15, 1980, reported on the state of the art of cryonic suspension and found that approximately one hundred persons had contracted to be frozen upon death, for an initial cost of \$12,000.00 and a current charge of \$2,000.00 a year for maintenance thereafter. Another figure sets the costs of suspension at \$60,000.00.³ In 1976, some twenty-four bodies, or cryons, were then in suspension.⁴

CRYOBIOLOGY AND ITS PROGENY

Working with low temperature experiments in the 1950's, biologists designed the term, "cryobiology," in order to describe those investigations which were conducted well below normal body temperatures.⁵ Cryogenics, then, refers broadly to the technology of low temperature experiments, while cryonics pertains to all disciplines and programs centered on human cold storage.⁶

A survey of the literature of cryobiology is replete with successes in the freeze-preservation of viable cell suspensions, blood serum and micro-organisms, semen and non-viable tissues used for transplantation, cryosurgery, advanced research into the freeze-preservation of large mammalian organs and the plethora of other exciting uses.⁷ Although the experimentation and successes in transplanting human organs proceeds with definite success,⁸ a total cryonic suspension of an entire human body and its revival has yet to be achieved.⁹

CHALLENGES TO LAW AND MEDICINE

The major concern of both law and of medicine in meeting the challenges presented by the developing use and eventual perfection of cryonic suspension is to organize itself in such a manner as to perform as full partners in this area where dynamic decisionmaking is demanded. Law must not be merely anticipatory to the challenges of the New Biology; rather, it must develop its basic postulates for action from, by, through and with medicine.¹⁰

The pivotal issue or question concerning the use and administration of a cryonic suspension process is the extent to which a physician may be guilty of malpractice. More particularly, the immediate challenge here is the need to clarify the legal-medicine definition of death, and where necessary, validate a new concept of cryonic suspension thus avoiding criminal liability for murder, and by such actions thereby modify the laws of inheritance.

THE PHENOMENON OF DEATH

Although attempts to draw sharp distinctions between the legal and medical definitions of death have been attempted by serious scholars,¹¹ the law generally treats the determination as one of fact—determined accordingly by the "ordinary standards of medical practice" in each community and guided by the customs and laws of each state.¹²

While not regarded as infallible, the standardized methods for determining death are: irreversible cessation of spontaneous circulation and/or respiration; absence of reflex in the eyes' pupil; absence of brain activity and absence of response to nerve stimulations.¹³ As scientific advances continue, it may be expected that new criteria will be developed or a finer level of sophisticated application will be achieved in charting the occurrence of death. Owing to the rapid expansion of the technology of bio-medicine, it would be unwise for a statutory definition of death to be recognized which would structure criteria for diagnosing time of death. Regrettably, all too often the motivating forces behind the drive to evolve a uniform or statutory definition of death have been by many wishing to ensure a ready source for human transplantation.¹⁴

Meeting in Australia in 1968, the World Association put forth the argument 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 judgment supplemented 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 technological procedure be substituted for the overall judgment of the physician."¹⁵

Interestingly, in 1981, The President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research gave its unanimous approval, in drafting a Uniform Determination of Death Act, that death be redefined as an occurrence where: "(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 accepted medical standards."¹⁶

A NEW MEDICO-LEGAL DEFINITION

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 "decendent's" estate. A working definition of cryonic suspension would, thus, go far in easing potential difficulties in this field. Accordingly, cryonic suspension should be recognized and defined in law in medicine as that state where, under medical supervision, body tempera-

ture is lowered to such a degree that a condition of temporary cessation of vital processes is achieved.¹⁷ Given this definition, the vexatious Rules Against Perpetuities might not be a total bar to disposition of an estate.

LEGAL COMPLEXITIES IN ESTATE PLANNING

The Rule Against Perpetuities states that, "no interest is good unless it must vest, if at all, no later than twenty-one years after some life in being at the creation of the interest."¹⁸ Its object as first formulated and applied is the same today: namely, to confine the vesting of contingent estates to a relatively short period after their creation.¹⁹

Since the cryonic suspension and revival process will probably extend over a number of generations, it would seem obvious that the Rule would be violated. Yet, an argument could be made that a cryon could remain in a state of cryonic suspension twenty-one years without being pronounced dead. At the conclusion of this period, a judicial determination whether a scientific breakthrough existed for a cure of the disease which befell the cryon had been made or was imminent. If one did in fact exist or was predictably in the process of being perfected, an additional period of time (e.g., five to ten year period) could be arguably allowed for the suspension to be continued and revivification completed. If contrariwise no such medical or scientific breakthrough had been achieved or was ascertainable in the immediate future, a final, legal determination of the cryon's "death" would be made and the estate settled.²⁰

PREVENTING MURDER

In order to even encourage or allow physicians-scientists or lay persons to participate in the preparation of an individual for cryonic suspension before death, an exculpatory clause in the contract for suspension would have to be inserted which would have the effect of conferring an immunity from civil and criminal liability on the doctors, scientists and others for either failure to find a cure for the illness of those suspended during the period of suspension or for participating or supervising a surgical intervention (i.e., the initial suspension, itself) determined subsequently by a court to be life ending.

It would be wise, also, to have either a judicial recognition of the immunity from suit from a criminal prosecution for murder in connection with the acts of cryonic suspension undertaken by a physician on a living individual or, for that matter, a state statute which would admit as an absolute bar or total defense the acts undertaken to initiate the suspension.

Presently, to undergo a cryonic suspension, one must first be pronounced dead; and once such a pronouncement is made, in order to pay off a life insurance policy (since the policy is actually a death benefit), the insurance company needs a death certificate. If a legal and medical state of cryonic suspension were recognized, a suspension certificate might issue and the 1942 problems here of life insurance coverage would be resolved.²¹ It is obvious that the proceeds from the policy would be used to meet the initial expenses associated with the suspension process and the maintenance of it over the years until revival.

In those cases where, after a determination of death is made, one seeks to have his or her remains cryonically preserved, the law should be less flexible than in the cases of the suspension having been undertaken

*Footnotes at end of article.

before death. Indeed, to fail 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.

A NEEDED PARTNERSHIP

Rather than wait until the reality of human cryonic suspension occurs in order to map a response strategy or actual mechanism, law and medicine should begin to anticipate and to plan now for this and the other rapid developments of the New Biology and of the brave, yet necessarily somewhat frightened new world which will come in its aftermath.²² Only with a full and committed partnership between law and medicine can enduring progress—as opposed to uncharted chaos—be recorded as the benchmark of the 21st century.

FOOTNOTES

¹ Larry McShane, "Hopkins Saves a Life with New Technique," *Washington Post*, Oct. 12, 1983, at C1, col. 5.

² *Time*, June 22, 1981, at 71.

³ *Newsweek*, July 7, 1980, at 8.

⁴ *Newsweek*, August 16, 1976, at 11.

⁵ Robert W. Prehoda, "Suspended Animation" (Philadelphia: Chilton Book Co., 1969), p. 9; Audrey U. Smith, ed., "Current Trends in Cryobiology." (New York: Plenum Brooks, 1970).

⁶ Robert C. W. Ettinger, "Man Into Superman" (New York: St. Martin's Press, 1972), p. 251.

⁷ F. M. Guttman, A. Khalessi and G. Bendnikoff, "Whole Organ Preservation," *Cryobiology*, Vol. 6, (1970), pp. 339-346; Peter Mazur, "Cryobiology, the Freezing of Biological Systems," *Science*, Vol. 168, (1970), pp. 939-949.

⁸ Endre Nizsalovsky, "A Legal Approach to Organ Transplantation" (Budapest: Akademiai Kiado, 1974); Jesse Dukeminier, and David Sanders, "Organ Transplantation: A Proposal for Route Salvaging of Cadaver Organs," *New England Journal of Medicine*, Vol. 279, (1969), pp. 413-419.

⁹ Basile J. Luyet, and Marie P. Gehenio: "Life and Death at Low Temperatures" (Normandy, Mo.: Biodynamics, 1940). The first cryonic suspension of a human took place, allegedly on January 12, 1967. See, Robert F. Nelson, "We Froze the First Man" (New York: Dell Pub. Co., 1968); Lucy Kavalier, "Freezing Point" (New York: John Day Co., 1970), p. 256.

¹⁰ George P. Smith, "Manipulating the Genetic Code: Jurisprudential Conundrums," *Georgetown University Law Review*, Vol. 64, (1976), pp. 697-733; Warren E. Burger, "Reflections on Law and Experimental Medicine," in *Ethical, Legal and Social Challenges to the Brave New World*, p. 211 edited by George P. Smith, (Port Washington, New York: Associated Faculty Press, 1982).

¹¹ "Task Force on Death and Dying of the Institute of Society, Ethics and Life Sciences: Refinements in Criteria for Determination of Death," *Journal of the American Medical Association*, Vol. 221, (1972), pp. 48-53.

¹² *Ibid.*

¹³ N.T. Jeddalah, "The Uniform Anatomical Gift Act and a Statutory Definition of Death," *Transplantation Proceedings*, Vol. 8, Supp. No. 1, (1976), pp. 245-249.

¹⁴ John A. Robertson, "Organ Donations by Incompetents and The Substituted Judgment Doctrine," *Columbia Law Review*, Vol. 76, (1976), pp. 48-78; Jesse Dukeminier, "Supplying Organs for Transplantation," *Michigan Law Review*, Vol. 68, (1970), pp. 811-866.

¹⁵ International Comments: "Declaration of Sydney," *News Item, Journal of the American Medical Association*, Vol. 206, (1968) pp. 657; Alexander M. Capron, and Leon Kass, "A Statutory Definition for Determining Human Death: An Appraisal and a Proposal," Vol. 121, (1972), pp. 87-118.

¹⁶ "Minutes of the Eleventh Meeting of the President's Commission for the Study of Ethical Problems in Medical and Biomedical and Behavioral Research," Vol. 3, (July 9, 1983).

¹⁷ Robert C.W. Ettinger, "The Prospect of Immortality" (New York: Doubleday, 1964), p. 3.

¹⁸ John C. Gray, "The Rule Against Perpetuities" (Boston: Little Brown & Co., 1942), p. 1.

¹⁹ Daniel M. Schuyler, "The New Biology and The Rule Against Perpetuities," *University of California at Los Angeles Law Review*, Vol. 15, (1968),

pp. 420-435. See also, David Haber, "Cryonic Suspension—The Rule Against Perpetuities and Related Rules: The Proceedings of the First Annual Cryonics Conference," Unpublished Report, (1968), pp. 82 et seq.

²⁰ For a study of the detailed legal ramifications of cryonic suspension and The Rule Against Perpetuities, see George P. Smith, "Medical-Legal Aspects of Cryonics: Prospects for Immortality" (Port Washington, New York: Associated Faculty Press, 1983), Ch. 4

²¹ See generally "Couch Cyclopaedia of Insurance Law," edited by Ronald Anderson (New York: The Lawyers Co-operative, 1959).

²² George P. Smith, II, "Genetics, Ethics and the Law" (Port Washington, New York: Associated Faculty Press, 1981), pp. 2, 10.●

TURKISH FEDERATED STATE OF CYPRUS

HON. LANE EVANS

OF ILLINOIS

IN THE HOUSE OF REPRESENTATIVES

Friday, November 18, 1983

● Mr. EVANS of Illinois. Mr. Speaker, the recent events in Cyprus have alarming implications for the security of that region as well as for international stability. The action of the Turkish Federated State of Cyprus in declaring itself to be an independent state on Cyprus is dangerous and threatens U.S. relations with the southern flank of NATO.

The population of Cyprus is 80 percent Greek speaking. The current Cypriot Government is internationally recognized by the global community. Over the past 9 years, the Cyprus Government has been faced with the difficult prospect of trying to maintain peace while combating armed resistance supported by the Turkish Army.

This latest action can only lead to further deterioration of peaceful initiatives in the Aegean region.

On November 17, I joined with a large majority of my colleagues in passing House Concurrent Resolution 220 which condemns this unilateral declaration and calls on the Turkish Government to withdraw its support for this declaration.

I believe that the United States must muster all of its moral force to prevent the breakup of the Cypriot nation. The Turkish Government which, by its encouragement and support for this blatant violation of international law, must bear a heavy burden for any disruption of the peace.

The citizens of each country must be allowed to determine their own future without outside intrusion. The Reagan administration must recognize the implications of its current policies in this region, must encourage a peaceful resolution of the conflicts in this important region and must support self-determination through democratic means for the people of Cyprus.●

INDUSTRIAL POLICY

HON. LARRY E. CRAIG

OF IDAHO

IN THE HOUSE OF REPRESENTATIVES

Thursday, November 17, 1983

● Mr. CRAIG. Mr. Speaker, recently, Mr. Robert Crandall, a senior fellow at the Brookings Institute, wrote a review of "The Next American Frontier" and "Industrial Renaissance." As we all know, the Brookings Institute is well known as a liberals haven. However, in this particular review by Mr. Crandall, we find out he does not accept the assertions of Mr. Reich, and in fact finds Mr. Reich's assumptions and conclusions to be mistaken completely. Contrary to Reich's contention, the industrial sector did not decline markedly from the mid-1960's to 1980. And since 1975, the United States has outperformed every major industrial nation except Japan. The industrial policies of foreign governments have not been the great success that Reich claims, but a dismal failure.

Crandall agrees rather with the conclusion drawn by William Abernathy, Kim Clar, Alan Kantrow in their study of the automobile industry: that international competition is essential to revive flagging industries. The problems of the American economy result from excessive wages, government subsidies and protection, and lack of competition, the conditions that a national industrial policy would proudly continue.

Along with my fellow colleagues, I do not support proposals to create a national industrial policy. We need an aggressive foreign economic policy that incorporates the strengths of the free market system. At this point, Mr. Speaker, I would like to insert into the RECORD Mr. Crandall's penetrating review of the two books.

CAN INDUSTRIAL POLICY WORK?

(By Robert W. Crandall)

Any traveler to the industrial belt between New York and Milwaukee can see that our manufacturing sector is in trouble, but how—he may ask—have we fallen so far and so fast? Two new books from different sides of the Charles River at Harvard give us very different answers and, correspondingly, different solutions to the problem.

Robert Reich of the John F. Kennedy School of Government argues in *The Next American Frontier* that the problem lies in the inability of industry to shift to new products and new markets. His book sounds the drumbeat for industrial policy, a prescription with obvious appeal to center-left politicians as they gear up for the 1984 campaign.

On the more conservative right bank of the Charles, William Abernathy, Kim Clark, and Alan Kantrow of the Harvard Business School see things differently. The problem with basic industry is that it has failed to adopt to increasing competition, changing technology, and new product demands. To