

# Tulsa Law Review

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Volume 10 | Number 2

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1974

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### Recommended Citation

Kevin Abel, *The Legal Implications of Ectogenetic Research*, 10 Tulsa L. J. 243 (1974).

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# THE LEGAL IMPLICATIONS OF ECTOGENETIC RESEARCH

Kevin Abel

*The really revolutionary revolution is to be achieved, not in the external world, but in the souls and flesh of human beings.*

*Aldous Huxley*

## INTRODUCTION

In 1961, Dr. Daniele Petrucci of the University of Bologna, Italy, was conducting experiments in human ectogenesis, the *in vitro*<sup>1</sup> fertilization and gestation of a fetus.<sup>2</sup> Dr. Petrucci had succeeded in nurturing from fertilization a human embryo for twenty-nine days; then he detected abnormalities in the embryo and "terminated" the experiment.<sup>3</sup> In another effort, Petrucci succeeded in sustaining an ectogenetic embryo for almost two months;<sup>4</sup> it died due to a laboratory mistake.<sup>5</sup> When word of Dr. Petrucci's experiments reached the Italian public it created a furor.<sup>6</sup> Petrucci was blasted by civic leaders and the Vatican.<sup>7</sup> Demands were even made that the doctor be prosecuted for murder.<sup>8</sup> At last, weary of public and Church criticism and fearful

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1. WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 1190 (3rd ed. 1961).

2. *Man into Superman*, TIME 38, 51 (Ap. 19, 1971); Smith, *Through a Test Tube Darkly: Artificial Insemination and the Law*, 67 MICH. L. REV. 127, 127 (1968); Rosenfeld, *The New Man*, LIFE 98 (Oct. 1, 1965); *Baby in a Bottle*, AMERICA 560 (Jan. 28, 1961); *Test Tube Tempest*, NEWSWEEK 78 (Feb. 6, 1961); NEWSWEEK 73 (Mar. 6, 1961).

3. See articles cited note 2 *supra*.

4. To be exact, 59 days. *Man into Superman*, *supra* note 2; Rosenfeld, *The New Man*, *supra* note 2.

5. *Man into Superman*, *supra* note 2.

6. *Id.*; Rosenfeld, *The New Man*, *supra* note 2; *Baby in a Bottle*, *supra* note 2.

7. See articles cited note 6 *supra*; *Test Tube Tempest*, *supra* note 2.

8. Rosenfeld, *The New Man*, *supra* note 2.

of the threat of criminal prosecution, Petrucci abandoned his work in ectogenesis.<sup>9</sup>

If Dr. Petrucci's case were to occur today in the United States, what criminal law issues would be involved? Could the genetic researcher be indicted for murder? For manslaughter? Is the "termination" of an *in vitro* fetus feticide in the context of Anglo-American law? Does the state have a compelling interest in the protection of fetal life?

The Petrucci case was not an isolated incident. He was not the first, or the last, scientist to attempt Promethean research; nor was he the last to feel the social, religious, and legal pressures incident to that research. Dr. John Rock of Harvard made the first successful fertilization of a human egg *in vitro* in 1944,<sup>10</sup> but none of Dr. Rock's test-tube embryos grew beyond the three-cell stage.<sup>11</sup> Then, beginning in the early 1950's and continuing until the present, Dr. Landrum B. Shettles of Columbia University has conducted ectogenetic research. He has succeeded in maintaining embryos for six days to the blastocyst stage of development (34 cells and up).<sup>12</sup> In 1954, when Dr. Shettles attended the International Fertility Conference in Italy, he found himself being criticized by Pope Pius XII who condemned those who "take the Lord's work into their own hands."<sup>13</sup> In Great Britain, Dr. R.G. Edwards of Cambridge succeeded in human test-tube fertilization and embryonic growth in a laboratory culture in the late 1960's.<sup>14</sup> *Nature*, in response to the work of Dr. Edwards and the adverse public opinion incident thereto, published the following:

[A] correspondent in *The Times* voiced the fear that: "The ability of scientists to develop the technique of creating life in a test-tube is so serious that I feel human beings should be given the opportunity to express their views on whether or not this line of research should be pursued . . . . [sic] Personally I find the idea of creating life at man's will terrifying." . . . [T]hose who are engaged in research that is at all liable to be misinterpreted will doubtless take the present episode as a warning of the misunderstandings that can arise, particularly if the true facts are not readily available from authoritative sources. There is always the danger that

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9. *Id.*; *Man into Superman*, *supra* note 2.

10. Rorvik, *The Test-Tube Baby is Coming*, LOOK 83 (May 18, 1971); Smith, *Through a Test Tube Darkly*, *supra* note 2.

11. Rorvik, *Test-Tube Baby*, *supra* note 10.

12. *Id.*; *Man into Superman*, *supra* note 2, at 38.

13. Rorvik, *Test-Tube Baby*, *supra* note 10, at 84.

14. Kass, *New Beginnings in Life*, in *THE NEW GENETICS AND THE FUTURE OF MAN* 22 (M. Hamilton ed. 1972); New York Times, Feb. 15, 1969, at 31, col. 7.

lack of information or misinformation may convert legitimate public concern about new knowledge into a paranoia that impedes research.<sup>15</sup>

In an article on ectogenetic research, the *New York Times* quoted Dr. Donald Gould, the editor of *The New Scientist*:

What happens to the embryos which are discarded at the end of the day—washed down the sink? There would necessarily be many. Would this amount to abortion—or to murder? We have no law to cope with this kind of situation.<sup>16</sup>

Martin P. Golding, Professor of Philosophy at Columbia University, stated, "It is possible that the discipline of genetics will be unable to police itself and that legal sanctions will be necessary to deter what the public . . . regards as abuses."<sup>17</sup> Perhaps the strongest (at least a very authoritative) statement concerning ectogenetic research came from Dr. James D. Watson, The Nobel Prize-winning molecular biologist. While testifying before a House sub-committee on science, he urged the establishment of a commission to study the ramifications of fertilization and gestation *in vitro*, and he asked Congress to consider legislation prohibiting all research involving human embryos.<sup>18</sup>

It should be clear that the subject of this comment does not concern itself with the mere speculation or wild hypotheticals, nor is it premature in raising the legal issues herein. Albert Rosenfeld, in his book *The Second Genesis: The Coming Control of Life*, quoted an anonymous American scientist, "If I can carry a baby all the way through to birth *in vitro*, I certainly plan to do it—though obviously, I am not going to succeed on the first attempt, or even the twentieth."<sup>19</sup> Dr. Bentley Glass, past-president of the American Association of Advancement of Science, has predicted that before the year 2000, human ectogenesis from conception to decantation<sup>20</sup> will be achieved.<sup>21</sup> The law must confront, identify, and resolve the legal dilemmas born of this brave new world.

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15. *Premature Birth of Test Tube Baby*, 225 NATURE 886 (1970), quoted in Kass, *New Beginnings in Life*, *supra* note 14, at 58.

16. Kass, *New Beginnings in Life*, *supra* note 14, at 33.

17. Golding, *Ethical Issues in Biological Engineering*, 15 U.C.L.A.L. REV. 443, 478 (1968).

18. *Man into Superman*, *supra* note 2; Rorvik, *Test-Tube Baby*, *supra* note 10, at 88; Robinson, *Genetics and Society*, 1971 UTAH LAW REV. 487, 492 (Winter, 1971).

19. A. ROSENFELD, *THE SECOND GENESIS: THE COMING CONTROL OF LIFE* 117 (1969), quoted in Kass, *New Beginnings in Life*, *supra* note 14, at 24.

20. A. HUXLEY, *BRAVE NEW WORLD* (1st ed. 1932).

21. Rorvik, *Test-Tube Baby*, *supra* note 10.

## BACKGROUND

Ectogenesis is but one facet of eugenics, the science which deals with the improvement of genetic qualities.<sup>22</sup> The science of eugenics can be applied either negatively or positively. Negative eugenics is the science devoted to the diminution of inferior genetic qualities.<sup>23</sup> Positive eugenics is the science devoted to the propagation of superior genetic qualities.<sup>24</sup> Positive and negative eugenics, and biological engineering<sup>25</sup> in general, have been the subject of much discussion in law review circles. Although this comment will focus on the criminal law aspects of ectogenetic research, it would be well to establish the context of this comment by reviewing the general topic of biological engineering.

A host of legal and moral questions have been raised by the giant advances in biological engineering; the following issues are merely a sample of the questions considered in legal and popular sources. One area of controversy has been the growing practice of organ transplants. The medical problem of obtaining the donor's organs as promptly as possible upon his death is a crucial one due to the rapid deterioration of most organs. This medical problem has in turn raised a crucial legal problem. May a doctor remove a vital organ from a person on the verge of death, so as to prevent even the possibility of deterioration? If he did, could he be indicted for murder?<sup>26</sup> The risk of criminal prosecution in such a case has created interest in legislation to redefine the moment of death.<sup>27</sup> Cryonic suspension, the suspended animation of individuals through the use of very low temperatures,<sup>28</sup> has also been the subject of legal debate. Since "freezing kills" by today's standards, could freezing an individual before his death be construed as murder?<sup>29</sup> Legal commentators have considered the issues raised by the advent

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22. Vukowich, *The Dawning of the Brave New World—Legal, Ethical, and Social Issues of Eugenics*, 1971 U. ILL. L.F. 189, 189 (1971).

23. *Id.*; Pauling, *Foreword to Reflections on the New Biology*, 15 U.C.L.A.L. REV. 267, 271 (1968).

24. See articles cited notes 22 and 23 *supra*.

25. Biological engineering refers to those techniques acquired from research done in the biological sciences which are utilized to produce changes in an individual's genotype (the genetic characteristics) or phenotype (the visible characteristics). Golding, *Ethical Issues in Biological Engineering*, *supra* note 17, at 451.

26. See *For the Record*, 15 U.C.L.A.L. REV. vii (1968).

27. Grad, *Legislative Responses to the New Biology: Limits and Possibilities*, 15 U.C.L.A.L. REV. 480, 500 (1968).

28. Spector, *Legal Implications of Cryonics*, 18 CLEV.-MAR. L. REV. 341, 356 (1969).

29. See *id.*

of cyborgs, a biologically engineered hybrid between man and machine manufactured through the coupling of human brain tissue with electronic units.<sup>30</sup> Two areas of biological engineering that have been the source of legal discussion are parthenogenesis and cloning. Parthenogenesis is the reproduction of an individual from an unfertilized egg, which is induced to begin formation of an embryo through the prick of a pin or by cooling the ovum at a particular stage in its maturation.<sup>31</sup> An individual produced by parthenogenesis would always be the same sex as its sole parent, but it would not be the twin of its parent.<sup>32</sup> An asexually produced individual that is the exact copy of its parent is a clone.<sup>33</sup> Biological engineers have also begun the task of human genetic mapping, the identification and location of each gene along the forty-six human chromosomes.<sup>34</sup> It is hoped that this deciphering of the genetic code will be completed within a few decades.<sup>35</sup> A great deal of legal reflection has been focused on embryo transplantation.<sup>36</sup> Dr. Landrum Shettles has already performed an embryo transplant; he fertilized, *in vitro*, the egg of one woman with the sperm of her husband and then implanted it within a second woman.<sup>37</sup> Two days later, a previously scheduled hysterectomy was performed on the second woman; the embryo was located and examined in the excised uterus where it had successfully embedded itself.<sup>38</sup> If a transplanted embryo were carried to term, who would be the parents of the child, the egg and sperm contributors or the woman who carried the child to term and her husband?<sup>39</sup> The issues raised by the embryo transplants are very similar to the legal questions surrounding A.I.D., artificial insemination by donor. A child conceived by A.I.D. would, of course, be the child of its mother, but it would not be the genetic offspring of her husband.<sup>40</sup> Should the marriage ever end in divorce, a number of problems could develop. The mother may attempt to deny her former husband visitation rights on the grounds of non-paternity; conversely, the former husband may assert his non-paternity as a defense to any claim for child

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30. Gorney, *The New Biology and the Future of Man*, 15 U.C.L.A.L. REV. 273, 357 (1968).

31. *Id.* at 282-83.

32. *Id.* at 283.

33. *Id.* at 300.

34. *Id.* at 288-91.

35. *Id.* at 288.

36. See Grad, *Legislative Responses*, *supra* note 27, at 502.

37. Rorvik, *Test-Tube Baby*, *supra* note 10, at 83, 86.

38. *Id.*

39. Grad, *Legislative Responses*, *supra* note 27, at 502.

40. *Id.*

support.<sup>41</sup> Is the former husband the child's father?<sup>42</sup> Is the child illegitimate?<sup>43</sup> Is the child the issue of the former husband with regard to intestate succession?<sup>44</sup> Is the mother guilty of adultery?<sup>45</sup> Is the physician who performed the artificial insemination guilty of battery?<sup>46</sup>

The legal ambiguities generated by A.I.D. and the legal questions raised by biological engineering in general mirror the legal problems encountered in ectogenetic research. Just as the "old" definitions of father, legitimacy, issue, adultery, and battery are inapplicable in a case involving A.I.D., so it is in a case of ectogenetic research with quick child, feticide, infanticide, viability, and murder. This comment will attempt to resolve the legal ambiguities that may confront an ectogenetic researcher.

#### CRIMINAL LAW AMBIGUITIES

By definition, ectogenesis involves the deliberate fertilization of a human egg, and in the course of everyday laboratory work, it necessarily involves the "termination" of fertilized eggs. The "termination" may occur a few moments after conception or 59 days thereafter.<sup>47</sup> It may occur volitionally, by mistake, or by negligence, but if this work continues (and it surely will) a great many embryos will be destroyed. The destruction of human offspring is prolicide.<sup>48</sup> Prolicide is divided into two subjects, feticide and infanticide.<sup>49</sup>

Feticide has been defined as the destruction of the fetus, whether *in utero* or *in vitro*; the act by which criminal abortion is produced.<sup>50</sup> It is known that the ancient Persians had knowledge of abortifacients but considered their use to be a highly criminal act subject to severe

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41. *Id.* at 504, 507; Grad, *New Beginnings in Life—A Lawyer's Response*, in *THE NEW GENETICS AND THE FUTURE OF MAN* 72 (M. Hamilton ed. 1972); Gorney, *The New Biology*, *supra* note 30, at 279; Rosenfeld, *The New Man*, *supra* note 2, at 96.

42. See articles cited note 41 *supra*.

43. Vukowich, *Brave New World*, *supra* note 22, at 223; Grad, *Legislative Responses*, *supra* note 27, at 503; Rosenfeld, *The New Man*, *supra* note 2, at 96.

44. Vukowich, *Brave New World*, *supra* note 22, at 223; Gorney, *The New Biology*, *supra* note 30, at 279; Grad, *Legislative Responses*, *supra* note 27, at 507; Rosenfeld, *The New Man*, *supra* note 2, at 96.

45. Grad, *A Lawyers Response*, *supra* note 41, at 73; Vukowich, *Brave New World*, *supra* note 22, at 223; Grad, *Legislative Responses*, *supra* note 27, at 504.

46. Grad, *Legislative Responses*, *supra* note 27, at 503-04; Rosenfeld, *The New Man*, *supra* note 2, at 96.

47. See note 4 *supra*.

48. BLACK'S LAW DICTIONARY 1378 (rev. 4th ed. 1968).

49. *Id.*

50. *Id.*; Grad, *A Lawyer's Response*, *supra* note 41, at 65-66.

punishment.<sup>51</sup> By the time of the Greeks, however, feticide was practiced without penalty or dishonor; the same being true of the Romans.<sup>52</sup> The common law followed the precedent set by the Greeks and Romans, up to that stage of pregnancy when the embryo became "quick."<sup>53</sup> A "quick" child was distinguished at the first uterine movement of the fetus.<sup>54</sup> The distinction of "quickness" was an important one under the common law, for it determined the nature of the abortion act. Prior to "quickening," the fetus was considered a part of its mother and no crime resulted with its destruction.<sup>55</sup> After "quickening," however, feticide did result from the abortion act. As Lord Coke stated:

If a woman be quick with childe, and by a Potion or otherwise killeth it in her wombe; or if a man beat her, whereby the child dieth in her body, and she is delivered of a dead childe, this is a great misprison, and no murder  
 . . . .<sup>56</sup>

Lord Coke defined a misprison as the commission of a heinous offence under the degree of a felony.<sup>57</sup> Blackstone considered a misprison to be a high offense, not of the degree of a capital crime, but one bordering thereon.<sup>58</sup> A misprison was not a misdemeanor, in the modern sense, as some commentators have suggested;<sup>59</sup> for misprisons frequently involved punishments of life imprisonment and the forfeiture of all lands held by the criminal party.<sup>60</sup>

Blackstone explained that before any degree of homicide could occur, there had to be a person, a "reasonable creature in being," to be the subject of a homicide, and a fetus, whether "quick" or not, had never met that criteria.<sup>61</sup> It is clear that the common law looked with disfavor upon the destruction of the "quick" fetus; synchronously, however, it did not accord even the "quick" fetus the status of a human being,<sup>62</sup> and apparently afforded no status whatsoever the pre-"quick"

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51. See *Roe v. Wade*, 410 U.S. 113, 130 (1973).

52. *Id.*

53. *Id.* at 132-33.

54. *Id.* at 132.

55. *Id.*

56. 3 E. COKE, INSTITUTES 50.

57. *Id.* at 139.

58. 4 W. BLACKSTONE, COMMENTARIES 119.

59. R. PERKINS, CRIMINAL LAW 140 (2nd ed. 1969).

60. 3 E. COKE, INSTITUTES 140, 141. Note, however, that a misprison did not destroy the right of the criminal party's heirs to the inheritance of land, since being no felony, corruption of blood did not occur. *Id.*

61. 4 W. BLACKSTONE, COMMENTARIES 197-98.

62. *Id.*



fetus. Were the common law to rule today in the case of a "terminated" ectogenetic embryo, no crime of any degree would be involved, since no ectogenetic embryo to date has exhibited any movement within its glass womb. (This defense will, however, crumble before on-going research which will, sooner or later, produce a fetus that has "quickened.") But, how would American statutory law and case law view the "termination" of an ectogenetic fetus?

In American jurisprudence, the initial feticide statutes continued the English distinction of "quickness," dealing harshly with feticide after "quickening" and being lenient with feticide before "quickening."<sup>63</sup> Beginning in the middle 1800's, however, the "quickness" distinction began to disappear from the statutory law of most states, and the degree of the offense and the penalties attached thereto were made more severe.<sup>64</sup> Some states even classified feticide as a homicide, manslaughter.<sup>65</sup> The statutory trend was also reflected in the case law. In the 1850 case of *Mills v. Commonwealth*,<sup>66</sup> the Pennsylvania court held that "quickness" was not a necessary element in the crime of abortion:

[Feticide] interferes with and violates tame mysteries of nature in that process by which the human race is propagated and continued. It is a crime against nature which obstructs the fountain of life, and therefore it is punished. . . . The moment the womb is instinct with embryo life, and gestation has begun, the crime may be perpetrated.<sup>67</sup>

Almost one-hundred years later, in the case of *Hall v. People*,<sup>68</sup> the Supreme Court of Colorado held that the crime of feticide occurred with the destruction of the fetus *at anytime before birth*. A similar holding was reached by the Supreme Court of Nebraska, in the case of *Hans v. State*.<sup>69</sup>

While arbitrary distinction is made by some writers between "foetus"<sup>70</sup> and "embryo",<sup>71</sup> the distinction is not recognized

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63. 410 U.S. at 139.

64. *Id.*

65. PERKINS, CRIMINAL LAW, *supra* note 59, at 29; *Gilpin v. Gilpin*, 94 N.Y.S.2d 706, 708 (Dom. Rel. Ct. 1950).

66. 13 Pa. (1 Harris) 631 (1850).

67. *Id.* at 633.

68. 201 P.2d 382 (Colo. 1948).

69. 22 N.W.2d 385 (Neb. 1946).

70. The unborn young of a viviparous animal, after it has taken form in the uterus; in man, the product of conception from the end of the eighth week to the moment of birth. *STEDMAN'S MEDICAL DICTIONARY* 461 (3rd ed. 1972).

71. An organism in early stages of development; in man, from conception until approximately the end of the second month. *Id.* at 404.

in a charge of "foeticide". We make reference to the following legal definitions: "Foetus. In medical jurisprudence. An unborn child. An infant *in ventre sa mere*." Black's Law Dictionary, 3rd Ed., p. 794.

. . . .

It is clear that the arbitrary and technical distinction between the terms "embryo" and "foetus" are not recognized by the law. The terms are practically interchangeable and refer to an unborn child, *in ventre sa mere*. It is obvious the Legislature used these terms in their ordinary and commonly accepted meaning, and when it used the term "foeticide" it meant the unlawful destruction of an unborn child, *in ventre sa mere*, at any stage of gestation.<sup>72</sup>

With the concept of "quickness" having been completely abandoned, a charge of feticide would stand for the destruction of a fetus or an embryo. Under this approach, the "termination" of an ectogenetic embryo would seem to be feticide. The only possible loophole being the qualifying phrase, *in ventre sa mere*, in the mother's womb.<sup>73</sup> An ectogenetic embryo has a womb, albeit glass, but what of the mother?

The American law of feticide, as formulated in statutory and case law dating from the middle 1800's, was abrogated by the United States Supreme Court decision in *Roe v. Wade*.<sup>74</sup> The Court held unconstitutional the feticide statutes proscribing abortion at any stage of gestation. Basing its decision on the mother's right to privacy, the Court explained that the statutes, in restricting a woman's right to terminate her pregnancy, violated the due process clause of the fourteenth amendment.<sup>75</sup> The Court acknowledged, however, that the mother's right to terminate her pregnancy was not an unqualified right;<sup>76</sup> the decision differentiating the extent of this right during the three gestational trimesters. The decision to terminate the fetus during the first trimester must be solely that of the mother and her doctor.<sup>77</sup> During the second trimester, a state may regulate the abortion procedure only to insure maternal health.<sup>78</sup> During the final trimester of gestation, a state may protect fetal life by prohibiting feticide, except where it is necessary to preserve

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72. 22 N.W.2d 385, 388-89 (Neb. 1946).

73. BLACK'S LAW DICTIONARY 902 (rev. 4th ed. 1968).

74. 410 U.S. at 113.

75. *Id.* at 154, 164.

76. *Id.* at 154.

77. *Id.* at 164.

78. *Id.*

the health of the mother.<sup>79</sup> With the decision in *Roe v. Wade*, the law of feticide has come full circle, for the protection the Supreme Court afforded a third trimester fetus is analogous to the protection the common law of Lord Coke afforded a "quick" child. There is no crime of any degree for the destruction of a fetus prior to the third trimester, just as there was no crime of any degree for the destruction of a fetus prior to "quickening." As a result of the *Roe* decision, the "termination" of an ectogenetic embryo clearly could not be feticide; no ectogenetic embryo to date having developed to the third trimester.<sup>80</sup>

Infanticide has been defined as the killing of an infant after its birth;<sup>81</sup> the felonious taking of the life of a newborn child, which constitutes murder.<sup>82</sup> Lord Coke said, "[I]f the childe be borne alive, and dieth of the Potion, battery or other cause, this is murder: for in law it is accounted a reasonable creature, *in rerum natura*, when it is born alive."<sup>83</sup> The crucial element in a case of infanticide is the birth of the child. As was stated in the case of *Gilpin v. Gilpin*:<sup>84</sup>

It [the birth of the child] determines the distinction between the crimes of foeticide and infanticide. The former, the destruction of the life of the foetus; infanticide, the felonious taking of the life of a newborn child. The killing of a foetus *in utero*, is manslaughter; the killing of a child after its birth is murder.<sup>85</sup>

Determining exactly what constitutes the birth of a child has, however, been something of a problem. Professor Perkins in his text on criminal law has stated: "[T]he infant must be fully expelled from the body of the mother and have established a separate circulation. *It must live apart from the body and circulation of the mother . . .*"<sup>86</sup> (Emphasis added.) Precisely defining infanticide and accurately identifying the elements of that crime have great significance when contemplating the criminal nature, if any, of the "termination" of an ectogenetic embryo, for an ectogenetic child *begins* life apart from the body and circulation of the mother. Yet, it cannot be said that the ectogenetic embryo

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79. *Id.*; See p. 18 *infra* for further discussion of permissible state regulation during the third trimester.

80. Presumably, however, future research will develop an ectogenetic fetus to the third trimester of development, the "termination" of which would constitute feticide in a state regulating third trimester abortions.

81. BLACK'S LAW DICTIONARY 917 (rev. 4th ed. 1968).

82. *Gilpin v. Gilpin*, 94 N.Y.S.2d 706, 708 (Dom. Rel. Ct. 1950).

83. 3 E. COKE, INSTITUTES 50.

84. *Gilpin v. Gilpin*, 94 N.Y.S.2d 706, 708 (Dom. Rel. Ct. 1950).

85. *Id.* at 708.

86. PERKINS, CRIMINAL LAW, *supra* note 59, at 29.

has, to echo Lord Coke, been "born alive." The "birth" of an ectogenetic fetus, decantation,<sup>87</sup> may someday be accomplished, but today there is simply no "birth" in any sense of the word. Nevertheless, the ectogenetic fetus is living apart from the body and circulation of the mother; in this sense it is somewhat analogous to a viable child.

A viable child has been defined as a fetus that is capable of an existence independent of the mother.<sup>88</sup> It is traditionally thought that viability occurs between the sixth and seventh month after conception,<sup>89</sup> and that an embryo (a fetus in its earliest stages of development) could never be considered a viable child.<sup>90</sup> In the case of an ectogenetic embryo, however, viability occurs at conception. It not only is *capable* of an independent existence; it *maintains* an independent existence, yet, like the viable child, it is still a fetus because it has never been "born alive". The viability analogy is tremendously important due to the Supreme Court's decision in *Roe*.<sup>91</sup> The Court held that the state's police power could include a compelling interest in the protection of fetal life *at the stage of viability*, such that the state could regulate and even proscribe the destruction of a fetus at that stage.<sup>92</sup> But, do the states need to formulate legislation to protect an ectogenetic fetus that, due to its independent existence, may already be the subject of infanticide?

Is the "termination" of an ectogenetic embryo feticide, infanticide, or criminal in any respect, whatsoever? The ambiguities remain.

#### LEGISLATIVE DEMARCATION

The legal quesitons raised by ectogenetic research could be easily resolved by appropriate legislation. Legislation has already been passed incident to another area of eugenics, A.I.D.<sup>93</sup> The difficult questions in a case involving A.I.D. concerning the legal definition of father, legitimacy, issue, adultery, and battery, were answered on May 12, 1967, when the Oklahoma legislature passed the first statute in the

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87. HUXLEY, *BRAVE NEW WORLD*, *supra* note 20.

88. *Wendt v. Lillo*, 182 F. Supp. 56, 57 (N.D. Ia. 1960); *Bonbrest v. Kotz*, 65 F. Supp. 138, 140 (D.D.C. 1946); *Mitchell v. Couch*, 285 S.W.2d 901, 904 (Ky. 1955); *Mallison v. Pomeroy*, 291 P.2d 225, 225 (Or. 1955).

89. *Wendt v. Lillo*, 182 F. Supp. 56, 57 (N.D. Ia. 1960); *Mitchell v. Couch* 285 S.W.2d 901, 905 (Ky. 1955).

90. *See* cases cited note 89 *supra*.

91. 410 U.S. at 113.

92. *Id.* at 163-65.

93. *See* p. 8-9 *supra*.

United States authorizing the use of A.I.D.<sup>94</sup> The statute defines the father of the child as the husband of the mother, the child as the legitimate issue of the couple, and removes the possibility of accusations of adultery or battery.<sup>95</sup> The Oklahoma legislation expressly sanctioning one legally troublesome eugenic program serves as a precedent for legislation pertaining to another, ectogenesis. Legalizing all facets of ectogenetic research would prevent scientists from ever experiencing the nightmare Dr. Petrucci suffered.<sup>96</sup> But there is also a compelling state interest in passing such legislation.

In the past, mankind has been subject to the laws of natural selection and survival of the fittest; the weak and genetically defective succumbing to natural forces. Today, however, medical science and technology have succeeded in frustrating natural selection by prolonging to the age of reproduction many individuals carrying deleterious genes—individuals who then transmit their genetic defects to future generations.<sup>97</sup> This circumvention of natural selection has resulted in greatly increasing humanity's genetic load, the total number of genetic defects in society.<sup>98</sup> Geneticists have estimated that today every individual carries between five and ten potentially harmful genes.<sup>99</sup> In the 1968 meeting of the American Association for the Advancement of Science, Robert L. Sinsheimer, biophysicist at the California Institute of Technology, stated that 250,000 children are born annually with structural or functional defects and that *four-fifths* of such births involve a genetic component.<sup>100</sup> Consider the remarks of Sir Julian Huxley:

[I]f we don't do something about controlling our genetic inheritance, we are going to degenerate. Without selection, bad mutations inevitably tend to accumulate; . . . Most mutations are deleterious, but we now keep many of them going that would otherwise have died out. If this continues indefinitely . . . then the whole genetic capacity of man will be much weakened.<sup>101</sup>

The human race will continue even if its genetic load doubles or even

94. OKLA. STAT. tit. 10, §§ 551-53 (1967); Grad, *A Lawyer's Response*, *supra* note 41, at 71-72; Smith, *Through a Test Tube Darkly*, *supra* note 2, at 144.

95. OKLA. STAT. tit. 10, §§ 551-53 (1967); *see* articles cited note 94 *supra*.

96. *See* p. 1-2 *supra*.

97. Golding, *Ethical Issues in Biological Engineering*, *supra* note 17, at 444.

98. Vukowich, *Brave New World*, *supra* note 22 at 192.

99. *Man into Superman*, *supra* note 2, at 37.

100. *Noted in* Little, *Statistical Morality, Law and Tomorrow's World*, 21 U. FLA. L. REV. 442, 446 n.8 (1969).

101. *Quoted in* Golding, *Ethical Issues in Biological Engineering*, *supra* note 17, at 453.

triples, but it would mean an existence of ever increasing medical dependency.<sup>102</sup> It has been stated that life totally dependent on constant medical attention would become more of a treatment than a treat.<sup>103</sup> To prevent man from becoming so genetically weak as to be constantly dependent on medical maintenance, intervention through the science of eugenics is essential.<sup>104</sup> Eugenic research must be allowed the unfettered opportunity to develop the means to insure mankind a better tomorrow. Ectogenesis is an important facet of that research. However, no other area of eugenic research is so fraught with the pressures of legal uncertainty as ectogenesis. Legislation protecting the ectogenetic researcher from any fear of criminal prosecution would permit the unworried continuance of this necessary research; research vital to any state concerned with the health of its present and future citizens.

#### CONCLUSION

Mankind stands uncertainly at the door of a biological revolution. Ectogenesis can help humanity pass through that door and pursue its promising future awaiting behind it. The law, however, not science, will be chiefly responsible for the decision to encourage or to hinder mankind's challenges of the future, for the law will authorize or restrain scientific research necessary for that venture. Unrestricted scientific research must be allowed, for if law or the threat of law immobilizes science, the future of mankind is not promising but dismal. The law must work with and promote science and scientific research to insure mankind an auspicious tomorrow.<sup>105</sup>

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102. Gorney, *The New Biology*, *supra* note 30, at 292.

103. *Id.*

104. *Id.* at 292-93.

105. See Schroeder, *The Influence of Medical and Biological Progress on the Criminal Law*, 9 MEDICINE, SCI. L. 137, 160 (1969).