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**BIOTECHNOLOGY AND THE COMMERCIAL
USE OF HUMAN CELLS: TOWARD AN
ORGANIC VIEW OF LIFE AND
TECHNOLOGY**

**Patricia A. Martin†
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I. INTRODUCTION

Biotechnology is the technology of life. It is young and challenging, raising new legal issues and provoking new concern regarding the role of technology in human life. The tools of biotechnology have made it possible to isolate and maintain cell cultures in a laboratory, to fuse different kinds of cells, and to alter and then clone cells' genetic material.¹ New commercial products can be made with these methods.² However, difficult issues arise when human cells or genes are involved. From the perspective of the medical patient or research subject, these issues concern the individual rights affected by the commercial exploitation of an individual's unique genetic identity.

Such issues are raised by *Moore v. The Regents of the University of California*.³ In this case, Mr. John Moore claims that tissue⁴ re-

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1. See *infra* notes 18-41 and accompanying text.
2. See *infra* note 44 and accompanying text.
3. *Moore v. The Regents of the University of California*, 202 Cal. App. 3d 1230, 249

moved from his body was used to establish a novel cell line.⁵ His cells are unusual. When cultured, they produce a wide variety of proteins that have enormous value as human therapeutics; and, with genetic engineering techniques, these proteins can be produced on a large scale.⁶ The cell line was established by Dr. David W. Golde, Mr. Moore's physician, along with another investigator.⁷ In 1984, a patent was issued covering the cell line as well as its derivative products, and commercial exploitation has begun.⁸ Dr. Golde has entered into development contracts with two companies, Genetics Institute, Inc. ("Genetics") and Sandoz Pharmaceutical Corporation ("Sandoz"), under which Dr. Golde acquired 75,000 shares of Genetics' stock; Genetics paid \$330,000 to Dr. Golde and the Regents of the University of California (the "University"); and Sandoz paid \$110,000 to Dr. Golde and the University.⁹ During this period, Mr. Moore was treated for hairy-cell leukemia but his cell line was established and developed without his knowledge or consent.¹⁰ By 1990, the commercial value of his cell line is expected to exceed \$3 billion.¹¹

The basic issues raised in *Moore* concern the rights one may have in the commercial exploitation of his or her own body tissue.¹² These rights are analyzed in the first part of this article, and the

Cal. Rptr. 494, *rev. granted*, 252 Cal. Rptr. 816 (1988) (hereinafter *Moore*). As of this writing, *Moore* is pending before the California Supreme Court where the legal sufficiency of the complaint remains in issue. (See *infra* notes 68-71 and accompanying text for a discussion of the procedural history of the case). Hence, the allegations of the complaint have yet to be proven, see 249 Cal. Rptr. at 498, n.1, and generally will be assumed to be true for the purpose of this analysis.

4. Unless otherwise indicated, "tissue" is used broadly to refer to any biological part or product of the human body.

5. *Moore*, 249 Cal. Rptr. at 498, 499-500. A "cell line" has been defined as a sample of cells, adapted to artificial laboratory cultivation, that sustain continuous, indefinite growth in culture. U.S. Congress, Office of Technology Assessment, *New Developments in Biotechnology: Ownership of Human Tissues and Cells - Special Report 3* n.1, 33 OTA-BA-337 (Washington, D.C.: U.S. Government Printing Office, March 1987) (hereinafter *Ownership of Human Tissues*).

6. *Moore*, 249 Cal. Rptr. at 498.

7. *Id.* at 498, 499-500.

8. *Id.* at 498, 501. See also *id.* at 516-30 (patent covering cell-line and derivative products attached as Appendix A to court's opinion).

9. *Id.* at 498, 500-501.

10. *Id.* at 498, 499-500, 501.

11. *Id.* at 501.

12. This article does not address the use of embryonic or fetal tissue in research and product development. The use of such tissue involves special concerns such as the moral and legal status of the human embryo and fetus, the relationship between research and abortion, and the question of who (if anyone) has the right to consent to research with an abortus. These issues are beyond the scope of this article.

following arguments are made: The principle of informed consent protects an individual's right to be informed if the removal of his or her tissue will serve a commercial purpose.¹³ The right to privacy established by tort law protects an individual's right to consent to the commercial use of his or her tissue.¹⁴ Further, this new aspect of the privacy right may be recognized as a protectable property right, giving one the right to redress if the right is infringed.¹⁵

In *Moore*, this analysis supports Mr. Moore's right to sue for a reasonable share of the profits derived from the commercial exploitation of his cell line. Generally applied to medical treatment and biomedical research, the analysis would require fuller disclosure during the informed consent process so the individual involved could decide whether or not to participate in research linked to some kind of commercial development. Further, the analysis would entitle individuals to compensation, for the commercial use of their tissue, depending on the relative weight of various factors: for example, whether the individual's tissue was unique, whether the tissue of one individual or many individuals was used in a research project, and whether the research project was related directly to a commercial development.

Moore is thus important as legal precedent. On a policy level, *Moore* is important because it invites us to reexamine the relationship between our humanity and technology, to ask what it means to use technology in a human way as well as what it means to use our humanity in a technical way. This question is addressed in the second part of this article by exploring the assumptions of our modern world view.¹⁶ As the discussion postulates, we are the heirs of a mechanistic world view, supported by the Scientific Revolution of the sixteenth and seventeenth centuries. Yet, in our time, this view is giving way to a more integrated world view, supported by the dynamic implications of more recent scientific work. This transition should enhance our understanding of nature, human dignity, the connections among individuals, and the human aspects of our technical abilities.¹⁷ Also, the transition is germane to *Moore*, for

13. See *infra* notes 73-130 and accompanying text.

14. See *infra* notes 131-160 and accompanying text.

15. See *infra* notes 161-187 and accompanying text.

16. See *infra* notes 245-296 and accompanying text. The second part is more in the nature of a speculative essay. Drawing mainly from the history of science and literature, it thus tries to orient the policy issues *Moore* has raised within a larger context than the law alone can provide.

17. See Tribe, *Technology Assessment and the Fourth Discontinuity: The Limits of Instrumental Rationality*, 46 S. CAL. L. REV. 617 (1973) [hereinafter *Technology Assessment*]. Discussing the relationship between man, technology, and contemporary ways of thought,

Moore points to the problems of mechanism as well as to the solutions made possible by a more organic view of the relationship between life and technology.

II. *Moore*: Human Dignity and the Commercial Use of Human Tissue

A. *Understanding The Dispute In Moore*

1. The Scientific and Commercial Context

Moore is the product of biotechnology, and biotechnology presently includes three main techniques: cell and tissue culture technology, hybridoma technology, and recombinant DNA technology.¹⁸ A cell culture is based on a sample of cells removed from an organism; a tissue culture is based on an isolated piece of tissue.¹⁹ In either event, the aim of a laboratory culture is to establish a cell line, that is, a sample of cells able to grow in culture over a continuous, indefinite period of time.²⁰ The chance of success, however, is low.²¹ For example, tissue may be contaminated or damaged when it is removed, and human cultures require a complex mix of nutrients, strict temperature controls, and constant levels of acidity.²² Further, it is not yet known exactly how or why one culture becomes "immortal" and another does not.²³

Hybridoma technology is based on cell fusion, a technique in which cells from different sources are fused to form a hybrid.²⁴ To

Professor Tribe points to a "discontinuity" between man and machines which, he argues, is related to "instrumental rationality," that is, a mode of thought and action based on the selection of efficacious, rational means to achieve particular ends or values. *See id.* at 617-18. To bridge this man-machine (or subject-object) discontinuity and transcend the limits of instrumental rationality, Tribe relies on three postulates: (1) that "an act shapes the actor no less than the actor chooses the act," *id.* at 654-54; (2) that reason and desire (or means and ends) really form an integrated reality rather than an inexorable dichotomy, *id.* at 654; and (3) that rationality has both an individual and a communal dimension—individual in the sense that individual actions express a personal commitment and are deeply rooted in the individual's life history, and communal in the sense that individuals must act with reference to coherent bodies of principle which are shared by communities and which may evolve over time. *Id.* at 652-54; *See also* Tribe, *Ways Not To Think About Plastic Trees: New Foundations for Environmental Law*, 83 *YALE L. J.* 1315, 1326-27, 1327 n.58 (1974) [hereinafter *Plastic Trees*]. Tribe thus envisions a "constitutive rationality" or an "organic shaping of an inseparable triad consisting of men, tools, and values as the three define and constitute one another over time." *Technology Assessment*, *supra* note 17, at 654.

18. *Ownership of Human Tissues*, *supra* note 5, at 31.

19. *Id.*

20. *Id.* at 33.

21. *Id.* at 32, 33.

22. *See id.* at 33.

23. *See id.* at 33-34.

24. *Id.* at 35.

create a "hybridoma," a tumor cell (called a myeloma) is fused with a certain kind of white blood cell (called a B lymphocyte or B cell).²⁵ The tumor cell is immortal—it grows and multiplies indefinitely in culture.²⁶ A B cell responds to a specific foreign substance (called an antigen) by producing a specific antibody to the substance.²⁷ Hence, if a B cell is injected with a particular antigen and then fused with a myeloma, the resulting hybridoma will be an immortal cell line producing a single, specific (or monoclonal) antibody.²⁸

Hybridoma research is also progressing with the study of T lymphocytes (or T cells) and macrophages. Like B cells, these are specialized cells involved in the immune system; but, instead of producing antibodies, they produce proteins which regulate the immune response by transmitting signals between cells.²⁹ These protein molecules are referred to as "lymphokines,"³⁰ and efforts are now being made to produce lymphokines by fusing an immortal cancer cell with an isolated T cell, thus creating a T cell hybridoma.³¹

Recombinant DNA technology reflects the brief but dramatic history of genetics. In the mid-nineteenth century, Gregor Mendel identified the basic mechanism of heredity in what are now called genes.³² In the late nineteenth and early twentieth centuries, microscopic studies revealed new details about the cell, including the cell nucleus with its "colored bodies" or chromosomes (made more visible by dye) which carried the Mendelian gene.³³ In the early 1940s, investigators identified the material of which genes are made, deoxyribonucleic acid ("DNA").³⁴ In 1953, James Watson and Francis Crick uncovered the structure of DNA, the elegant double helix.³⁵

In the early 1970's, restriction enzymes were discovered (special types of complex proteins that catalyze specific biochemical re-

25. *Id.* at 37-38.

26. *Id.* at 38.

27. *Id.* at 37-38.

28. *Id.* at 38.

29. *Id.* at 38-39.

30. *Id.* at 39.

31. *Id.*

32. United States Congress, Office of Technology Assessment, *Impacts of Applied Genetics*, reprinted in J. AREEN, P. KING, S. GOLDBERG, & A. CAPRON, LAW, SCIENCE AND MEDICINE 3 (1984) (hereinafter Areen, et. al).

33. *Id.* at 4.

34. *Id.*

35. *Id.*

actions), which made it possible to "cut" DNA at certain points.³⁶ Once cut, the exposed ends are "sticky" and attach to other DNA fragments cut by the same process.³⁷ The resulting strand of DNA is known as "recombinant DNA" or "rDNA."³⁸ In a slight variation on this technique, a piece of DNA can be spliced into the plasmid of a bacterium,³⁹ (a plasmid is a ring of DNA outside the bacterium's single chromosome), and then the hybrid plasmid can be transferred back into the bacterium. The new gene functions inside the bacterium and is replicated many times; i.e., the hybrid plasmid replicates autonomously inside the bacterium and the bacterium itself replicates in culture.⁴⁰ Thus, by way of example, if the human gene responsible for insulin production is spliced into a plasmid, the resulting culture of bacteria will contain many copies of the new gene and produce large amounts of human insulin.⁴¹

In 1980 and 1984, two related patents were issued to Stanford University, one covering the basic process of creating rDNA and the other covering genetically engineered plasmids.⁴² Also in 1980, the United States Supreme Court held that genetically engineered bacteria (the actual microorganisms) were subject to patent protection.⁴³

Hence, in the nineteen eighties, biotechnology has emerged as a nascent but explosive industry with great commercial potential in areas as diverse as human therapeutics, plant agriculture, and hazardous waste management.⁴⁴ As the technology has grown, new

36. President's Comm'n for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research, *Splicing Life* 32 (1982) (hereinafter *Splicing Life*). See also *Ownership of Human Tissues*, *supra* note 5, at 41-44, for a brief review of recombinant DNA technology.

37. *Ownership of Human Tissues*, *supra* note 5, at 41-44.

38. *Id.*

39. *Id.* at 32-33.

40. *Id.* at 33.

41. *Id.*

42. AREEN, *supra* note 32, at 5.

43. *Diamond v. Chakrabarty*, 447 U.S. 303 (1980).

44. See generally U.S. Congress, Office of Technology Assessment, *New Developments in Biotechnology: U.S. Investment in Biotechnology - Special Report 79-80*, OTA-BA-360, (Washington, D.C.: U.S. Government Printing Office, July 1988) (hereinafter *Investment in Biotechnology*) (areas of research and development in biotechnology include therapeutics and diagnostics for use in human health care, chemicals, plant and animal agriculture, biotechnology reagents, biotechnology equipment, and cell cultures, with human health care attracting the greatest investment). With respect to human therapeutics, biotechnology has been applied to create new pharmaceuticals or products with therapeutic value, *id.* at 161; in the area of plant agriculture, to modify plants in agriculture or cultivation so "they can resist insects and disease, grow in harsh environments, provide their own nitrogen fertilizer, or be more nutritious," *id.* at 194; and in hazardous waste management, "to engineer systems that use biological processes to degrade, detoxify, or accumulate contaminants." *Id.* at 2323. For a

links between academics and industry have been forged,⁴⁵ and generous research and development support has been obtained from many sectors: the federal government,⁴⁶ state government,⁴⁷ and commercial industry (including new biotechnology companies and older, more diversified corporations).⁴⁸

2. The Facts and Procedural Posture of the *Moore* Lawsuit

The techniques and sociology of biotechnology are evident in *Moore*. In 1976, John Moore was referred to the Medical Center of the University of California, Los Angeles ("UCLA") for treatment of hairy-cell leukemia.⁴⁹ In October 1976, Mr. Moore's spleen was

good overview of the biotechniques used in these areas as well as the factors affecting research and development, see *id.* at 159-90 (therapeutics), 191-220 (plant agriculture), 221-51 (hazardous waste management).

45. Collaboration between universities and industry has become common in biotechnology research. See generally *Investment in Biotechnology*, *supra* note 44, at 111-27. Such collaborative arrangements may take a variety of forms. For example, private industry may fund university research; universities may acquire an equity (or financial) interest in biotechnology firms; or universities and industry may join in commercial joint ventures or research consortia. See *id.* at 113, 115-17. Likewise, university faculty may acquire an equity interest in biotechnology companies or may become involved with industry through research contracts or grants, consulting agreements, or positions as a company officer, director, or member of a science advisory board. See *id.* at 116. Such arrangements may enhance the productivity of both academics and industry, but also may pose new problems, such as restricting publication and the free exchange of information, shifting research toward more commercial applications, and causing conflicts in allegiance between the university and industry. See *id.* at 118-25.

46. Total federal funding of biotechnology research and development was in the range of \$2.72 billion in fiscal year 1987, \$2.28 billion in fiscal year 1986, and \$2.16 billion in fiscal year 1985, with the National Institutes of Health contributing 83.5% of these amounts. *Investment in Biotechnology*, *supra* note 44, at 37. See generally *id.* at 33-52.

47. As of 1986, 33 states had programs in place designed to foster biotechnology through activities such as the following: research and development spending in state universities and biotechnology companies (33 states), biotechnology training at state colleges and universities (23 states), financial and technical support for biotechnology companies (27 states), and the creation of "centers" to encourage collaboration between academic disciplines, between universities, and between universities and industry (28 states). *Investment in Biotechnology*, *supra* note 44, at 58-62. Leadership has come from the executive branch of state government, the state legislature, or state university system. See generally *id.* at 53-73.

48. As of January 1988, some 403 companies, started as entrepreneurial ventures to commercialize biotechnology, were actively engaged in biotechnology work; and some 70 large, more established corporations with diversified product lines had significant investments in biotechnology. See *Investments in Biotechnology*, *supra* note 44, at 77-80. In 1987, these two groups of companies invested a total estimated amount of \$1.5 billion to \$2.0 billion in biotechnology research and development (roughly two-thirds of the amount invested by the federal government). See generally *id.* at 76-94.

49. *Moore*, 249 Cal. Rptr. at 498, 520-21 ("Case History" section of patent attached as Appendix A to court's opinion).

removed at UCLA.⁵⁰ From November 1976 through September 1983, Mr. Moore (a Washington resident) made a number of follow-up visits to UCLA for further removal of blood, blood serum, skin, bone marrow aspirate, and sperm.⁵¹

Mr. Moore's cells are unique. They can be cultured for an indefinite period of time (creating a cell line) and maintain the properties of T lymphoblasts (cells giving rise to T lymphocytes).⁵² Also, the cells produce a wide variety of proteins, which normal T cells produce when stimulated by an antigen (or foreign substance),⁵³ which can be isolated. Some of these proteins include immune interferon (a lymphokine), erythroid potentiating activity (also a lymphokine) which is important in the early formation of red blood cells, and colony stimulating factor which stimulates the formation of granulocytes (a certain kind of white blood cell) and macrophages (both important in regulating the immune response).⁵⁴ Through such protein production, the cells provide a source of the genes from which the proteins are expressed;⁵⁵ and with genetic engineering techniques, these genes can be introduced into microorganisms which then become busy micro-factories, designed for continuous, large-scale protein production.⁵⁶ The resulting proteins have enormous potential for therapeutic use in human beings.⁵⁷

Mr. Moore's physician at UCLA, Dr. David W. Golde, and Shirley G. Quan, another employee of UCLA, established the cell line using Mr. Moore's spleen cells.⁵⁸ On January 30, 1981, Dr. Golde and Ms. Quan filed a patent application based on the cell line they named "Mo."⁵⁹ On January 6, 1983, the first patent application was abandoned and a second was filed; and on March 20, 1984,

50. *Id.*

51. *Id.* at 499, 500.

52. *Id.* at 518, 519, 521 ("Summary of the Invention," "Description of the Specific Embodiments," and "Experimental Procedures" sections of the patent attached as Appendix A to the court's opinion).

53. *Id.* at 519 ("Description of the Specific Embodiments" section of the patent attached as Appendix A to the court's opinion).

54. *Id.* at 518, 519-20 ("Summary of the Invention" and "Description of the Specific Embodiments" sections of the patent attached as Appendix A to the court's opinion). For a general overview of research involving lymphokines, see *Ownership of Human Tissues, supra* note 5, at 38-40.

55. *Moore*, 249 Cal. Rptr. at 518 ("Summary of the Invention" section of the patent attached as Exhibit A to the court's opinion).

56. *Id.*

57. *Id.* at 498.

58. *Id.* at 498, 517 (patent, attached as Appendix A to court's opinion, listing Dr. Golde and Ms. Quan as "inventors").

59. See *id.* at 517 (patent attached as Appendix A to court's opinion).

a patent was issued covering the Mo line and its derivative products.⁶⁰ The patent rights were assigned to the University.⁶¹

During this same period in 1981, 1982, and 1983, Dr. Golde contracted with two companies, Genetics and Sandoz, to develop the Mo line's commercial potential.⁶² As part of these transactions, Dr. Golde acquired 75,000 shares of Genetics' stock at a nominal price; Genetics paid \$330,000 over three years to Dr. Golde and the University; and Sandoz paid \$110,000 to Dr. Golde and the University.⁶³

On April 11, 1983, Mr. Moore made another trip to UCLA and was asked to sign a consent form allowing tissue samples to be taken from him and used in research. Mr. Moore signed the form.⁶⁴ On September 20, 1983, Mr. Moore again was asked to sign a consent form allowing tissue to be removed and used in research, but this form contained an express provision which Mr. Moore could check to grant to the University any rights he might have in his cell line or any product developed from his blood or bone marrow. Mr. Moore signed the form, but declined to check the provision.⁶⁵

Neither Dr. Golde, Ms. Quan, nor any other person acting on behalf of the University, Genetics, or Sandoz ever informed Mr. Moore of any facts regarding his cell line's commercial value.⁶⁶ By 1990, the market for products derived from his cell line or tissues is estimated to be more than \$3 billion.⁶⁷

Based on these allegations, Mr. Moore sued the University, Dr. Golde, Ms. Quan, Genetics, and Sandoz on a variety of theories, including conversion, lack of informed consent, breach of fiduciary duty, fraud and deceit, unjust enrichment, quasi-contract, breach of the implied covenant of good faith and fair dealing, intentional infliction of emotional distress, negligent misrepresentation, interference with prospective advantage, slander of title, accounting, and declaratory relief.⁶⁸ The trial court sustained demurrers to the complaint and dismissed the action. The court reasoned that Mr. Moore had not stated a cause of action for conversion and that the

60. *Id.* at 498, 500, 501, 516-30 (patent attached as Appendix A to court's opinion).

61. *Id.* at 501, 517 (patent, attached as Appendix A to court's opinion, listing the University as assignee).

62. *Id.* at 498, 500-501.

63. *Id.* at 500-501.

64. *Id.* at 501.

65. *Id.* at 501, 531-32 (consent form attached as Appendix B to court's opinion).

66. *Id.* at 498-99, 499-500, 501.

67. *Id.* at 498-99, 501.

68. *Id.* at 499.

other counts, which incorporated the allegations of the conversion count, were defective for the same reason.⁶⁹

The Court of Appeal reversed the judgments of dismissal, holding that Mr. Moore could state a cause of action for conversion.⁷⁰ In a thought-provoking opinion, the appellate court concluded that Mr. Moore had a property interest in his own body, had not abandoned the interest in his spleen by consenting to its surgical removal (a "splenectomy"), and had not consented to the commercial exploitation of his tissue by consenting to the surgery or to subsequent medical research.⁷¹ Hence, the basic issues raised in *Moore* concern any protectable rights one might have in the commercial exploitation of his or her own body tissue.⁷²

B. *Informed Consent And the Removal of Human Tissue For A Commercial Purpose*

1. Informed Consent and the Medical Patient

a. *Tort Law*

John Moore was both a medical patient and a research subject. When he was referred to UCLA for treatment of hairy-cell leukemia, he consented to a splenectomy for that purpose. Seven years later, he also consented to the removal of other tissue "for the purpose of scientific investigation of the body's defense against dis-

69. *Id.* at 502, 512.

70. *Id.* at 503, 512, 515. The appellate court also remanded the case to the trial court for ruling on the defendants' demurrers to the other causes of action. *Id.* at 503, 514, 515.

71. *Id.* at 504-11.

72. Situations similar to *Moore* have arisen previously but have been settled out of court. See Royston, *Cell Lines from Human Patients: Who Owns Them? A Case Report*, 33 CLINICAL RES. 442 (Oct. 1985) (a dispute between the University of California and the Hagiwara family, regarding the ownership rights in a cell line (a B cell hybridoma) which had been derived from cancer cells removed from Mrs. Hagiwara, was settled by an agreement (1) to assign the patent rights in the cell line to the University of California, and (2) to license back to the Hagiwara Institute of Health, the right to use the cell line in Japan and other Asian countries; the Hagiwara Institute of Health was located in Japan and run by Mrs. Hagiwara's scientist-husband); Rowland, *Letter Licenses for Biotechnology*, 1 HIGH TECH. L. J. 99, 100-102 (1986) (Dr. Golde of UCLA Medical School (later sued by Mr. Moore) obtained a cell line from a cancer patient and gave it to Dr. Robert Gallo of the National Cancer Institute who discovered it was an interferon over-producer and gave it to Dr. Sidney Pestka of the Hoffman-LaRoche Institute of Molecular Biology ("Hoffman-LaRoche") which entered into a development effort with Genentech, Inc. to produce interferon in microorganisms; Hoffman-LaRoche sued the University of California ("UC") to establish that UC did not have any rights in the cell line; UC counter-sued for conversion (one of the theories Mr. Moore later alleged) and misappropriation of trade secrets; the case settled but remains an ironic forerunner to Mr. Moore's lawsuit).

ease.”⁷³ Mr. Moore’s consent to those procedures implicates the legal doctrine of informed consent, and the allegations in *Moore* raise serious informed consent issues.

Within the context of medical treatment, the informed consent doctrine can be traced through the development of both tort law and constitutional law.⁷⁴ As a common law doctrine, the notion of “informed consent” first appeared in *Salgo v. Leland Stanford, Jr. University Board of Trustees*.⁷⁵ In this 1957 decision, the California Court of Appeal held that a physician could incur malpractice liability by “withhold[ing] any facts which are necessary to . . . the basis of an intelligent consent by the patient to the proposed treatment.”⁷⁶ In other words, a physician’s duty to his or her patient required “the full disclosure of facts necessary to an *informed consent*.”⁷⁷

In *Cobbs v. Grant*⁷⁸ and *Truman v. Thomas*,⁷⁹ the California Supreme Court expressly based the physician’s duty to disclose on four “postulates”:

The first is that patients are generally persons unlearned in the medical sciences and therefore, except in rare cases . . . the knowledge of patient and physician are not in parity. The second is that a person of adult years and in sound mind has the right, in the exercise of control over his own body, to determine whether or not to submit to lawful medical treatment. The third is that the patient’s consent to treatment, to be effective, must be an informed consent. And the fourth is that the patient, being unlearned in the medical sciences, has an abject dependence upon, and trust in his physician for the information upon which he relies during the decisional process, thus raising an obligation in

73. *Moore*, 249 Cal. Rptr. 498, 531 (consent form attached as Appendix B to court’s opinion).

74. *Conservatorship of Drabick*, 200 Cal. App. 3d 185, 245 Cal. Rptr. 840, 853 n.20, (1988), *cert. denied*, *Drabick v. Drabick*, 109 S. Ct. 399 (1988), *reh’g denied*, 109 S. Ct. 828 (1989) (right to determine scope of medical treatment is grounded in constitutional right of privacy and common law); *Keyhea v. Rushen*, 178 Cal. App. 3d 526, 640, 223 Cal. Rptr. 746, 754 (1986) (right to give or withhold informed consent to medical treatment settled under state constitutional right of privacy and the common law); *Foy v. Greenblott*, 141 Cal. App. 3d 1, 11, 190 Cal. Rptr. 84, 91 (1983) (informed consent is a right arising from state constitutional right of privacy and the common law).

75. *Salgo v. Leland Stanford, Jr. Univ. Bd. of Trustees*, 157 Cal. App. 2d 560, 578 (1957). See Katz, *Informed Consent—A Fairy Tale? Law’s Vision*, 39 U. PITT. L. REV. 137, 138, 149-50 (1977) [hereinafter Katz].

76. *Id.* at 578.

77. *Id.* (emphasis added).

78. *Cobbs v. Grant*, 8 Cal. 3d 229, 104 Cal. Rptr. 505, 502 P.2d 1 (1972).

79. *Truman v. Thomas*, 27 Cal. 3d 285, 165 Cal. Rptr. 308, 611 P.2d 902 (1980).

the physician that transcends arms-length transactions.⁸⁰

Hence, whether a therapeutic procedure or diagnostic test is involved, the physician must "divulge[] . . . all information relevant to a meaningful decisional process."⁸¹ In other words, the physician must inform the patient of any information which might be "material" to the patient's decision.⁸²

[M]aterial information is that which the physician knows or should know would be regarded as significant by a reasonable person in the patient's position when deciding to accept or reject the recommended medical procedure. To be material, a fact must also be one which is not commonly appreciated. If the physician knows or should know the patient's unique concerns or lack of familiarity with medical procedures, this may expand the scope of required disclosure.⁸³

Within the traditional area of medical malpractice, the physician's duty of disclosure is part of the physician's duty to treat the patient with due care; and an action based on the physician's failure to disclose material information sounds in negligence.⁸⁴ As a practical matter, however, it may be difficult to recover on this kind of negligence theory because the patient must prove a causal connection between his or her injury and the physician's failure to inform.⁸⁵ In other words, the patient must show that if he or she had been informed of all pertinent information, he or she would have declined to consent to the procedure in question.⁸⁶ Further, to avoid the self-serving effect of perfect hindsight, the patient is held

80. *Cobbs*, 8 Cal. 3d at 242, 104 Cal. Rptr. at 513, quoted in, *Truman*, 27 Cal. 3d at 291, 165 Cal. Rptr. at 311. Other courts have relied on the same postulates when considering the informed consent doctrine and imposing a reasonable duty to disclose on physicians. See, e.g., *Canterbury v. Spence*, 464 F.2d 772, 780 (D.D.C.), cert. denied, 409 U.S. 1064 (1972).

81. *Cobbs*, 8 Cal. 3d at 242, 104 Cal. Rptr. at 505.

82. *Id.* at 245, 104 Cal. Rptr. at 515. See also, *Truman*, 27 Cal. 3d at 291, 165 Cal. Rptr. at 311. In *Canterbury v. Spence*, 464 F.2d at 786-88, the District of Columbia Circuit likewise defined the physician's duty to disclose in terms of the patient's need to know material information. As of 1987, some 19 jurisdictions (including California and the District of Columbia) had adopted this kind of patient-oriented standard; some 26 jurisdictions had adopted a professional standard of disclosure based on medical custom. See AREEN, *supra* note 32, at 384, note 4 (1984 and Supp. 1987 at 71).

83. *Truman*, 27 Cal. 3d at 291, 165 Cal. Rptr. at 311-12.

84. See *Cobbs*, 8 Cal. 3d at 239-41, 104 Cal. Rptr. at 511-12. In contrast, a battery occurs if the physician performs a treatment without the patient's consent or performs a treatment which is substantially different from a treatment to which the patient consented. *Id.* at 239, 240, 104 Cal. Rptr. at 511, 512.

85. *Id.* at 245, 104 Cal. Rptr. at 515. Causation is one of the elements of a negligence cause of action. 4 B. WITKIN, CALIFORNIA PROCEDURE PLEADING § 527 (3d ed. 1985) (elements of negligence include duty, breach of duty, causation, and damages).

86. *Cobbs*, 8 Cal. 3d at 245, 104 Cal. Rptr. at 515.

to an objective test; the controlling issue is "what would a prudent person in the patient's position have decided if adequately informed of all significant perils."⁸⁷

Despite these practical problems of proof, the theory of informed consent has given the patient a new stature within the doctor-patient relationship. Now recognized as an individual with distinct goals and values, the patient can enter into a new kind of partnership with his or her physician, sharing responsibility for medical decisions.⁸⁸ Thus, even though the informed consent process may be difficult to regulate in practice,⁸⁹ the principle of informed consent remains an important expression of our collective belief in individual autonomy as well as the necessary partnership between doctor and patient.⁹⁰

b. Constitutional Law

As a principle of tort law, the informed consent doctrine has imposed new disclosure requirements on the physician and given the patient new footing within the ordinary doctor-patient relationship. As a principle of constitutional law, the informed consent doctrine ensures that patient rights are held paramount.

In *Cobbs*, the California Supreme Court relied on the "postulate" that "a person of adult years and in sound mind has the right, in the exercise of control over his own body, to determine whether or not to submit to lawful medical treatment."⁹¹ Subsequently,

87. *Id.* at 245, 104 Cal. Rptr. at 515-16.

88. In an early, incisive analysis of the informed consent doctrine, Professor Jay Katz illuminated the tension between courts' vision of individual autonomy and courts' deference to professional paternalism. See Katz, *supra* note 75. In a more recent book, however, Professor Katz has relied on the idea of informed consent to develop a more reciprocal model of the physician-patient relationship based on a theory of mutual decision-making. See J. KATZ, *THE SILENT WORLD OF DOCTOR AND PATIENT* (1986). See also President's Comm'n for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research, *Making Health Care Decisions A Report on the Ethical and Legal Implications of Informed Consent in the Patient-Practitioner Relationship* 36-39 (1982) [hereinafter *Making Health Care Decisions*] (similar model based on "mutual participation and shared decisionmaking").

89. As a legal doctrine, the theory of informed consent measures the objective content of physician disclosures, not the quality of communication between physician and patient and, hence, not the actual quality of the patient's consent. See Katz, *supra* note 75, at 146-47, 172-73. Moreover, in actual medical settings, the informed consent process varies widely depending on the nature of the patient's condition and the proposed treatment as well as the individuals and institution involved. See generally, *Making Health Care Decisions*, *supra* note 88 at 72-76, 78 n.16, 80-93.

90. See *Making Health Care Decisions*, *supra* note 88, at 16-17, 44-51.

91. *Cobbs*, 8 Cal. 3d at 242, 104 Cal. Rptr. at 513. This premise can be traced to *Schloendorff v. Soc'y of N.Y. Hosp.*, 211 N.Y. 125, 105 N.E. 92, 93 (1914) (Cardozo, J.) ("[E]very human being of adult years and sound mind has a right to determine what shall be

California courts have established that the constitutional right of privacy protects the individual's right to refuse medical treatment, including life support procedures.⁹²

In *Bartling v. Superior Court*,⁹³ the appellate court recognized a patient's right to disconnect a machine called a "ventilator" which mechanically sustained the patient's ability to breathe. In *Bouvia v. Superior Court*,⁹⁴ the appellate court sustained a patient's right to remove a nasogastric tube which supplied the patient with nutrients through a tube inserted through her nose and into her stomach. In each case, the patient's medical condition was serious but not yet diagnosed as terminal.⁹⁵ Nevertheless, the patient's right to make medical decisions was held paramount to any countervailing inter-

done with his own body") (disapproved on other grounds in *Bing v. Thunig*, 2 N.Y.2d 656, 163 N.Y.S.2d 3, 143 N.E.2d 3 (1957)); *Conservatorship of Drabick*, 200 Cal. App. 3d at 206 n. 2, 245 Cal. Rptr. at 853 n.2.

92. *Bouvia v. Superior Court*, 179 Cal. App. 3d 1127, 1137, 225 Cal. Rptr. 297, 300-301 (1986); *Bartling v. Superior Court*, 163 Cal. App. 3d 186, 193-95, 209 Cal. Rptr. 220, 224-25 (1984). See also *Conservatorship of Morrison*, 206 Cal. App. 3d 304, 253 Cal. Rptr. 530 (1988); *Drabick*, 200 Cal. App. 3d at 206, 245 Cal. Rptr. at 853.

This right also has been recognized by statute. See Cal. Health and Safety Code § 7186 (Deering Supp. 1989) ("The Legislature finds that adult persons have the fundamental right to control the decisions relating to the rendering of their own medical care, including the decision to have life-sustaining procedures withheld or withdrawn in instances of a terminal condition"). The right thus underpins California's Natural Death Act, *id.* at §§ 7185-7195, which allows patients with a terminal condition to execute a written document directing their physicians to withhold or withdraw life-sustaining procedures. Similarly, the Keene Health Care Agent Act, CAL. CIV. CODE §§ 2500-2508 (Deering 1986), provides for a statutory form durable power of attorney for health care whereby one person can give another (an "agent" or "attorney-in-fact") the power to make health care decisions on his or her behalf, including decisions to refuse or withdraw life-prolonging care. Professional guidelines are in accord. See *Bouvia*, 179 Cal. App. 3d at 1140-41, 225 Cal. Rptr. at 303.

93. *Bartling v. Superior Court*, 163 Cal. App. 3d 186, 209 Cal. Rptr. 220 (1984). Seventy year old William Bartling had emphysema, chronic respiratory failure, arteriosclerosis, an abdominal aneurysm, a malignant lung tumor, alcoholism, and chronic acute anxiety/depression. When the tumor was biopsied, his lung collapsed and could not be reinflated. A tracheotomy was performed and he was placed on a ventilator. Mr. Bartling and his wife sought an injunction to have the ventilator disconnected. Ironically, Mr. Bartling died (still on the ventilator) before the Court of Appeal heard the case. The case thus becomes moot, but the appellate court chose to render an opinion since the issues were capable of repetition.

94. *Bouvia v. Superior Court*, 179 Cal. App. 3d 1127, 225 Cal. Rptr. 297 (1986). At the time of the court's decision, Elizabeth Bouvia was 28 years old. Bedridden and unable to care for herself, she suffered from cerebral palsy, quadriplegia and arthritis. For some time, she had expressed the desire to die. Hence, when the medical staff where she was hospitalized determined that she was not able to consume sufficient nutrients, they inserted a nasogastric tube into Ms. Bouvia's body, against her will and without her consent. Ms. Bouvia then filed an action for injunctive relief, seeking a court order to require the hospital and doctors to remove the tube and to prohibit them from replacing the tube without her consent. She prevailed in the Court of Appeal.

95. See *Bartling*, 163 Cal. App. 3d at 189, 192-93, 209 Cal. Rptr. at 220, 223; *Bouvia*, 179 Cal. App. 3d at 1139, 1142-44, 225 Cal. Rptr. at 302, 304-305.

est, including the state's interest in preserving life.⁹⁶ As the *Bouvia* court explained:

Here Elizabeth Bouvia's decision to forego medical treatment . . . is not a medical decision for her physicians to make. Neither is it a legal question whose soundness is to be resolved by lawyers or judges. It is not a conditional right subject to approval by ethics committees or courts of law. It is a moral and philosophical decision that, being a competent adult, is her's alone.⁹⁷

In *Bouvia* and *Bartling*, the patients were competent and able to exercise their own rights of privacy.⁹⁸ Patient rights, however, do not turn on competency. Recognizing the privacy rights of the

96. See *Bartling*, 163 Cal. App. 3d at 195-96, 209 Cal. Rptr. at 225-26; *Bouvia*, 179 Cal. App. 3d at 1142-45, 225 Cal. Rptr. at 304-306. Four state interests have been argued in opposition to the termination of life support: (1) preserving life, (2) preventing suicide, (3) maintaining the ethical integrity of the medical profession, and (4) protecting innocent third parties. *Bartling*, 163 Cal. App. 3d at 195, 209 Cal. Rptr. at 336; *Bouvia*, 179 Cal. App. 3d at 1142, 225 Cal. Rptr. at 304. See also *Superintendent Of Belchertown v. Saikewicz*, 373 Mass. 728, 370 N.E.2d 417 (1977).

With respect to the first state interest in preserving life, courts have held that the patient's right to self-determination is paramount. See *Bartling*, 163 Cal. App. 3d at 195-96, 209 Cal. Rptr. at 336. As the *Bouvia* court explained with some degree of passion:

We do not believe it is the policy of this State that all and every life must be preserved against the will of the sufferer. It is incongruous, if not monstrous, for medical practitioners to assert their right to preserve a life that someone else must live, or, more accurately, endure We cannot conceive it to be the policy of this State to inflict such an ordeal upon anyone.

179 Cal. App. 3d at 1143-44, 225 Cal. Rptr. at 305. See also *Drabick*, 200 Cal. App. 3d at 209 n. 25, 245 Cal. Rptr. at 855 n. 25.

Likewise, the second state interest in preventing suicide has not prevailed because courts have distinguished between acts of self-destruction and acts of self-determination which allow death to occur by natural causes. See *Bartling*, 163 Cal. App. 3d at 196, 200 Cal. Rptr. at 225-26; *Bouvia*, 179 Cal. App. 3d at 1144-45, 225 Cal. Rptr. at 305-306.

The third state interest in the ethical standards of the medical profession has been vitiated by the courts' analyses of the first and second state interests. Moreover, if a protected patient decision conflicts with the physician's ethics, the physician's personal beliefs can be accommodated if the patient can be referred to another physician who will follow the patient's instructions. *Conservatorship of Morrison*, 253 Cal. Rptr. at 533-34.

Finally, the fourth state interest in protecting innocent third parties is only implicated in relatively rare situations: for example, when "the patient attempting to refuse treatment has minor children who would be left without a parent should the treatment not proceed." *Bartling*, 163 Cal. App. 3d at 195 n.6, 209 Cal. Rptr. at 225 n.6 (citing *In re President and Directors of Georgetown Col. Inc.*, 331 F.2d 1000 (D.C. Cir.), *reh'g denied*, 331 F.2d 1010 (D.C. Cir.), *cert. denied*, *Jones v. President and Directors of Georgetown Col., Inc.*, 377 U.S. 978 (1964)). In that type of situation, the state's interest in preserving life is based on the rationale that a patient has a responsibility to the community to care for his or her child. *Georgetown*, 331 F.2d at 1008.

97. *Bouvia*, 179 Cal. App. 3d at 1143, 225 Cal. Rptr. at 305.

98. See also *Satz v. Perlmutter*, 362 So. 2d 160 (1978), *aff'd* 379 So. 2d 359 (1980) (right of terminally ill, competent adult to refuse or discontinue medical treatment protected by constitutional right of privacy).

developmentally disabled as well as comatose patients existing in a persistent, vegetative state, courts have allowed treatment decisions on behalf of such patients — including decisions to refuse life-sustaining care — to be made by family members, a legally appointed guardian, or conservator.⁹⁹ Thus, as an expression of the patient's fundamental right to self-determination, the informed consent doctrine has become a vital principle of constitutional law.

2. Informed Consent and the Research Subject

In a parallel development, the principle of informed consent has become the cornerstone of clinical research involving human subjects. In this area, ethics and law have been driven by a number of dramatic world and national events. Following World War II, the Nuremberg trials revealed the Nazi atrocities committed in the name of medical and scientific research.¹⁰⁰ From 1959 to 1962, a number of infants were born with birth defects caused by an experimental drug called Thalidomide.¹⁰¹ In 1966, an article by Dr. Henry Beecher was published in the *New England Journal of Medicine* exposing experimental abuse in American medicine.¹⁰² In 1972, the national press revealed a study, conducted for more than 40 years by the United States Public Health Service, in which 400 black males were allowed to remain untreated for syphilis.¹⁰³ Further, legal regulation was spurred as biomedical research became more institutionalized after World War II; the federal government became a major source of research funding and the national research effort grew rapidly.¹⁰⁴

In response to these events, international guidelines, federal regulations, and state law all sought to curtail experimental abuse

99. See *Drabick*, 200 Cal. App. 3d at 189, 193-200, 204-10, 245 Cal. Rptr. at 841, 844-49, 851-56 (thoughtful analysis of effect of incompetence on privacy right to make medical decisions as well as comprehensive review of case law approving decisions to forego life-sustaining treatment made on behalf of permanently comatose patients existing in a persistent vegetative state). See also *Superintendent of Belchertown v. Saikewicz*, 373 Mass. 728, 370 N.E.2d 417 (1977) (protecting privacy right of 67 year old man, with mental age of approximately two years, eight months, to forego life-prolonging chemotherapy).

100. See generally I, II *Trials of War Criminals Before the Nuremberg Military Tribunals Under Control Council Law No. 10* (1949) (proceedings from the medical case).

101. Taussig, *A Study of the German Outbreak of Phocomelia: The Thalidomide Syndrome*, 180 J. AMER. MED. ASSOC. 1106-14 (1962).

102. Beecher, *Ethics and Clinical Research*, 274 NEW ENG. J. MED. 1354 (1966).

103. See generally Brandt, *Racism and Research: The Case of the Tuskegee Syphilis Study*, 8 HASTINGS CTR. REP. 21 (Dec. 1978).

104. See President's Comm'n for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research, *Compensating for Research Injuries* (1982) [hereinafter *Compensating for Research Injuries*].

through the principle of informed consent. The Nuremberg Code, incorporated into the judgment of the Nuremberg court, established that “[t]he voluntary consent of the human subject is absolutely essential” to the ethical and legal conduct of human experimentation.¹⁰⁵ As the Code explained, this meant that “the person involved . . . should have sufficient knowledge . . . of the subject matter involved . . . to . . . make an understanding and enlightened decision.”¹⁰⁶ The subject had to be informed of “the nature, duration, and purpose of the experiment; [and] the method and means by which it [was] to be conducted.”¹⁰⁷

In 1964, the Declaration of Helsinki was prepared by the Eighteenth World Medical Assembly as an international guide to physicians.¹⁰⁸ As a basic principle, the Declaration stated:

In any research on human beings, each potential subject must be adequately informed of the aims, methods, anticipated benefits and potential hazards of the study and the discomfort it may entail . . . The physician should then obtain the subject’s freely-given informed consent, preferably in writing.¹⁰⁹

In 1974, the Department of Health and Human Services (“HHS”) (then Health, Education and Welfare) promulgated its first regulations applicable to all research either conducted or funded by HHS involving human subjects.¹¹⁰ As thus regulated, HHS research only can be approved if the informed consent of each human subject is sought and documented.¹¹¹ Moreover, like the Nuremberg Code and Declaration of Helsinki, HHS regulations require a research subject to be informed of basic information such as the following:

that the study involves research . . . the purposes of the research and the expected duration of the subject’s participation . . . the procedures to be followed . . . any procedures which are experimental . . . any reasonably foreseeable risks or discomforts to the subject . . . [and] any benefits to the subject or to others which may reasonably be expected from the research.¹¹²

In 1978, the California legislature enacted the Protection of

105. II *Trials of War Criminals, Before the Nuremberg Military Tribunals under Control Council Law No. 10* 181 (1949).

106. *Id.* at 182.

107. *Id.*

108. 271 *NEW ENG. J. MED.* 473 (1964).

109. *Id.*

110. 45 *C.F.R.* § 46.101 (1988).

111. *Id.* at § 46.111(a)(4) and (5).

112. *Id.* at § 46.116(a)(1)-(3).

Human Subjects in Medical Experimentation Act which applies to research immune from regulation by HHS.¹¹³ This Act, like its international and federal counterparts, provides that research involving a human subject can proceed only with the subject's informed consent.¹¹⁴ Also, the subject must be informed of the "nature and purpose of the experiment . . . [and] the procedures to be followed."¹¹⁵

3. Informed Consent and John Moore

In John Moore's case, the principle of informed consent seems to have been honored more in the breach than the observance. Considering Mr. Moore as a medical patient, the issue is whether Mr. Moore's physician had a duty to disclose the commercial potential of Mr. Moore's spleen or other body tissues before Mr. Moore consented to the splenectomy or to any other procedure in which tissue may have been removed as part of his follow-up care. An argument against disclosure can be made on the ground that any facts regarding the commercial value of Mr. Moore's tissue were irrelevant to the risks and benefits of any medical procedure related to the treatment of hairy-cell leukemia. Hence, Mr. Moore would not have to be informed of his tissue's commercial value in order to make an informed treatment decision.¹¹⁶ The argument for disclosure follows a more expansive view of the informed consent doctrine. "[T]he patient's right of self-decision is the measure of the physician's duty to reveal."¹¹⁷ Hence, although a physician necessarily retains some discretion in assessing what a patient needs to know, the physician's discretion must always be exercised in the patient's best interest.¹¹⁸

Given these basic tenets, it seems that Dr. Golde should have

113. CAL. HEALTH & SAFETY CODE §§ 24170-24179.5 (Deering 1988).

114. *Id.* at § 24175.

115. *Id.* at § 24172(a),(b). All clinical investigations regulated by the federal Food and Drug Administration (including investigations of new drugs, medical devices, and biological products for human use) are subject to informed consent requirements which are substantially similar to HHS requirements. See 21 C.F.R. Part 50 §§ 50.1-50.27 (1988).

116. For an argument concluding that tissue excised for therapeutic reasons may be used in research without further consent because there is no further risk to the patient, see Wagner, *The Legal Impact of Patient Materials Used for Product Development in the Biomedical Industry*, 33 CLIN. RES. 444, 446 (Oct. 1985).

117. *Cobbs*, 8 Cal. 3d at 245, 104 Cal. Rptr. at 515.

118. See *id.* at 242, 104 Cal. Rptr. at 513 ("The patient, being unlearned in medical sciences, has an abject dependence upon and trust in his physician for the information upon which he relies during the decisional process, thus raising an obligation in the physician that transcends arms-length transactions"). See also *id.* at 245-46, 104 Cal. Rptr. at 516 (The therapeutic privilege, that is, the physician's privilege to withhold information during the in-

told Mr. Moore about the commercial value of Mr. Moore's own body tissue. According to Mr. Moore's allegations, Dr. Golde and Ms. Quan became aware of his tissue's unique commercial potential prior to his splenectomy. Nevertheless, Mr. Moore was neither informed of this fact nor of the efforts which would begin after surgery to exploit his tissue. Mr. Moore was dependent on Dr. Golde for medical information. Dr. Golde, in turn, had a fiduciary obligation to disclose material information to Mr. Moore; and, the fact that Mr. Moore's tissue was so unusual seems material (at the very least) to Mr. Moore's general medical situation.

Mr. Moore's experience as a research subject compels a similar conclusion. About seven years after Mr. Moore's splenectomy, Mr. Moore consented to the removal of other tissues for use in a research project. Mr. Moore was not informed of any facts regarding the commercial exploitation of his tissue—even though a patent application based on his cell line was pending and Dr. Golde had entered into development agreements with Genetics and Sandoz. The consent form simply stated that the “study [would] provide information which may aid the medical profession and other scientists in the understanding of how the body defends itself against disease.”¹¹⁹ This description appears woefully inadequate if, as Mr. Moore contends, his tissue was withdrawn to further the commercial exploitation of his cell line. A generalized statement regarding the body's defense against disease simply does not amount to any kind of meaningful disclosure of the real research effort, namely, the development of a cell line which would support a potentially multi-billion dollar product line.

This sleight of hand violates the universal research canon that informed consent depends on understanding the true nature and purpose of the research. Also, the consent form seems to offend the federal requirement of disclosing “any benefits to the subject or to others which may reasonably be expected from the research.”¹²⁰

formed consent process if that would be in the patient's best interest, must be exercised in a way that is “consistent with . . . the ‘fiducial qualities’ of the physician-patient relationship”).

After reviewing both sides of the disclosure issue, the Office of Technology Assessment determined that “[i]t will be up to the courts or state legislatures to decide whether the possibility of commercial gain for any interested party requires disclosure where diagnostic tests or active treatment is contemplated.” *Ownership of Human Tissues*, *supra* note 5, at 103-104.

119. *Moore*, 249 Cal. Rptr. at 531 (consent form attached as Appendix B to court's opinion).

120. 45 C.F.R. § 46.116(a)(3)(1988). Assuming *arguendo* that Dr. Golde's research was funded by HHS, the removal of body tissue for use in research appears to be an “intervention” subject to HHS' informed consent requirements. HHS' regulations provide that “no investigator may involve a human being as a subject in research covered by these regulations

Again, the abstract benefit which the form describes ("understanding . . . how the body defends itself against disease") hardly begins to suggest the very concrete benefits, commercial and otherwise, which were expected from research regarding the Mo line.¹²¹

Such infractions of the informed consent process violate the autonomy of the research subject. In theory, the informed consent of the research subject is sought to create a partnership between the subject and investigator in the common pursuit of knowledge.¹²² Research serves the common good, and the voluntary participation of the human subject allows the subject to participate in a common pursuit. Without this kind of participation, without such fully informed and freely given consent, the subject becomes a mere thing whom others act on and manipulate in the course of an experimental procedure.¹²³

Further, the principle of informed consent serves to balance individual and societal needs. Research, as stated, is designed to serve the common good, to benefit the needs of the many through the general advancement of human knowledge.¹²⁴ The informed consent process, however, is designed to ensure that the good of the many is not achieved at the expense of the one.¹²⁵ When the indi-

unless the investigator has obtained the legally effective informed consent of the subject . . ." 45 C.F.R. § 46.116. As defined in the regulations, "[h]uman subject' means a living individual about whom an investigator . . . conducting research obtains . . . data through intervention 'Intervention' includes . . . physical procedures by which data are gathered (for example, venipuncture) . . ." *Id.* at § 46.102(f).

121. For a good overview of the manner in which HHS regulations might be interpreted, applied, and revised to deal with the disclosure of potential commercial gain, see *Ownership of Human Tissues*, *supra* note 5, at 102-110. In general, this government study appears to support disclosure in "those instances where there is a significant probability of commercial gain (i.e., a high probability or certainty of a marketable biological material being extracted) arising from the use of human tissues and cells from an identified research subject." *Id.* at 107.

122. See Ramsey, *The Ethics of a Cottage Industry in an Age of Community and Research Medicine*, 284 NEW ENG. J. MED. 700, 705 (Apr. 1971).

123. See H. JONAS, PHILOSOPHICAL REFLECTIONS ON EXPERIMENTING WITH HUMAN SUBJECTS, EXPERIMENTATION WITH HUMAN SUBJECTS 1, 2-4, 13-14 (P. Freund ed. 1969).

124. See *id.* at 13-14; *Compensating for Research Injuries*, *supra* note 104, at 11-12.

125. Research is justified by utilitarianism which, simply put, seeks to achieve the greatest good for the greatest number of individuals. See generally T. MAPPE & J. ZEMBATY, BIOMEDICAL ETHICS 6-17, 175 (2d ed. 1986). The principle of informed consent, however, directly follows from the ethics of Immanuel Kant (1724-1804). See *id.* at 20-21, 176. Based on the "Categorical Imperative," Kantian deontology includes the directive to "[a]ct in such a way that you always treat humanity, whether in your own person or in the person of any other, never simply as a means, but always at the same time as an end." *Id.* at 17 (quoting I. KANT, GROUNDWORK OF THE METAPHYSICS OF MORALS 96 (H. Paton trans. 1964)). Thus, rather than an ethic based on the consequence of human action, this principle supports an ethic based on duty (to self and others) and respect for the inherent dignity of individuals. See *id.* at 18-22.

In the research setting, the principle of informed consent is designed to ensure that re-

vidual is subordinated to the abstract needs of "progress," the lessons of history demonstrate the dire results.

Finally, when a medical patient serves as a research subject, the informed consent process may guard against the abuse which is possible when a medical doctor functions as both a treating physician and scientific investigator. Medical patients who may ever harbor the hope of recovery, are especially vulnerable research subjects.¹²⁶ Medical doctors functioning in a dual capacity may be torn in two directions, consciously or unconsciously, and the patient's best interests may not always coincide with the constraints imposed by a specific research protocol.¹²⁷

This conflict was apparent in *Moore*. As a physician, Dr. Golde was responsible for the treatment of Mr. Moore's medical condition (hairy-cell leukemia). As a scientist, Dr. Golde was interested in the development of a unique cell line. Moreover, in Mr. Moore's case, Dr. Golde functioned in yet another capacity, namely, as an entrepreneur of the new biotechnology industry. Indeed, during the approximately seven years that Mr. Moore trav-

search subjects are treated as ends and respected as persons. Thus, the informed consent doctrine serves as a deontological balance to utilitarian research goals. *See id.* at 176. For a discussion of research ethics incorporating these principles, see Ramsey, *supra* note 122, at 704-705.

126. This point is illustrated by a poignant passage from *The Cancer Ward*, a novel by Alexander Solzhenitsyn:

How he craved to be healed!—despite those harrowing months and years of by now hopeless treatments, he would suddenly recover completely. His back would heal and he would stand up straight and walk with a firm step, feeling like a new man. Greetings, Dr. Lyudmila Afanasyevna! I'm well—see?

How they all craved to hear of such a wonder-working doctor, of a medicine unknown to the doctors here! These people might have admitted or denied that they believed in such a thing, but all of them, to a man, felt, deep in their hearts, that there really was such a doctor, such a dispenser of herbs or such an old village woman living somewhere, and that they only had to learn where, take that medicine, and they would be saved.

It was impossible that their lives were already doomed!

Laugh as we may at miracles as long as we are strong, healthy and flourishing, let life become hopelessly wedged and crushed so that only a miracle can save us—and we shall believe in that one and only and altogether extraordinary miracle.

A. SOLZHENITSYN, *THE CANCER WARD* 164 (1968). *See also* A. CAPRON, *THE LAW OF GENETIC THERAPY IN THE NEW GENETICS AND THE FUTURE OF MAN* 133, 150-52 (M. Hamilton ed. 1972).

127. *See, e.g., Case Studies - When Research Is Best Therapy*, 18 HASTINGS CTR. RPT. 24 (Apr./May 1988); *False Data & The Therapeutic Misconception: Two Urgent Problems in Research Ethics*, 17 HASTINGS CTR. RPT. 16 (Apr. 1987) (hereinafter *False Data*).

The dynamics of the informed consent process must be evaluated carefully in any given situation to ensure the quality of an individual's consent. *See, e.g., False Data, id.* at 21-24; F. Ingelfinger, *Informed (But Uneducated) Consent*, 287 NEW ENG. J. MED. 465-66 (1972).

eled from Washington to UCLA for further withdrawals of tissue, Dr. Golde (together with Ms. Quan) applied for a patent based on Mr. Moore's cell line and entered into development contracts for his own personal gain.

In light of these facts, Mr. Moore claims that his follow-up visits to UCLA were not really for his medical treatment; instead, they were designed to facilitate the commercial exploitation of his cell line. One wonders: Was Dr. Golde primarily motivated by the best interests of his patient? Or, was he driven by the quest for fame and fortune? Professional fame is the traditional reward of scientific research¹²⁸ and great fortune is the new reward of biotechnology.¹²⁹ Both are powerful attractions.

The principle of informed consent thus required Dr. Golde to tell Mr. Moore about the commercial value of his cell line. Unaware of the special nature of his cell line, Mr. Moore became an object of research instead of a research subject. There was no true partnership between Mr. Moore and Dr. Golde. To the contrary, Mr. Moore's autonomy was subordinated to Dr. Golde's own research goals and the lure of profits estimated at more than \$3 billion by 1990.¹³⁰

C. *The Right of Privacy, Property, And The Commercial Use of Human Tissue*

1. The Right of Privacy and The Right To Consent to the Commercial Use of One's Own Tissue

As a tort law doctrine, the right of privacy developed through

128. See generally Eisenberg, *Proprietary Rights and the Norms of Science in Biotechnology Research*, 97 YALE L.J. 177, 181-84 (1987).

129. See *supra* notes 44-48 and accompanying text.

130. Several commentators support the medical patient's or research subject's right to give an informed consent to the commercial use of his or her body tissue, but either suggest that sales of tissue should be banned as a matter of policy, see Caplan, *Blood, Sweat, Tears, and Profits: The Ethics of the Sale and Use of Patient Derived Materials in Biomedicine*, 33 CLINICAL RES. 448, 450-51 (Oct. 1985), or that the consent process should be revised to include a specific waiver of the patient's or subject's interest in any commercial gain derived from the research. See Levine, *Research that Could Yield Marketable Products from Human Materials: The Problem of Informed Consent*, 8 I.R.B. 6 (Jan./Feb. 1986); Rosenberg, *Using Patient Materials for Product Development: A Dean's Perspective*, 33 CLINICAL RES. 452, 453 (Oct. 1985). Ironically, one commentator who concludes that John Moore probably would not have an informed consent claim, also concludes on other grounds that Mr. Moore has a strong claim for compensation. See Danforth, *Cells, Sales, and Royalties: The Patient's Right to a Portion of the Profits*, 6 YALE L. & POL'Y REV. 179 (1988).

For a good summary of the economic considerations bearing on the policy issue of whether payment for biological materials should be required, see *Ownership of Human Tissues*, *supra* note 5, at 115-25.

the common law. Given the basic nature of the right as well as the kind of situations where the right has been protected, the privacy right seems broad enough to include a right to consent to the commercial use of one's own body tissue. Further, if this particular aspect of privacy is recognized, the privacy right would further affirm our basic values of individual autonomy and self-determination.

During the late nineteenth and early twentieth centuries, the privacy right was recognized as a counterpoint to technology. The means of communication had become more sophisticated and private lives were ever more "subject[] . . . to exploitation by those who pander[ed] to commercialism and to prurient and idle curiosity."¹³¹ Hence, courts realized the time had come to protect the individual's "personality" from "encroachment" and to preserve his or her "spiritual nature" and "feelings" as inviolate.¹³² Thus, recognized as the right "to be let alone,"¹³³ the privacy right "concerns one's . . . peace of mind"¹³⁴ and protects one's right "to be free of unauthorized and unwarranted publicity."¹³⁵

As the privacy doctrine developed through case law, Dean Prosser (the famous authority on tort law) observed that four different kinds of wrongs were identified as privacy torts: (1) intrusion into another's seclusion, solitude, or private affairs, (2) public disclosure of embarrassing, private facts about another, (3) publicity putting another in a false light in the public eye, and (4) appropriation of another's name or likeness for one's own advantage.¹³⁶ This

131. *Gill v. Curtis Publishing Co.*, 38 Cal. 2d 273, 277, 239 P.2d 630 (1952) (quoting 41 AM. JUR. 1ST *Privacy* § 9).

132. *Id.*

133. *Lugosi v. Universal Pictures*, 25 Cal. 3d 813, 819, 160 Cal. Rptr. 323, 326, 603 P.2d 425 (1979); *Gill*, 38 Cal. 2d at 276; *Melvin v. Reid*, 112 Cal. App. 285, 289, 297 P. 91 (1931).

134. *Fairfield v. American Photocopy Equip. Co.*, 138 Cal. App. 2d 82, 86, 291 P.2d 194 (1955).

135. *Id.* As a distinct tort law doctrine, the right of privacy can be traced to the seminal law review article by Samuel Warren and Louis Brandeis, entitled "The Right of Privacy" and published in 1890. (Warren & Brandeis, *The Right of Privacy*, 4 HARV. L. REV. 193 (1890).) See W. PROSSER, LAW OF TORTS § 117 at 802-804 (4th ed. 1971) [hereinafter PROSSER, TORTS].

136. *Lugosi*, 25 Cal. 3d at 819, 160 Cal. Rptr. at 326 (quoting Prosser, *Privacy*, 48 CAL. L. REV. 383, 389 (1960)); *Eastwood v. Superior Court*, 149 Cal. App. 3d 409, 416, 198 Cal. Rptr. 342, 346 (1983) (citing Prosser, *Privacy*, 48 CAL. L. REV. 383, 384 (1960)).

CAL. CIV. CODE § 3344 is a statutory complement to Dean Prosser's fourth category of cases (appropriation of name or likeness). *Lugosi*, 25 Cal. 3d at 819 n.6, 160 Cal. Rptr. at 326 n.6; *Eastwood*, 149 Cal. App. 3d at 416-17, 198 Cal. Rptr. at 346. Adopted in 1971, section 3344 creates a statutory scheme to redress the use of "another's name, voice, signature, photograph, or likeness, in any manner, on or in products, merchandise, or goods, or for purposes of advertising or selling, or soliciting purchases of, products, merchandise, goods or services, without such person's prior consent." CAL. CIV. CODE § 3344(a).

In some ways, the statutory action is more limited than the common law action. It

last category is not confined to the wrongful use of another's name or likeness per se. To be sure, many early cases were based on the fact that an individual's name or likeness was used, without his or her consent, to promote the sale of some product.¹³⁷ More generally, however, the wrong lies in the unauthorized exploitation of another's personality or identity.¹³⁸ Hence, the imitation of Bette Midler's voice as part of an advertising campaign has been held to be an actionable invasion of privacy.¹³⁹

Conversely, the "right of publicity" is concerned with one's ability to capitalize on commercial opportunities for it protects the right to exploit any commercial value in one's name, likeness, or personality.¹⁴⁰ Indeed, as the United States Supreme Court recog-

requires a knowing use of another's attributes while a mistaken or inadvertent use may be actionable under the common law. *Eastwood*, 149 Cal. App. 3d at 417, 417 n.6, 198 Cal. Rptr. at 346 n.6, 346-47. Also, the statutory action appears limited to the attributes listed by statute while a common law action is not. See *Midler v. Ford Motor Co.*, 849 F.2d 460, 463 (9th Cir. 1988). On the other hand, section 3344(a) provides for a more liberal remedial scheme than the common law. See *infra* note 193.

137. See generally PROSSER, TORTS, *supra* note 135, § 117, at 804-807.

138. See *Fairfield*, 138 Cal. App. 2d at 86; *Midler*, 849 F.2d at 463 (quoting *Mot-schenbacher v. R. J. Reynolds Tobacco Co.*, 498 F.2d 821, 824 (9th Cir. 1974)). See generally PROSSER, TORTS, *supra* note 135, § 117, at 805 ("[i]t is the plaintiff's name as a symbol of his identity that is involved here") (emphasis added).

139. *Midler*, 849 F.2d at 460.

140. See *Lugosi*, 25 Cal. 3d at 819, 824, 160 Cal. Rptr. at 326, 329; *Guglielmi v. Spelling-Goldberg Prods.*, 25 Cal. 3d 860, 861, 160 Cal. Rptr. 352, 353, 603 P.2d 454 (1979); *Eastwood*, 149 Cal. App. 3d at 419, 198 Cal. Rptr. at 348; *Accord Carson v. Here's Johnny Portable Toilets, Inc.*, 698 F.2d 831, 834-37 (6th Cir. 1983) (Michigan law) (right of publicity protects commercial exploitation of identity and is not limited to protection of name or likeness per se); *Martin Luther King, Jr., Center for Social Change, Inc. v. American Heritage Prods., Inc.*, 694 F.2d 674, 676-80 (11th Cir. 1983) (Georgia law); *Factors Etc., Inc. v. Pro Arts, Inc.*, 579 F.2d 215, 220-22 (2d Cir. 1978) (New York law), *cert. denied*, 440 U.S. 908 (1979); *Haelan Laboratories, Inc. v. Topps Chewing Gum, Inc.*, 202 F.2d 866, 868 (2d Cir. 1953) (New York law), *cert. denied*, 346 U.S. 816 (1953); *Winterland Concessions Co. v. Sileo*, 528 F. Supp. 1201, 1213 (N.D. Ill. 1981) (Illinois law), *aff'd in part, rev'd in part, and remanded*, *Winterland Concessions Co. v. Trela*, 735 F.2d 257 (7th Cir. 1984) (reversal and remand only affecting antitrust counterclaim).

A statutory right of publicity also exists in California. See CAL. CIV. CODE § 990(a) (Deering Supp. 1989). As defined by statute, a "'deceased personality' means any natural person whose name, voice, signature, photograph, or likeness has commercial value at the time of his or her death, whether or not during the lifetime of that natural person the person used his or her name, voice, signature, photograph or likeness" for a commercial purpose. *Id.* at § 990(h).

The rights created by statute may be transferred freely either before or after the death of the deceased personality. *Id.* at § 990(b). If the deceased personality does not transfer these rights, they descend to the surviving spouse, children, grandchildren, or parents of the deceased personality. *Id.* at § 990(d). If the deceased personality does not effect any such transfers and there are no surviving heirs, the rights terminate. *Id.* at § 999(e). Finally, even if the statutory publicity rights are transferred or inherited, they expire 50 years from the death of the deceased personality. *Id.* at § 990(g). (Likewise, federal copyright protection for works

nized in *Zacchini v. Scripps-Howard Broadcasting Co.*,¹⁴¹ the right of publicity is not merely concerned with the appropriation of another's "reputation to enhance the attractiveness of a commercial product,"¹⁴² the right extends more broadly to protect the economic value of one's talents or livelihood.¹⁴³ Thus, the Court held that the unauthorized broadcast of a human cannonball act (where an individual made a living being shot from a cannon into a net), violated the individual's right of publicity and was not privileged by the first and fourteenth amendments.¹⁴⁴

Examined closely, the right of publicity really appears to be a species of the right of privacy, rather than an entirely separate interest.¹⁴⁵ To begin with, both the right of publicity and right of privacy are based on the individual's interest in the attributes of his or her own personality.¹⁴⁶ Furthermore, whether the right of publicity or right of privacy is violated, the gravamen of the tort is the same: An individual's identity has been used without his or her consent for another's advantage. Hence, the only real difference between the right of publicity and right of privacy seems to be whether one seeks to exploit or to prevent the public use of his or her identity. In the former instance, the right is used offensively as a sword; in the latter instance, the right is used defensively as a shield.¹⁴⁷ In either event, both rights protect the individual's right to decide what use another

created on or after January 1, 1978 endures for "the life of the author and fifty years after the author's death." 17 U.S.C.A. § 302(a) (West 1977).

The statutory right of publicity differs from the common law right recognized in *Lugosi*. Among other things, the common law right must be exercised, if at all, during the individual's lifetime and is not descendible. See *Lugosi*, 25 Cal. 3d at 822-24, 160 Cal. Rptr. at 328-29. See also *infra* notes 199-205 and accompanying text.

141. *Zacchini v. Scripps-Howard Broadcasting Co.*, 433 U.S. 562 (1977) (discussing Ohio law).

142. *Id.* at 576.

143. See *id.* at 569, 576.

144. See *id.* at 574-79.

145. See *Factors, Etc.*, 579 F.2d at 220 (right of publicity analyzed under the "appropriation" branch of the common law right of privacy); See also *Winterland*, 528 F. Supp. at 1213. ("One of the species of the right of privacy recognized by the cases and the commentators is the right of publicity.")

146. See *Lugosi*, 25 Cal. 3d at 824, 160 Cal. Rptr. at 329:

The so-called right of publicity means in essence that the reaction of the public to [a] name and likeness . . . endows the name and likeness of the person involved with commercially exploitable opportunities. The protection of [the] name and likeness from unwarranted intrusion or exploitation is the heart of the law of privacy.

147. See *American Heritage Products*, 694 F.2d at 678-79 (court's discussion of *Haelan* illustrates use of right as offensive sword while discussion of *Palmér v. Schonhorn Enters., Inc.*, 96 N.J. Super. 72, 232 A.2d 458 (1967), illustrates use of right as defensive shield).

shall make of his or her personal attributes.¹⁴⁸

Based on the privacy and publicity case law, it seems that John Moore's right to consent to the commercial use of his own tissue can be recognized as an aspect of the common law right of privacy. With respect to legal doctrine, there does not seem to be any need to create a new tort to protect the interest at stake. Further, with respect to facts and public policy, the situation in *Moore* is analogous to the privacy and publicity cases in at least several ways.

First, Mr. Moore's tissues and cell line were used without his knowledge or consent for others' economic and professional gain.¹⁴⁹ Secondly, Mr. Moore's tissue, with the genetic code it contains, can be considered an attribute of Mr. Moore's identity. As the Court of Appeal queried in the *Moore* opinion: "If the courts have found a sufficient proprietary interest in one's persona, how could one not have a right in one's own genetic material, something far more profoundly the essence of one's human uniqueness than a name or a face?"¹⁵⁰ Likewise, by analogy to the *Zacchini* decision: If the right of publicity protects the economic value of a unique talent, shouldn't the law protect the economic value of a unique genetic code? Both questions seem properly rhetorical.¹⁵¹

Thirdly, the publicity right furthers public policies which should be furthered in *Moore*. As described by the *Zacchini* Court, the right of publicity protects the individual's incentive to create

148. Some courts have distinguished between the right of publicity and the right of privacy on the ground that the former is concerned with the commercial value of one's identity or "persona" and can be transferred, while the latter is concerned with the right "to be left alone" or with one's feelings and cannot be transferred. See *Carson*, 698 F.2d at 834; *Bi-rite Enters., Inc. v. Button Master*, 555 F. Supp. 1188, 1199-1200 (S.D.N.Y. 1983), 578 F. Supp. 59 (S.D.N.Y. 1983) (supplemental opinion regarding damages). The more fundamental fact seems to be that both rights are concerned with the individual's right to control the commercial use of his or her personal attributes. Moreover, if the right of publicity were recognized as a species of the right of privacy, just as the other categories identified by Dean Prosser, there does not seem to be any reason why the publicity interest alone could not be deemed a commercial, transferable interest.

The protection provided by privacy and publicity law is similar to the protection provided by unfair competition law which prevents the "passing off" of a fictional character, i.e., the portrayal of a character in such a way that the public is likely to be deceived as to the lawful creator or proprietor of the character. See *Lone Ranger, Inc. v. Cox*, 124 F.2d 650, 652-54 (4th Cir. 1942) (the "Lone Ranger" character, of radio fame, wrongfully used in circus).

149. See *supra* notes 49-67 and accompanying text.

150. *Moore*, 249 Cal. Rptr. at 508.

151. As the Ninth Circuit has observed, "It would be wholly unrealistic to deny that a name, likeness, or other attribute of identity can have commercial value." *Motschenbacher v. R.J. Reynolds Tobacco Co.*, 498 F.2d 821, 824 n.10 (9th Cir. 1974). Likewise, in the present context, it would be wholly unrealistic to deny that a cell line can have commercial value.

something of public interest and thereby serve the public good.¹⁵² The same reasoning underlies the patent and copyright laws,¹⁵³ and seems equally compelling when biomedical research is involved. Research serves the common good and biomedical research depends on the willing participation of human subjects. Human subjects play an especially distinct role in research when they bring a unique product to the research enterprise. Hence, for research to proceed most fruitfully, it seems necessary to encourage the participation of research subjects by protecting the economic value of their special contributions to the research effort.¹⁵⁴

Finally, if the right to consent to the commercial use of one's own cell line is recognized as an incident of the common law right of privacy, the rights of physical autonomy and self-determination will be enhanced. As discussed above, these rights are basic to our jurisprudence and underpin the principle of informed consent. Hence, the privacy right urged here would conform to other areas of law which incorporate the informed consent doctrine, namely, negligence law (structuring the doctor-patient relationship),¹⁵⁵ state constitutional law (protecting the patient's right to make medical decisions free from unwarranted interference),¹⁵⁶ and statutory and regulatory law (protecting the rights of human research subjects and imposing new duties of disclosure on scientific investigators).¹⁵⁷

Likewise, the rights of physical autonomy and self-determination are basic to the constitutional right of privacy established by federal law. The United States Supreme Court has recognized the right of every individual to determine what shall be done with his or her own body. As early as 1891, the Court stated: "No right is held more sacred, or is more carefully guarded, by the common law, than the right of every individual to the possession and control of his own person, free from all restraint or interference of others, un-

152. *Zacchini*, 433 U.S. at 576-78.

153. *Id.* at 576.

154. In *Zacchini*, the Court also observed that the right of publicity would protect the time, effort, and expense invested in the individual's performance and indeed would provide the individual with a form of compensation for his labor. *See id.* at 575-76.

This rationale can be applied to the commercial use of human tissue. An individual must invest some time undergoing the procedure(s) through which tissue is removed. Moreover, the procedure may involve some expense or inconvenience as well as some degree of pain or discomfort. Hence, although an individual's livelihood may not be jeopardized by the commercial exploitation of his or her tissue, the individual does make a personal investment in the process.

155. *See supra* notes 74-90 and accompanying text.

156. *See supra* notes 91-99 and accompanying text.

157. *See supra* notes 100-115 and accompanying text.

less by clear and unquestionable authority of law."¹⁵⁸ In 1973, the Court recognized this "sacred" right as part of the personal privacy protected by the United States Constitution.¹⁵⁹ Although the limits of personal privacy are not always easy to define, as indicated by the long, bitter abortion debate, the right of privacy has become synonymous with individual autonomy and self-determination.¹⁶⁰ The privacy right urged here would be consistent with these values.

2. Privacy as a Property Right

Moore has sparked a debate as to whether body tissue can be considered a form of property.¹⁶¹ In *Lugosi*, the California Supreme Court considered the issue of whether one's name and likeness are a form of "property."¹⁶² Although the court turned to the principles of privacy law to protect the right to exploit these attributes, the court said the property debate was "pointless."¹⁶³ As a practical matter, the court concluded that once the publicity right was recognized, it was valuable and could be licensed and pro-

158. *Union Pac. Ry. Co. v. Botsford*, 141 U.S. 250, 251 (1891).

159. *See Roe v. Wade*, 410 U.S. 113, 152, *reh'g denied*, 410 U.S. 959 (1973).

160. *See e.g.*, *Carey v. Population Servs. Int'l*, 431 U.S. 678, 684-85 (1977) ("This right of personal privacy includes 'the interest in independence in making certain kinds of decisions.' . . . While the outer limits of this aspect of privacy have not been marked by the Court, it is clear that among the decisions that an individual may make without unjustified government interference are personal decisions 'relating to marriage . . . procreation . . . contraception . . . family relationship . . . and child rearing and education. . . .'" (citations omitted); *Eisenstadt v. Baird*, 405 U.S. 438, 453 (1972) ("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") (emphasis in original). *See also Bouvia v. County of Los Angeles*, 195 Cal. App. 3d 1075, 1085, 241 Cal. Rptr. 239, 245 (1987) ("The right of bodily self-determination is a basic societal concept and is well rooted in the common law").

161. *Compare Danforth*, *supra* note 130, at 192-95 (arguing for a property right in the body) and Note, *Toward the Right of Commerciality; Recognizing Property Rights in the Commercial Value of Human Tissue*, 34 UCLA L.REV. 207 (1986) (arguing for a limited property right, i.e., a right in the commercial value of the body, to be known as the "right of commerciality") and Andrews, *My Body, My Property*, 16 HASTINGS CTR. RPT. 28 (Oct. 1986) (arguing for a property or quasi-property right whereby individuals would not be treated as property but would "have the autonomy to treat their own parts as property, particularly their regenerative parts") with Wagner, *Human Tissue Research: Who Owns the Results?*, 3 S C COMPUTER & HIGH TECH L. J. 231 (1987) (arguing against "implied reservation of interest" in tissue lawfully removed from the human body) and Murray, *Who Owns the Body? On the Ethics of Using Human Tissue for Commercial Purposes*, 8 I.R.B. 1, 5 (1986) (arguing against a property right in the body but for compensation to individuals when tissue is commercialized, based on "the dignity of the human body and its parts, and the gift relationship between science and the public").

162. *See Lugosi*, 25 Cal. 3d at 816-19, 823, 160 Cal. Rptr. at 325-326, 329.

163. *Id.* at 819, 823-24, 160 Cal. Rptr. at 326, 329 (citing Prosser, *Privacy*, *supra* note 136, at 406).

tected from invasion.¹⁶⁴ Although the debate in *Moore* also may be pointless, it seems important for the impact it may have on our perception of human dignity.

In *Moore*, the Court of Appeal analyzed the property debate, concluding that one's "bodily tissues amount[] to personal property" and that one does have "a property right in his own tissue."¹⁶⁵ Hence, the unauthorized exploitation of one's body tissue would support a cause of action for conversion.¹⁶⁶ Conversion consists of an unauthorized act interfering with another's rights in personal property.¹⁶⁷ Therefore, the commercial exploitation of another's body tissue, without the individual's consent, would interfere with the individual's rights of dominion and control over his or her own body.¹⁶⁸

The court's argument was serious and persuasive: In theory, property is broadly defined as a collection of ownership rights.¹⁶⁹ The ownership of one's own body is dramatically different from the ownership of another's body, and thus cannot be outlawed as slavery.¹⁷⁰ A limited property interest has been recognized in dead bodies for burial purposes, and body tissues are treated as property which can be donated (by will or other means) for use in organ transplants or other scientific endeavors.¹⁷¹ The court's analysis, however, appears flawed in one fundamental respect: The right to consent to the commercial use of one's body seems better understood as the cornerstone of a privacy interest in one's own body rather than a property interest.¹⁷²

The equation of human tissue with personal property inevitably seems to carry the connotation that tissue is some kind of com-

164. *Id.* at 819, 160 Cal. Rptr. at 326.

165. *Moore*, 249 Cal. Rptr. at 504.

166. *Id.*

167. *See id.* at 503-04.

168. *See id.* at 504-11.

169. *Id.* at 504-06.

170. *Id.* at 504.

171. *Id.* at 506.

172. Indeed, in its opinion in *Moore*, the Court of Appeal drew directly from privacy law to support its conclusions regarding property law. Citing *Bouvia v. Superior Court*, 179 Cal. App. 3d 1127, 1139, 225 Cal. Rptr. 297, 302 (1986), for the principle that every adult of sound mind has the right to control his own body, the *Moore* court defined this right as a property interest. *See Moore*, 249 Cal. Rptr. at 505-06.

Moreover, the approach suggested here is supported by the legal status given dead bodies which are not treated as property per se. *Cohen v. Groman Mortuary, Inc.*, 231 Cal. App. 2d 1, 41 Cal. Rptr. 481, 483, 484 (1964). To be sure, there is a "quasi property right" in a corpse (emphasis in original), but this right only refers to the right to have custody of the corpse for purpose of burial. In other words, in the absence of any testamentary disposition, the next of kin have the right (and duty) to bury a corpse or otherwise dispose of its remains.

modity.¹⁷³ In other words, when defined as personal property, human tissue seems to become an ordinary good or chattel which, like other kinds of merchandise, can be bought and sold in the marketplace.¹⁷⁴ Further, this perception will be reinforced as other property doctrines are applied to the acquisition and disposition of human tissue.¹⁷⁵

As an alternative analysis, a property right may be located in the *right* to control the commercial use of one's own tissue, a right arguably protected by the right of privacy. As the Court of Appeal observed in *Moore*, a property right is essentially an ownership right, that is, a right to exclusive use and possession; property per se is anything subject to ownership.¹⁷⁶ Under this broad definition, property may be real or personal, and personal property may be tangible or intangible.¹⁷⁷ Intangible personal property, in turn, may consist of an abstract right such as a contract right,¹⁷⁸ a license,¹⁷⁹ a cause of action¹⁸⁰ (or right to sue), and evidence of a debt (or right to recover money).¹⁸¹ Moreover, intangible personal property includes the "rights created or granted by statute,"¹⁸² as well as "every species of right and interest capable of being enjoyed as such upon which it is practicable to place a money value."¹⁸³

Rights which are directly analogous to the right to consent to the commercial use of one's own tissue have been recognized as property. After *Lugosi* was decided, the California legislature created a specific property right in the right to use a name, voice, sig-

173. See e.g., *Moore*, 249 Cal. Rptr. at 533-34 (George, A.J. dissenting); Note, *Toward the Right of Commerciality*, *supra* note 161, at 262-63 (arguing that a new "right of commerciality," as opposed to an absolute property right in the body, would avoid treating the body as a commodity); Murray, *supra* note 161 (general argument against treatment of body as commodity).

174. See *Moore*, 249 Cal. Rptr. at 533-34 (George, A.J. dissenting).

175. See *id.* at 534-35; Note, *Toward the Right of Commerciality*, *supra* note 161, at 242-58 (discussing application of traditional property law doctrines to the human body).

176. See *Moore*, 249 Cal. Rptr. at 504-05; See also CAL. CIV. CODE § 654 (Deering 1971).

177. See *Moore*, 249 Cal. Rptr. at 505; CAL. CIV. CODE §§ 57, 663.

178. *Yuba River Power Co. v. Nevada Irrigation Dist.*, 207 Cal. 521, 523, 279 P. 128 (1929).

179. *Golden v. State of California*, 133 Cal. App. 2d 640, 643-44, 285 P.2d 49 (1955) (general on-sale liquor license is property).

180. CAL. CIV. CODE § 14, subd. 3 (Deering 1971); Cal. Civ. Proc. Code § 7, subd. 3 (Deering 1972).

181. *Id.*

182. Cal. Civ. Proc. Code § 655 (Deering 1973).

183. *Yuba River Power*, 207 Cal. at 523 (quoting 22 R.C.L., § 10, at 43) (quoted in *Moore*, 249 Cal. Rptr. at 505).

nature, photograph, or likeness for a commercial purpose.¹⁸⁴ Following the enactment of this statute, the individual's common law rights in the attributes of his or her identity have been considered property.¹⁸⁵ Finally, a property right in the right to practice one's occupation or profession has long been recognized,¹⁸⁶ even though one's personal knowledge or skill is not considered property.¹⁸⁷

Hence, it seems that the right to consent to the commercial use of one's own tissue may be defined as a form of intangible personal property without in any way violating established property doctrines or diminishing our respect for an individual's unique worth.

3. Incidents of a Property Right in Privacy

If the right to consent to the commercial use of one's own tissue is recognized as a property right, at least three incidents of ownership would follow: (1) the right to license the commercial use of one's tissue; (2) the right to sue for unauthorized commercial use; and (3) subject to the principles of informed consent, the right to transfer any commercial rights in tissue removed from one's body.¹⁸⁸ Arguably, too, the right would be descendible.

First, the right to license the commercial use of one's tissue follows from the very nature of a property right. Property is the subject of ownership, and ownership is defined as the right "to possess and use [a thing] to the exclusion of others."¹⁸⁹ Hence, in *Lugosi*, the California Supreme Court recognized the right of publicity as a "right of value" which could be licensed.¹⁹⁰ Likewise, if the right to consent to the commercial use of one's own tissue is defined as a property right, then one necessarily has the right to license the commercial use of his or her own tissue.

Secondly, the right to authorize the commercial use of one's

184. CAL. CIV. CODE § 990(b) (Deering Supp. 1989).

185. See *Midler*, 849 F.2d at 463 (construing California law); *Accord Factors Etc.*, 579 F.2d at 221 (construing New York law); *Estate of Presley v. Russen*, 513 F. Supp. 1339, 1354-55 (D.N.J. 1981) (construing New Jersey law).

186. *Laisne v. California State Bd. of Optometry*, 19 Cal. 2d 831, 835, 123 P.2d 457 (1942).

187. *Gonsalves v. Hodgson*, 38 Cal. 2d 91, 98-99, 237 P.2d 656 (1951).

188. A "license" gives permission; without such authority, the act in question would be illegal. H. BLACK, *BLACK'S LAW DICTIONARY* 1067 (4th ed. rev'd 1968). A "transfer," on the other hand, refers to "an act . . . by which the title to property is conveyed from one living person to another." CAL. CIV. CODE § 1039 (Deering 1971).

189. CAL. CIV. CODE § 654 (1971). See also *Desny v. Wilder*, 46 Cal. 2d 715, 299 P.2d 257 (1956).

190. See *Lugosi*, 25 Cal. 3d at 819, 160 Cal. Rptr. at 326, quoting Prosser, *Torts*, *supra* note 135, at 807; *Eastwood*, 149 Cal. App. 3d at 419, 198 Cal. Rptr. at 348.

own tissue implies the right to sue for damages or injunctive relief if one's tissue is used without permission. The *Lugosi* court recognized this right in connection with the right of publicity.¹⁹¹ Similarly, the full panoply of common law remedies should be available, including lost profits as an element of damages,¹⁹² when the unauthorized use of human tissue is involved. To be sure, any relief would be subject to the usual rules of proof and would raise new issues unique to the biotechnology industry, but such issues can be met on a case by case basis.¹⁹³

Thirdly, subject to the requirements of informed consent, the right to consent to the commercial use of one's own body tissue should be freely transferable during one's lifetime. Under California law, property of any kind may be transferred,¹⁹⁴ including such intangibles as a contract right¹⁹⁵ and a cause of action.¹⁹⁶ The

191. See *Lugosi*, 25 Cal. 3d at 819, 160 Cal. Rptr. at 326; *Eastwood*, 149 Cal. App. 3d at 419, 198 Cal. Rptr. at 348. See also *Bi-rite v. Button Master*, 578 F. Supp. 59 (S.D.N.Y. 1983) (calculating damages caused by infringement of right of publicity).

192. See generally CAL. CIV. CODE § 3333 (Deering 1984); *Natural Soda Prod. Co. v. City of Los Angeles*, 23 Cal. 2d 193, 199-200, 143 P.2d 12 (1943), cert. denied, 321 U.S. 793, reh'g denied, 322 U.S. 768 (1944) (damage award in tort action may include lost profits provided "there is a satisfactory basis for estimating what the probable earnings would have been had there been no tort.").

193. If the state legislature ever elects to regulate the commercial use of human tissue, several statutes provide a common point of reference with respect to a remedial scheme. Under California law, the statutory remedies available upon a violation of the statutory right of privacy or statutory right of publicity include the following: statutory damages of \$750 or actual damages caused by the unauthorized use, whichever is greater, "any profits from the unauthorized use that are attributable to the use and are not taken into account in computing the actual damages," and punitive damages; the prevailing party also may recover attorneys fees and costs. CAL. CIV. CODE §§ 3344(a), 990(a) (Deering Supp. 1989).

Similarly, under federal law, the remedies available for copyright infringement include: either statutory damages of specified amounts, 17 U.S.C.A. § 504(c) (West 1977), or actual damages caused by the infringement and any profits "that are attributable to the infringement and are not taken into account in computing the actual damages." *Id.* at § 504(b). Further, the statutory scheme provides for injunctive relief, the impoundment and destruction of infringing copies, an award of costs to any party, and an award of attorneys fees to the prevailing party. *Id.* at §§ 502, 503, 505. See *Bi-rite*, 578 F. Supp. at 60, 62 for an example of a case where the court turned to the damages provisions of the Copyright Act for guidance in calculating the damages caused by the infringement of the right of publicity.

Both the state and federal statutes alter the traditional rules of proving lost profits. In the former instance, the plaintiff only bears the burden of proving the gross revenue attributable to the use and the defendant must prove his or her deductible expenses. CAL. CIV. CODE §§ 3344(a), 990(a) (Deering Supp. 1989). In the latter instance, the statutory scheme is even more plaintiff-oriented; the plaintiff need only prove "the infringer's gross revenue, and the infringer is required to prove his or her deductible expenses and the elements of profit attributable to factors other than the copyrighted work." 17 U.S.C.A. § 504(b) (West 1977). Hence, in the present context a model exists for aggressive legislative action.

194. CAL. CIV. CODE § 1044 (Deering 1971).

195. *Id.* at § 1458.

196. *Id.* at § 954.

analogous right of publicity may be transferred in California as well as in other jurisdictions.¹⁹⁷ Similar federal rights, like copyright, may be transferred.¹⁹⁸ Hence, as indicated above, only one limit seems mandatory in the present context: Any transfer of any commercial right in one's tissue must be contingent on one's informed consent to the initial removal of body tissue. As a matter of public policy, the right of informed consent should never be diminished or relinquished because of any transfer of any commercial interest.

Finally, the question of descendibility seems best approached by way of example. If John Moore should die without having licensed or transferred the right to use his tissue for a commercial purpose, should the right to control and profit from the commercial use of his tissue descend to his heirs or other named beneficiaries? Or, if the unique value of John Moore's cell line had been discovered after his death, should his heirs or beneficiaries inherit the right to license the commercial use of the cell line? Arguably, these questions should be answered in the affirmative.

Once again, right of publicity law is informative. In *Lugosi*, the California Supreme Court held that the right of publicity was personal to the individual and had to be exercised, if at all, during the individual's lifetime.¹⁹⁹ The court thus declined to hold that the right was descendible, but invited the state legislature to intervene on behalf of interested heirs.²⁰⁰ Accepting this invitation in 1984, the California legislature enacted Civil Code § 990, a comprehensive statute which created a statutory right of publicity and established that the right was a descendible property interest.²⁰¹ Among other things, the statute specified the heirs to whom the right would pass, the heirs' respective percentage interest in the right, and the length of time for which the right would survive (50 years from the death of the deceased personality).²⁰²

197. See *Lugosi*, 25 Cal. 3d at 823, 160 Cal. Rptr. at 329; CAL. CIV. CODE § 990(b) (Deering Supp. 1989); accord, *Factors Etc.*, 579 F.2d at 221-22; *Haelan Laboratories*, 202 F.2d at 868; *Bi-rite*, 555 F. Supp. at 1199-1200.

198. 17 U.S.C.A. § 201(d) (West's 1977). A federal copyright and the right of privacy urged here are similar in at least several ways. First, both rights are intangible. Second, copyright law protects "original works of authorship fixed in any tangible medium of expression," *id.* at § 102 (a), such as literary, musical, and pictorial works. See *id.* These intellectual products are at least analogous to the body products in issue when human tissue is used commercially. Finally, copyright protection and the privacy protection urged here both encourage individuals to contribute to the public good. See *supra*, notes 152-154 and accompanying text.

199. *Lugosi*, 25 Cal. 3d at 823-24, 160 Cal. Rptr. at 329.

200. *Id.* at 822, 160 Cal. Rptr. at 328.

201. See Cal. Civ. Code § 990(a),(b) (Deering Supp. 1989).

202. *Id.* at § 990(d),(g) (Deering Supp. 1989).

In jurisdictions outside of California, a number of courts addressing the issue have held that the right of publicity is descendible.²⁰³ As the courts have explained: If the right of publicity is descendible, the right's commercial value will be preserved and the rewards of individual effort will be greater; there is no reason why those who would exploit a person's attributes should receive a windfall at the expense of the individual's heirs or chosen beneficiaries; other intangible property rights descend at death;²⁰⁴ and the law favors survivability.²⁰⁵

The same reasoning applies when the right involved pertains to the commercial use of human tissue. The policy reasons favoring a right to consent to the commercial use of human tissue will be enhanced if the right is descendible. If a person's death is to create a windfall, it does not seem fair to subordinate the interests of heirs or chosen beneficiaries to the interests of a researcher, university, or commercial company. Further, descendibility would conform to the favored policy of the law. Thus, whether courts proceed on a case by case basis or the state legislature intervenes, there is good reason to allow the right to consent to the commercial use of human tissue to descend to an individual's heirs or successors-in-interest.²⁰⁶

4. Arguments Against Protection of the Right To Consent to the Commercial Use of One's Body Tissue

a. The Waste Argument: Tissue Without Value

In *Moore*, the dissenting appellate justice concluded that body tissue should not be recognized as personal property, and opined: "In any event, I am not prepared to extend the constitutionally sanctified right of property . . . to the refuse found on the floor of the barbershop or nail salon, in the hospital bedpan, or in the operating room receptacle."²⁰⁷ With this rather dramatic statement, the dissenting opinion summarized one argument made against the recognition of a property interest in human tissue: Once removed from the body, human tissue becomes waste. The individual from whom

203. See *American Heritage Products*, 694 F.2d at 680-82; *Factors Etc.*, 579 F.2d at 221-22; *Estate of Presley v. Russen*, 513 F. Supp. at 1355; but see *Memphis Dev. Found. v. Factors Etc., Inc.*, 616 F.2d 956 (6th Cir.), cert. denied, 449 U.S. 953 (1980).

204. See, e.g., 17 U.S.C.A. § 201(d) (West's 1977) (federal copyright); CAL. CIV. CODE § 954 (Deering 1971) (cause of action).

205. See *American Heritage Products*, 694 F.2d at 682; *Presley*, 513 F. Supp. at 1355.

206. Accord Note, *Toward the Right of Commerciality*, supra note 161, at 261.

207. *Moore*, 249 Cal. Rptr. at 535 (citations omitted) (George, A.J., dissenting).

the tissue was removed, no longer has any interest in it.²⁰⁸ By analogy, this argument also could be leveled against a privacy interest in human tissue: If tissue is waste and has no value to the individual when removed, then the individual would have no interest in the tissue's commercial use.

The waste argument, however, is self-serving and "fraught with irony."²⁰⁹ It would deny John Moore any right to share in the profits derived from his cell line on the theory that his own tissue, once removed, was tantamount to "refuse . . . in the operating room receptacle." On the other hand, the same argument would allow Dr. Golde, Ms. Quan, the University, Genetics, and Sandoz to claim the tissue, exploit it, and enjoy the profits of a product line estimated at more than \$3 billion by 1990. The irony is obvious. One man's waste is another's treasure.²¹⁰

In American jurisprudence, "the inviolability of the person is sacred."²¹¹ The inviolable, however, would be violated if body tissue were treated as meaningless waste once removed from the body. A sense of the whole would be lost. Even when removed, tissue is linked to a particular body and bears forever the genetic stamp of a unique individual. Hence, the waste argument seems to err by ignoring the necessary connection between an individual and a particular body part.²¹² Certainly, the connection may change when a particular body tissue is removed; the tissue may be used for diag-

208. For examples of arguments based on the assumption that removed tissue is waste, see Wagner, *supra* note 161, at 244 (when tissue is removed for therapeutic purpose, "the patient probably intends to abandon the tissue considering it to be repugnant material"); Caplan, *supra* note 130, at 450 ("in the area of commercial biotechnology. . .the biological materials involved are almost always replenishable and often constitute waste materials, at least from the point of view of the donor").

209. *Moore*, 249 Cal. Rptr. at 507.

210. See also Danforth, *supra* note 130, at 190 (arguing that such a result "offends traditional mores" and "tends to treat the human body as a commodity—a means to a profitable end").

211. *Union Pac. Ry. v. Botsford*, 141 U.S. 250, 252 (1891).

212. See Murray, *supra* note 161, at 2-3 (arguing that human organs and tissues, even when removed from the body, should be treated with appropriate respect and dignity).

Human experience also belies the notion that tissue is devalued when removed from the body. Consider an example from everyday life. When a child of five or six years has lost a so-called baby tooth, the tooth does not lose its value. To the contrary, it acquires an almost magical value, and even a commercial value. According to popular custom, the tooth is put under the child's pillow at night and the tooth fairy substitutes a quarter (or whatever amount the market demands) for the lost tooth while the child is asleep.

The beliefs and customs of many cultures also attest to the power and significance of body parts, even when separated from the whole body. In many "pre-modern" cultures, the flesh of a man or animal may be eaten or incorporated into a symbolic ritual so the participants will acquire the physical or spiritual qualities of that man or animal, or the particular characteristics believed to reside in a particular body part. See J. FRAZER, *THE GOLDEN*

nosis, garden-variety research, or commercial exploitation, or merely may be disposed of in the usual way.²¹³ Nevertheless, regardless of its ultimate disposition, the fundamental link between a body part and the whole body must be remembered and respected.

b. The Gift Argument: Value Beyond Price

Laws governing the acquisition of human organs for transplantation have been used to support a property interest in human tissue.²¹⁴ Conversely, the same laws have been used to argue against a property interest.²¹⁵ Quite simply, the latter argument relies on the fact that sales of organs for transplantation are restricted by federal and state law. The National Organ Transplant Act²¹⁶ broadly prohibits any "transfer [of] any human organ for valuable consideration for use in human transplantation if the transfer affects interstate commerce."²¹⁷ The Uniform Anatomical Gift Act²¹⁸ is built on the premise that cadaver organs can be donated as a gift but not sold.²¹⁹ Also, California law specifically bans the commercial brokerage of organs for purpose of transplantation.²²⁰ Therefore, the gift argument concludes by analogy that the sale of tissue for commercial exploitation should be banned.

BOUGH at 572-78 (abr. 1963). For example, a human heart may be eaten so one may acquire the valor of an especially courageous individual. *Id.* at 576-77.

The link between a part of the body and the whole being is also evident in Native American culture where the spirit of a hunted animal was greatly respected and certain taboos governed the disposal of the animal remains. If these taboos were violated, that is, if particular remains were not disposed of according to custom, the animal's spirit would be violated and the human population would suffer as a result. Martin, *The European Impact on the Culture of a Northeastern Algonquian Tribe: An Ecological Interpretation*, 31 WM. & MARY Q. 3, 12-16 (Jan. 1974).

213. See Moore, 249 Cal. Rptr. at 510; CAL. HEALTH & SAFETY CODE § 7054.4 (Deering 1975) (generally providing for internment or incineration of body parts after scientific use); Murray, *supra* note 161, at 2.

214. See, e.g., Moore, 249 Cal. Rptr. at 506; Note, *Toward the Right of Commerciality*, *supra* note 161, at 216-18.

215. See, e.g., Moore, 249 Cal. Rptr. at 538-39 (George, A.J. dissenting); Wagner, *supra* note 161, at 340-41; Murray, *supra* note 161, at 3.

216. Pub. L. No. 98-507, 98 Stat. 2339 (1984).

217. 42 U.S.C. § 275e(a) (West Supp. 1988).

218. See CAL. HEALTH AND SAFETY CODE §§ 7150-7156.5 (Deering Supp. 1989).

219. See *id.* at §§ 7150.1(a), 7155.

220. CAL. PENAL CODE § 367f(a) (Deering 1985). This section makes it "unlawful for any person to knowingly acquire, receive, sell, promote the transfer of, or otherwise transfer any human organ, for purposes of transplantation, for valuable consideration." Section 367f(e), however, specifically provides the statutory ban "shall not apply to the person from whom the organ is removed, nor to the person who receives the transplant, or those persons' next-of-kin who assisted in obtaining the organ. . . ." In effect, therefore, section 367f only prohibits the brokerage of human organs; it does not prohibit the purchase and sale of organs directly between a living donor and recipient.

The gift argument also could be made against the recognition of a property interest in the right to consent to the commercial use of one's own tissue. The argument, however, is flawed in at least two ways. First, the gift argument is subject to the same irony as the waste argument: The argument is used to defeat the individual's right to profit from the commercial value of his or her own tissue, but not to defeat the commercial interest of the involved physician, investigator, university, or biotechnology companies. Thus, in *Moore*, the Court of Appeal argued as follows for the patient's right to profit:

It has been suggested by writers that biotechnology is no longer a purely research oriented field in which the primary incentives are academic or for the betterment of humanity. Biological materials no longer pass freely to all scientists. As here, the rush to patent for exclusive use is rampant. The links being established between academics and industry to profitize biological specimens are a subject of great concern. *If this science has become science for profit, then we fail to see any justification for excluding the patient from participation in those profits.*²²¹

Secondly, when applied to the commercial exploitation of an individual cell line, the gift argument cannot be justified by the same policy concerns which support the argument in the context of organ transplantation. To begin with, any organ donated for transplantation is used by only one patient, and donors and donees are matched through a rigorous selection process. In all cases, the donor and donee are compared with respect to one or more physical attributes, including blood type, tissue type, and relative organ size.²²² Also, as a logistical matter, the donor organ and donee must be brought together while the donor organ can be preserved.²²³

Additional social, psychological, and physical factors are considered in selecting the donee. For example, the donee must have the resources to pay for the transplant procedure.²²⁴ The donee must be able to deal with the lifelong implications of an organ transplant such as the lifelong regimen of medication necessary to sup-

221. *Moore*, 249 Cal. Rptr. at 509 (emphasis added).

222. See Starzl, Hakala, Tzakis, Gordon, Stieber, Makowka, Klimoski, Bahnson, *A Multifactorial System for Equitable Selection of Cadaver Kidney Recipients*, 257 J. AMER. MED. ASSOC. 3073 (June 12, 1987) [hereinafter Starzl, et. al].

223. *Id.* at 3075.

224. See W. WINSLADE & J. ROSS, CHOOSING LIFE OR DEATH: A GUIDE FOR PATIENTS, FAMILIES, AND PROFESSIONALS 178-79, 180, 195, 200-201 (1986) [hereinafter Winslade & Ross].

press the donee's own immune reaction to the organ.²²⁵ Finally, other factors may be determinative, such as the donee's age, the severity of the donee's illness, and the length of time the donee's name has been on a waiting list.²²⁶

Likewise, if the donor is a living person rather than a cadaver, the donor is evaluated carefully. Although the donor always retains the right to consent to the procedure,²²⁷ many physicians will not ask an individual to donate if they believe the procedure would be detrimental to the individual's overall physical and emotional well-being.²²⁸

Hence, in the context of transplant surgery, it seems appropriate to conceive of organ donation as a "gift of life" which embodies some kind of deep bond among individuals, a relationship which cannot and should not be translated into economic terms.²²⁹ Further, the statutory ban on organ sales reflects a deliberate policy choice designed to prevent exploitation. With respect to organ recipients, organs are a scarce resource; allowing organ sales would promote bidding wars among patients; and the image of very ill, perhaps desperate patients competing in the marketplace is unsettling at best.²³⁰ Moreover, the distribution of scarce life-saving resources, based solely on ability to pay the highest sum the market will bear, offends many common notions of justice.²³¹

Exploitation of the donor is of equal concern. Legislators have been loathe to endorse a marketplace where one may give up for profit an eye, kidney, lung, or even a liver or heart.²³² To be sure, the statutory ban against organ sales may be criticized as a paternalistic restriction of individual liberty.²³³ Nevertheless, it reflects the reasonable concern that a market in body parts will result in the exploitation of the poor for the benefit of the wealthy.²³⁴

The concerns raised by the commercial exploitation of a

225. See *id.* at 180-81, 198-99.

226. See *id.* at 190, 196; Starzl, et. al, *supra* note 222.

227. See generally *supra* notes 74-90 and accompanying text.

228. See Winslade & Ross, *supra* note 224, at 192, 202-03.

229. See generally, Murray, *supra* note 161, at 3; T. Murray, *Gifts of the Body and the Needs of Strangers*, 17 HASTINGS CTR. REP. 30, 35-36 (Apr. 1987).

230. See, e.g., Caplan, *supra* note 130, at 448-49; Andrews, *supra* note 161, at 34.

231. See, e.g., Caplan, *supra* note 130, at 449; see generally Childress, *Who Shall Live When Not All Can Live?*, 53 SOUNDINGS 339-55 (Winter 1970) (arguing for selection of organ recipients based initially on medical acceptability and then by random selection).

232. See Caplan, *supra* note 130, at 449-50 (risk associated with donation of kidney or bone marrow sufficient to justify ban on purchase or sale).

233. See, e.g., Andrews, *supra* note 161, at 32-34.

234. See, e.g., *id.* at 31-32; Winslade & Ross, *supra* note 224, at 194-95.

human cell line are very different. The tissue or cells from which a cell line is established, are not used by only one other person within the context of a unique, even moral relationship. Instead, the tissue or cells are used to develop a cell line and related product line which, in turn, can be developed further to create commercial products, worth large sums of money, which then may help large numbers of individuals. In other words, while the purpose of an organ transplant is medical and therapeutic, the purpose of developing a cell line is scientific and commercial.

Further, the right to profit from the commercial use of one's own tissue does not seem to involve the same risks of exploitation as the purchase and sale of organs for transplantation. There is no comparable bidder. The research and development team is interested in fame and fortune, and is not in the same vulnerable position as a desperately ill patient hoping for a chance of recovery. Moreover, the donor is not subject to the same kind of pressures or detriment as a needy donor willing to barter an eye or kidney. For example, John Moore's spleen was removed for therapeutic purposes, and the other tissue removed was regenerative (blood, blood serum, skin, bone marrow aspirate, and sperm). In this respect, John Moore's situation was not unique, for tissues and cells (not organs) are most commonly used in biotechnology research.²³⁵ Finally, if John Moore's commercial rights in his own tissue had been recognized, Mr. Moore would have been in a very different bargaining position than the financially desperate donor imagined in the transplant setting.

Hence, although the gift argument is well placed in the context of human organ transplants, it only seems to obscure the real interests at stake when the commercial development of human tissue is involved.²³⁶

c. *The Impediment to Research Argument:
Unlikely Forecast of Doom*

In *Moore*, the University argued that medical research would be stifled if a property interest were recognized in human tissue.²³⁷ Illustrating the argument with the example of a research study using material from hundreds of different pituitary glands, the Uni-

235. *Ownership of Human Tissues*, *supra* note 5, at 3-4.

236. Likewise, notwithstanding the ban on organ sales, other biological products, such as blood products and sperm, may be purchased and sold. See Note, *Toward the Right of Commerciality*, *supra* note 161, at 219-21; Caplan, *supra* note 130, at 449.

237. See *Moore*, 249 Cal. Rptr. at 508-09.

versity argued that it would be onerous to track ownership of individual pituitary tissue in that kind of situation.²³⁸ The Court of Appeal rejected the argument for several reasons: The University had not cited any evidence to support the argument, and there was no practical reason to believe that research would suffer if either the patient's consent or additional record keeping were required.²³⁹ The patient, not the researcher, had the right to decide what could be done with his or her tissue, and there was no reason why the patient should not share in any profits.²⁴⁰ Finally, although the University predicted that the court's decision would have many dire consequences, these concerns were speculative at best and could be addressed by legislation if necessary.²⁴¹

If a privacy right to consent to the commercial use of one's own tissue is analyzed as a property right, the same practical objections—and same rebuttal—could be made. Furthermore, any kind of slippery slope argument must consider that *Moore* is distinguished by several facts: (1) John Moore's tissue was unique, perhaps one of a kind; (2) only John Moore's tissue was used to establish the Mo line; and (3) there seems to be a direct link between the Mo line and commercial products.²⁴² In combination, these factors invested John Moore's property rights with immense commercial value. Arguably, if any one factor were missing, that value would be reduced; if all factors were missing, the value could be negligible.²⁴³ Hence, in the pituitary example, it is arguable that any individual property rights had little or no commercial worth. The research did not seem to hinge on any unique qualities of any particular pituitary; many pituitaries were used; and the research did not appear directly related to the development of any particular commercial product.

Thus, if the individual's right to consent to the commercial use of his or her own tissue is recognized as a property right, not everyone's right automatically will be invested with great commercial value. Stated differently, although everyone may have a right to

238. See *id.* at 508-09 n.14.

239. See *id.* at 508-09 n.14, 509.

240. *Id.* at 509.

241. *Id.*

242. By analogy, in order to recover for the wrongful use of an attribute of identity under CAL. CIV. CODE § 3344 (Deering Supp. 1989), there must be "[a] 'direct' connection. . . between the use and the commercial purpose." *Eastwood*, 149 Cal. App. 3d at 417-18, 198 Cal. Rptr. at 347 (citing *Johnson v. Harcourt, Brace, Jovanovich, Inc.*, 43 Cal. App. 3d 880, 895, 118 Cal. Rptr. 370, 381 (1974)).

243. For an interesting discussion of a licensing system based on a fixed, statutory rate of compensation, see Danforth, *supra* note 130, at 199-201.

consent to (or license) the commercial use of his or her own tissue and everyone may be entitled to the disclosure of material information during the informed consent process, not everyone will have a property right of any significant worth. Indeed, it seems likely that John Moore's claim to compensation will be the exception rather than the rule.²⁴⁴

III. *Moore* Revisited: Crossroad To Another Era

New technologies test the vitality of legal concepts, and *Moore* measures the vitality of a number of legal doctrines, including informed consent, privacy, and basic property notions. Arguably, these doctrines are in fact vital and able to provide an appropriate framework within which to define and evaluate the competing interests in *Moore*.

On a policy level, the legal issues raised by *Moore* also challenge our assumptions regarding the role of technology in human life. In recent years, the impact of technology has become a major concern on many legal frontiers. For example, the National Environmental Policy Act of 1969²⁴⁵ (NEPA) reflects Congress' sweeping conclusion that "new and expanding technological advances" have a "profound impact. . . on. . . the natural environment,"²⁴⁶ but that technology's impact is ill understood and poorly controlled.²⁴⁷ Hence, NEPA is designed to enhance the federal government's ability to understand and control the environmental effects of new technology.²⁴⁸

When computers are involved, technology has inspired a more optimistic response. Oftentimes, society is confounded by computers,²⁴⁹ but a Congressional commission which studied the interface between computer technology and copyright law, rendered this enthusiastic statement:

From the Renaissance through the Industrial Revolution to

244. See generally *Ownership of Human Tissues*, *supra* note 5, at 55-56 (analyzing the role of common, uncommon, and rare tissues in research and product development; observing that most developments depend on common tissues removed from many individuals; and observing that rare tissues do not necessarily have any commercial value).

245. 42 U.S.C.A. §§ 4321-4347 (West 1977).

246. *Id.* at § 4331(a).

247. *Foundation on Economic Trends v. Heckler*, 756 F.2d 143, 147 (D.C. Cir. 1985) (citing legislative history).

248. *Id.*

249. See, e.g., *Bhattal v. Grand Hyatt-New York*, 563 F. Supp. 277, 278 (S.D.N.Y. 1983) ("All things in the modern world which go wrong for reasons other than the application of Murphy's Law, seem to go wrong because of a particular sort of mechanical malevolence known as 'computer error.'").

the present, technological developments have consistently extended society's power to control natural phenomena and to shape its own destiny. The rapid developments in communications and information technology of the past three decades have immeasurably expanded and extended the power of human communication.

One of the most important contributions to the communication and information revolution has been the digital computer. Animated by elements of human creative genius, these machines are opening new avenues for recording, storing, and transmitting human thought. New means of communication transcend words fixed on paper or images on film and permit authors to communicate creatively, adaptively, and dynamically with their audience.²⁵⁰

Based on the Commission's report, Congress extended copyright protection to computer programs.²⁵¹

The use of high technology remains more controversial in medical decision making. Although a number of courts already have considered the effects of mechanical life support and established the patient's right to refuse life-prolonging treatment,²⁵² many agonizing dilemmas remain. When the patient is a very premature or severely handicapped newborn, federal law seeks to encourage aggressive treatment; but the wisdom of life-prolonging treatment has been questioned when the infant remains critically ill with a low chance of survival or profound cognitive problems.²⁵³ New repro-

250. Nat'l Comm'n on New Technological Uses of Copyrighted Works, *Final Report 9* (1979). See also J. SCULLEY, *ODYSSEY PEPSI TO APPLE. . . A JOURNEY OF ADVENTURE, IDEAS, AND THE FUTURE* 150-53, 360-65, 403-16 (1987) (impact of personal computers on learning and innovation in America conceived in visionary terms).

251. *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1247-48 (3d Cir. 1983), *cert. dismissed*, 464 U.S. 1033 (1984).

252. See *supra* notes 91-99 and accompanying text. As one California court queried: "The question presented by this modern technology is, once undertaken, at what point does it cease to perform its intended function and who should have the authority to decide that any further prolongation of the dying process is of no benefit to either the patient or his family?" *Barber v. Superior Court*, 147 Cal. App. 3d 1006, 1017, 195 Cal. Rptr. 484, 490-91 (1983).

253. Compare 42 U.S.C.A. § 5106(a)(b)(10) (West Supp. 1989) (1984 amendments to Child Abuse Prevention and Treatment Act) (in order to receive federal funds, states required to respond to reports of "withholding medically indicated treatment" which, as defined by § 5106(g)(10),

means the failure to respond to the infant's life-threatening conditions by providing treatment . . . which . . . will be most likely to be effective in ameliorating or correcting all such conditions, except . . . when . . . (A) the infant is chronically and irreversibly comatose; (B) the provision of such treatment would (i) merely prolong dying; (ii) not be effective in ameliorating or correcting all of the infant's life-threatening conditions; or (iii) otherwise be futile in terms of the survival of the infant; or (C) the provision of such treatment

ductive technologies also involve complex concerns. Commercial surrogacy, for example, implicates our basic notions of what is best for children, what it means to be a parent, and what legitimate norms society may enforce.²⁵⁴ Likewise, the public funding of medical procedures may demand a cruel choice of priorities; public funds, for example, must be allocated between relatively high cost, high technology procedures serving relatively few individuals (such as organ transplants) or more basic public health programs serving many individuals (such as prenatal care).²⁵⁵

Hence, the policy issues raised by *Moore* can be viewed within a broader context of technological concerns. Sometimes pessimistic, sometimes optimistic, and sometimes controversial, our views of technology still reflect a basic policy effort to control our environment or to control technology. This singular focus has shaped the terms of our policy debates, but need not be taken for granted. The pattern of our thoughts and perceptions is woven through history, and arguably our assumptions regarding technology have been shaped by the rise of modern science beginning with the Scientific Revolution of the sixteenth and seventeenth centuries.²⁵⁶ To develop this point further, a brief journey in time is necessary.

The Scientific Revolution was built on the work of men such as Nicolaus Copernicus (1473-1543), Johannes Kepler (1571-1630), Galileo Galilei (1564-1642), Francis Bacon (1561-1626), and René Descartes (1596-1650). Culminating with the brilliant work of Sir Isaac Newton (1642-1727), the achievements of this period include the formation of the modern scientific method and the mechanical laws of physics.²⁵⁷

would be virtually futile in terms of the survival of the infant and the treatment itself under such circumstances would be inhumane.

with Kopelman, Ivans, Kopelman, *Neonatologists Judge the "Baby Doe" Regulations*, 318 *NEW ENG. J. MED.* 677 (Mar. 17, 1988) (survey showing that significant number of physicians believe that such regulations do not allow for adequate consideration of an infant's suffering and sometimes either encourage or require over-treatment when comfort, rather than maximum prolongation of life, may be in the infant's best interest).

254. See, e.g., *In re Baby M*, 109 N.J. 396, 537 A.2d 1227 (1988) (holding that commercial surrogacy contract conflicts with New Jersey law and public policy and therefore is illegal and invalid).

255. See, e.g., Durbin, *Bone Marrow Transplantation: Economic, Ethical, and Social Issues*, 82 *PEDIATRICS* 774 (Nov. 1988); Jennings, *A Grassroots Movement in Bioethics*, 18 *HASTINGS CTR. REP.* (Special Supp. June/July 1988).

256. See generally C. MERCHANT, *THE DEATH OF NATURE WOMEN, ECOLOGY, AND THE SCIENTIFIC REVOLUTION* (1980) (rich, historical account of the Scientific Revolution and its impact on Western culture) [hereinafter Merchant]; F. CAPRA, *THE TURNING POINT SCIENCE, SOCIETY, AND THE RISING CULTURE* (1982) (provocative work, authored by a physicist, analyzing the impact and limits of a mechanistic world view) [hereinafter Capra].

257. See generally, Capra, *supra* note 256, at 54-66.

With respect to scientific method, Bacon is acknowledged as the father of the inductive method, that is, an empirical form of investigation based on experiments designed to yield general conclusions which then can be tested by further experiments.²⁵⁸ Descartes, on the other hand, developed the deductive method, whereby a problem is reduced to its component parts and the parts are studied in logical order.²⁵⁹ Newton combined the two, (empirical induction and rational deduction), showing that experimental, empirical evidence and systematic, rational interpretation were complementary and each essential to reliable theory.²⁶⁰

Turning to the physical explanation of the world, the Scientific Revolution marked the end of a geocentric cosmology. Centering on the earth, this view of reality had endured for more than a thousand years, but the work of Copernicus, Kepler, and Galileo firmly established a heliocentric view of the heavens.²⁶¹ At the same time, the Scientific Revolution tolled the end of an organic world view through which nature was understood to be a living organism and the earth was conceived as a nurturing, beneficent mother.²⁶² Yielding to the achievements of men such as Descartes and Newton, the modern world view became more mechanistic.²⁶³

Descartes was driven by a vision that mathematics was the key to certainty and truth.²⁶⁴ With his discovery of analytic geometry, Descartes was able to express curves in algebraic equations and use mathematics to analyze moving bodies.²⁶⁵ Newton went even further, creating an entirely new form of mathematics (now called differential calculus) through which he was able to synthesize the empirical laws of planetary motion (which Kepler had derived from astronomical tables) and the laws of falling bodies (which Galileo had discovered).²⁶⁶ Newton thus formulated universal laws to describe the motion of all objects, whether located on the earth or in the heavens, subject to the force of gravity.²⁶⁷

As physical phenomena were thus defined by abstract laws, the world lost its living, animate quality. In Cartesian philosophy, mind and matter were torn asunder, with mind considered more

258. See Merchant, *supra* note 256, at 164-86; Capra, *supra* note 256, at 55-56.

259. See Capra, *supra* note 256, at 59.

260. See *id.* at 64.

261. See *id.* at 54.

262. See Merchant, *supra* note 256, at 1-28.

263. See Merchant, *supra* note 256, at 192-215, 216-35, 275-89.

264. See Capra, *supra* note 256, at 57; Merchant, *supra* note 256, at 203-204.

265. See Capra, *supra* note 256, at 58.

266. See Capra, *supra* note 256, at 63; Merchant, *supra* note 256, at 275.

267. See Capra, *supra* note 256, at 63-64, 65-66; Merchant, *supra* note 256, at 276-79.

certain and superior: "*Cogito, ergo sum*"; "I think, therefore I am."²⁶⁸ Similarly, in Newtonian physics, matter became passive, formed of "solid, massy, hard, impenetrable moveable particles,"²⁶⁹ while motion and force (including gravity) became external to matter.²⁷⁰

Through this mechanistic world view, man could achieve a new kind of power and control over nature. As Descartes stated, men could now become "the masters and possessors of nature."²⁷¹ In more sexual imagery, Bacon imagined the subjugation of nature so that nature might give up her secrets for human use.²⁷² With human intervention, nature could be "put in constraint,"²⁷³ and "forced out of her natural state and squeezed and molded."²⁷⁴ In that way, nature could be "made as it were new,"²⁷⁵ and "human knowledge and human power [would] meet as one."²⁷⁶

The Scientific Revolution continues to shape our world. Newton's laws define our understanding of many events including the motion of planets, moons, and comets, and the flow of tides.²⁷⁷ Even more generally, the scientific method remains the cornerstone of scientific truth, and mechanistic assumptions continue to define our understanding of reality in terms of mind and matter, subject and object, cause and effect. Moreover, the drive to pry loose the secrets of nature and to use those secrets to give man ever greater control of nature, is everywhere apparent. In public discourse, we alternatively wrestle with the problems of controlling technology and rejoice in the human power enhanced by technology. Further, our daily lives are more and more intertwined with technology—in the research laboratory and hospital, in the factory, home, and office, in the means of transportation and communication—and technology attests to the powerful drive unleashed by the Scientific

268. See Capra, *supra* note 256, at 59-60.

269. See Merchant, *supra* note 256, at 278 (quoting NEWTON, *OPTICKS* 400 (4th ed. 1730)).

270. See *id.* at 277-79.

271. See *id.* at 188 (quoting R. DESCARTES, *DISCOURSE ON METHOD* (Part 4), 1 *PHILOSOPHICAL WORKS OF DESCARTES* 119 (E. Haldane & G. Ross eds. 1955)).

272. See *id.* at 168-72.

273. *Id.* at 170 (quoting F. BACON, *De Augmentis* in 4 *WORKS* 294 (J. Spedding, R. Ellis & D. Heath eds. 1870)).

274. *Id.* at 171 (quoting F. BACON, *The Great Instauration* in 4 *WORKS* 29 (J. Spedding, R. Ellis & D. Heath eds. 1870)).

275. *Id.* at 170 (quoting F. BACON, *De Augmentis* in 4 *WORKS* 294 (J. Spedding, R. Ellis & D. Heath eds. 1870)).

276. *Id.* at 171 (quoting F. BACON, *Novum Organum* (Part 2), 4 *WORKS* 247 (J. Spedding, R. Ellis & D. Heath eds. 1870)).

277. See Capra, *supra* note 256, at 66-68.

Revolution.²⁷⁸

Despite this powerful history, our technology debates can no longer afford to be dominated by our simple focus on controlling nature or controlling technology.²⁷⁹ The issues are too complex. Again, consider *Moore*. In one sense, *Moore* reflects a classic accomplishment of Western science. John Moore's cell line was developed through scientific research based on the scientific method. Moreover, the development of a cell line represents the natural progression of a reductionist method; as an object of study, the body has been broken into smaller and smaller pieces until the inquiry has focused on some of its smallest parts, namely, the cell and its component genes. Finally, the ability to manipulate and reproduce a cell line through genetic engineering reflects an awesome ability to control — and alter — the basic characteristics of life. Such power, however, generates questions science cannot answer. We may be able to control the fundamental mechanisms of life, but to what end should that power be used? To what end should that power be restrained? Who should make those decisions?²⁸⁰

The impasse framed by these questions may be unlocked if, once again, we turn to physics as a reference point for physics has progressed beyond the limits of Newtonian mechanics and revealed a new vision of reality. In the twentieth century, phenomena occurring at or near the speed of light were observed on a vast, galactic scale and on a very small atomic and subatomic scale. These phenomena could not be explained fully by Newton's laws. On the sidereal level, Newton's laws were displaced by the theory of relativity conceived by Albert Einstein (1879-1955); on the particle level, by the theories of quantum mechanics developed by Einstein as well as Max Planck (1858-1947), Niels Bohr (1885-1962), Louis de Broglie (1892-1987), Irwin Schrödinger (1887-1961), Wolfgang Pauli (1900-1958), Werner Heisenberg (1901-1976), and Paul Dirac (1902-1984).²⁸¹

278. See generally Merchant, *supra* note 256, at 192-215.

279. See generally *Technology Assessment*, *supra* note 17.

280. See generally *Splicing Life*, *supra* note 36, at 14-17, 53-60.

281. See generally Capra, *supra* note 256, at 70-72, 75-97. The limits of Newtonian mechanics were evident even before these twentieth century developments occurred. In the 19th century, for example, Michael Faraday (1791-1867) and Clerk Maxwell (1831-1879) discovered electromagnetism, a force existing independently of material bodies, which could not be explained by Newton's laws of mechanics.

In biology, Charles Darwin (1809-1882) marshalled a vast amount of evidence and proposed a theory of evolution based on random mutation and natural selection. His thesis implied the idea of change over time as well as the development of simple forms into more complex structures, and could not be explained mechanically.

Very generally, the theory of relativity is based on the fact that the speed of light is constant for all observers, no matter how fast the observer is travelling.²⁸² The implications of this simple fact are profound. Force and matter can no longer be considered as fundamentally different and independent. Instead, mass must be understood as a form of energy, with the relationship described by Einstein's famous equation, $E = mc^2$, (where "E" is energy, "m" is mass, and "c" is the speed of light).²⁸³ Likewise, space and time can no longer be considered absolute or independent of each other. Instead, the universe must be conceived in four dimensions, as a continuum of space-time which must be described in terms relative to the observer and which not only affects the events occurring within its matrix but also is affected by those events.²⁸⁴

The findings of quantum mechanics are equally remarkable. In classical physics, a particle is defined by its position in space and its velocity. If these characteristics are known accurately at any point in time, the particle's position and velocity can be predicted at any other time. However, when an observer attempts to determine the position or velocity of a subatomic particle, the act of measurement imparts energy to the particle which changes the characteristic that is not being observed.²⁸⁵ Thus, a particle can never be defined in absolute terms. Matter tends to exist and events tend to occur so there is a statistical probability that particles will exist at given points in space at given points in time. This "uncertainty principle" is a cornerstone of quantum mechanics, and further illustrates that immutable laws do not exist.²⁸⁶

Thus, the theory of relativity and quantum mechanics reveal an organic, dynamic world which only can be understood in terms of the integral relationship between subject and object, the part and the whole, matter and energy, space and time. Further, the world is no longer explicable only in terms of immutable laws. Probabilities or tendencies must be taken into account.

Literature often embodies abstract concepts and here, *Frankenstein*,²⁸⁷ an old, familiar tale, illustrates the limits of a mechanistic world view as well as the need for a more expansive, organic view.

282. S. HAWKING, A BRIEF HISTORY OF TIME FROM THE BIG BANG TO BLACK HOLES 20 (1988) [hereinafter Hawking].

283. *Id.* at 20-21.

284. *Id.* at 21-33.

285. *Id.* at 54-55.

286. *Id.* at 55-56.

287. M. SHELLEY, FRANKENSTEIN OR THE MODERN PROMETHEUS (Oxford University Press ed. 1985).

The *Frankenstein* novel was written by Mary Shelley and first published in 1818.²⁸⁸ As the story unfolds, young Victor Frankenstein was enchanted by the secrets of nature. He mastered university science, and still driven to "explore unknown powers,"²⁸⁹ sought to create a human being. To this end, he collected body parts from graves, assembled a man of giant stature, and infused him with life. Frankenstein, however, was horrified and fled from his room and laboratory.

The creature, left alone to venture into the world, gradually learned of human society as well as the great fear and hatred he inspired. Desperately alone, the creature searched for Frankenstein and in the process met and killed Frankenstein's younger brother. Frankenstein, more distraught than ever, encountered the creature high in the mountains where the creature made an impassioned demand: Frankenstein must create a female companion for him. Frankenstein agreed and began the task, but could not finish. Enraged and bereft of hope, the creature again sought vengeance, first killing Frankenstein's boyhood friend and then Frankenstein's wife of only a few hours. Frankenstein's father later died of grief. Vowing to destroy the creature and to avenge the death of his loved ones, Frankenstein pursued the creature into the Arctic where Frankenstein died in the chase. The creature, too, was doomed. Soon he would die, alone and repulsed by his own deeds, on a funeral pyre of his own making. So the story ends.

On one level, *Frankenstein* is a study in paradox. Frankenstein tried to create a beautiful human form, but the creature was unnaturally hideous. Frankenstein expected to act as a father to the creature, but never gave the creature a name. Frankenstein labored passionately to create life, but thrice spurned the creature and left him to survive alone. Frankenstein expected to be praised as a creator, but the creature became his accursed and mortal enemy. Frankenstein gave life, but died with the effort to extinguish that life.

On another level, *Frankenstein* is an allegory of the power and pitfalls of mechanism. Frankenstein was enraptured by scientific investigation. He sought and achieved great power over nature, assuming that power could be controlled. The exercise of power, however, had unexpected effects. From the moment Frankenstein animated the creature, Frankenstein recoiled from the act of creation. From the moment the creature breathed with life, the creature

288. *Id.* at xv.

289. *Id.* at 48.

acquired an independent human nature with independent human needs. From the moment of creation, Frankenstein and the creature were locked in a tragic, solitary struggle.

Frankenstein never shared the secret of his creation with anyone he loved, and gradually lost each of his loved ones. The creature, too, was alone—lacking the companionship of his creator, society, or any kind of equal. As between creator and creature, there was only enmity, pursuit, and death. The struggle, however, was not the only alternative possible. Frankenstein could have shared his fellowship with the creature, assuming the responsibility of a creator, teacher, friend, or benefactor. He could have shared his secret with others. By doing so, he may have averted many tragedies, but Frankenstein never seemed to perceive the option.

Thus, there is a lesson to *Frankenstein*. The quest for knowledge need not be abandoned; technology need not be foresworn; individual freedom need not be ignored. Yet, the relationship among individuals must be recognized; technology's human dimension must be realized; and the responsibilities of power must be accepted.

The organic perspective implied by post-Newtonian physics as well as *Frankenstein* is emerging throughout society in many different ways. The environmental movement of the nineteen sixties and seventies has matured into a new study of ecology and a new ecological ethic ("ecoethics"). Both focus on the relationships within nature, including the role of the human population, and the dynamic unity of the whole.²⁹⁰ In a parallel development, the women's movement of the same period has matured into a creative study of the feminine and masculine aspects of many disciplines. In psychology,²⁹¹ history,²⁹² and even legal jurisprudence,²⁹³ the male perspective has been identified with individuality and separation among individuals, with abstract reasoning, with achievement, power, and control; the newly recognized female experience, with the unity of nature, with the connection between individuals, with responsibility and the awareness of relative needs. Likewise, in soci-

290. See generally Merchant, *supra* note 256, at 293-94; B. DEVALL & G. SESSIONS, *DEEP ECOLOGY* (1985); *Plastic Trees*, *supra* note 17 (criticizing an environmental policy based on human wants and self-interest, and proposing an alternative ethic based on the recognition "that humanity is a part of nature and the natural order a constituent part of humanity.").

291. See generally C. GILLIGAN, *IN A DIFFERENT VOICE PSYCHOLOGICAL THEORY AND WOMEN'S DEVELOPMENT* (1982).

292. See generally Merchant, *supra* note 256.

293. See generally Scales, *The Emergence of Feminist Jurisprudence: An Essay*, 95 *YALE L. J.* 1373.

ology²⁹⁴ and ethical theory,²⁹⁵ the limits of individual autonomy have been examined, and the need for greater community expressed.

Thus, within an organic world view, the terms of our technology policies might be enlarged to include relationships and responsibilities as well as power and control. More specifically, within an organic world view, we may better recognize that technology is an expression of our humanity and not merely a means to plumb and harness the secrets of nature.²⁹⁶ We may better recognize the unity of nature and that humankind is part of nature. We may better recognize that individuals have dignity as whole persons and that body and mind are inseparable. We may better recognize the connections between individuals and the relationships through which they exist. Further, we may better recognize the responsibilities which both individuals and communities bear for each other and the planet Earth.

Finally, within an organic world view, we may better define the policy implications of *Moore*. Arguably, the legal analysis developed above will preserve the link between a part of Mr. Moore's body, even when removed, and his right to decide how to use his body. The persons developing Mr. Moore's cell line will be held to the obligations of a partnership serving common human goals.²⁹⁷ Moreover, without any loss of human dignity, the technical potential of our human nature may be accepted and protected.

IV. CONCLUSION

Using the new tools of biotechnology, it has become possible for scientific investigators to develop a human cell line for commercial use. As a result, the investigators' rights and obligations must be defined relative to those of the individual who supplied the tissue or cells from which the cell line was developed. This task was handed to the courts in *Moore v. The Regents of the University of California* where a cell line with immense commercial value was

294. See generally R. BELLAH, R. MADSEN, W. SULLIVAN, A. SWIDLER, & S. TIPTON, *HABITS OF THE HEART INDIVIDUALISM AND COMMITMENT IN AMERICAN LIFE* (1985).

295. See generally Veatch, *Autonomy's Temporary Triumph*, 14 HASTINGS CTR. REP. 38 (Oct. 1984); Callahan, *Autonomy: A Moral Good, Not a Moral Obsession*, 14 HASTINGS CTR. REP. 40.

296. See, e.g., Sculley, *supra* note 250, at 398-99, 420-21 (arguing that shift from a mechanistic world view to a post-Newtonian paradigm will encourage creative use of personal computers and new innovation in American business).

297. See, e.g., Danforth, *supra* note 130, at 200 (arguing that a fixed profit-sharing plan or licensing agreement through which a patient would be compensated for the commercial use of his or her tissue, would reflect the "continuous partnership between the researcher and patient.").

developed from the cells of Mr. John Moore without his knowledge or consent. The legal issues raised by *Moore* can be analyzed in familiar terms but prod the law to move in new directions.

In this article, the issues raised by *Moore* are analyzed as follows: The principle of informed consent protects the individual's right to be informed if any proposed removal of tissue will serve a commercial purpose. The common law right of privacy protects the individual's right to consent to the commercial use of his or her tissue once removed. Further, this aspect of the privacy right may be recognized as a property right, of variable commercial worth, which protects the individual's right to profit from the commercial use of his or her tissue. The policy implications of this analysis arguably point toward an organic view of life and technology. There is a dynamic connection between all aspects of reality, so we must recognize that individuals have dignity as whole persons, that individuals exist in relationship with others oriented toward common human goals, that technology is an expression of our human nature, and that our human nature is part of all nature.

The term, "biotechnology," is of recent origin but is derived from ancient Greek: from *bios* meaning mode of life, from *techne* meaning art or skill, and from *logos* meaning word.²⁹⁸ The combination in "biotechnology" is apt. The biotechnology age is an age of synthesis. To move ahead we must respect the connections between our human abilities and life in all its dimensions. Further, we must respect those connections in the laws and policies through which we shape our world. Thus, the issues raised by *Moore* point to another era, reflecting the challenge as well as the promise of biotechnology.

298. See WEBSTER'S NINTH NEW COLLEGIATE DICTIONARY 147 (bi- or bios-), 153 (biotechnology), 703 (-logy), 1211 (techno-, technology) (1988).

