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ALTERNATIVE REPRODUCTION

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and
LISA DOUGLASS**

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I. INTRODUCTION

Individuals and couples now have a growing number of options with respect to whether, how, and when to have a child. *In vitro* fertilization, cryopreservation of embryos, gamete intrafallopian transfer, zygote intrafallopian transfer, gamete donation, embryo donation, surrogate

motherhood, and surrogate gestational motherhood provide new alternatives for infertile people. The more controversial techniques—such as IVF and surrogate motherhood—have brought attention to all forms of assisted reproduction, for no matter how *medically* simple or complex, or how innovative or routine, all assisted reproductive procedures are to some extent *socially* controversial. Some procedures, such as artificial insemination, involve techniques that are medically rudimentary, while others, such as *in vitro* fertilization (IVF) and gamete or zygote intrafallopian transfer (GIFT or ZIFT), involve more sophisticated techniques. Some of these medical procedures have come into use only recently; for example, the first child born with the assistance of IVF is only twelve years old. Other reproductive alternatives have longer histories and are more familiar. Artificial insemination, either by donor (AID) or by husband (AIH), is the most common. It has been available for most of this century and has resulted in hundreds of thousands of births.

Scores of articles have been written about the ethical and legal implications of these procedures and arrangements. Lawmakers in all states have been urged to enact laws focusing on one or more of the technologies.¹ In some areas of law, policy making is hampered by lack of familiarity with the process at issue. In the area of alternative reproduction, policy making has been confounded by the fact that everyone has a pre-existing notion, based on personal experiences, religious doctrine, societal guidelines, or mere wishful thinking, about how families should come into existence.² Participants in legislative hearings often merely turn these intuitions into dire predictions about the effects of a new reproductive arrangement on the parties involved. They argue not on the basis of fact, but on the basis of symbols and pejorative language.³

In developing a framework for policy in this area, we need to go beyond emotional responses. We must evaluate the potential physical and psychological effects of the procedures on the individuals and couples who seek treatment, on the donors and surrogates who provide assistance, on the children who are born through these new reproductive procedures and arrangements, and on society in general.

Research in this area to date, however, has provided little data; instead, it has merely repeated the generalizations espoused at legislative

1. See, e.g., Lori B. Andrews, *The Aftermath of Baby M: Proposed State Laws on Surrogate Motherhood*, HASTINGS CENTER REP., Sept. 1987, at 31.

2. See LORI B. ANDREWS, BETWEEN STRANGERS: SURROGATE MOTHERS, EXPECTANT FATHERS, AND BRAVE NEW BABIES (1989).

3. See, e.g., Lori B. Andrews, *Surrogate Motherhood: The Challenge for Feminists*, 16 LAW, MED. & HEALTH CARE 72, 73 (1988).

hearings. These alternative ways of creating families so offend the traditional notions held by some people that research on the medical, psychological, or social ramifications of the procedures has seldomly been funded. In addition, couples who become parents through use of these techniques are often made to feel like outcasts; thus many are unwilling to come forward to participate in follow-up studies of themselves and their children.

The purpose of this Article is to discuss existing studies and to highlight those areas in which research is needed. The Article first discusses infertility and briefly describes the forms of alternative reproduction that have been developed in response. It then describes general concerns about alternative reproduction, some of which apply to more than one procedure, and many of which raise empirical questions. The Article next describes the limitations of studies that attempt to assess the nature and effects of alternative reproduction. Subsequent sections discuss particular procedures and their ramifications, and the final section explores directions for future research.

II. INFERTILITY

“Infertility” refers to a relative inability to achieve pregnancy. The exact incidence of infertility is difficult to discern, but it is estimated that some degree of infertility affects 8.5 percent of the nation’s population in its childbearing years.⁴ The rate of infertility increases with age. In a recent study, almost one-quarter (24.6 percent) of married women aged thirty-five to thirty-nine had infertility problems. Among those aged forty to forty-four, 27.2 percent were infertile.⁵ The infertile who seek treatment spend more than a billion dollars a year.⁶

A. THE VALUE OF GENETIC AND BIOLOGICAL LINKS

Many couples who are infertile desire to have a child with a genetic or biological link to them. The reasons they give for wanting such a child are no different from those fertile couples might offer: some believe that having a biological child can give them a sense of immortality; others believe their biological child will be an expression of themselves or

4. OFFICE OF TECHNOLOGY ASSESSMENT, 100TH CONG., 2D SESS., *INFERTILITY: MEDICAL AND SOCIAL CHOICES* 50 (Comm. Print 1988); see also Alice D. Domar & Mabelle M. Seibel, *Emotional Aspects of Infertility*, in *INFERTILITY: A COMPREHENSIVE TEXT* 23, 24-35 (Mabelle M. Seibel ed. 1990) [hereinafter *INFERTILITY*].

5. OFFICE OF TECHNOLOGY ASSESSMENT, *supra* note 3, at 52.

6. *Id.* at 10.

of the love between them. Other couples cite the the importance of childbearing or childrearing as a life experience, a desire for the love of a child, and the desire to give love to a child. One group of infertile men said the reason to have a child was "to make life worth living."⁷ The women in an Australian study said they would feel less fulfilled if they did not have a child, and would have less in common with other women.⁸

An adopted child can fulfill many of these desires, yet our society still favors genetic and biological relatedness over social relatedness. That biological parenthood remains the ideal is attested to by the way we model adoptive families on biological ones. Traditionally, agencies sought to match children's attributes with those of their adoptive parents,⁹ and many families hid the fact that a child was adopted in order to feel the child was "really" theirs.¹⁰ Adoption agencies still prefer heterosexual couples as adoptive parents,¹¹ a tradition that mirrors the model of biological reproduction.

Men and women may have different reasons for desiring children biologically related to them.¹² Both may desire to see the features and characteristics of themselves and their parents expressed in a child.¹³ Parents of AID children in one study said physical resemblance was unimportant to them, but some of their spontaneous comments about being an AID parent suggested they were pleased when a child shared similarities with the nongenetic rearing father: "The child resembles me in so many ways (especially psychologically)"; "I catch myself remarking: just like daddy!"; or "she is . . . just the same dark type as my

7. Ann Lalos et al., *The Wish to Have a Child*, 72 ACTA PSYCHIATRICA SCANDINAVICA 476 (1985).

8. Victor J. Callan & John F. Hennessey, *Emotional Aspects and Support in In Vitro Fertilization and Embryo Transfer Programs*, 5 J. IN VITRO FERTILIZATION & EMBRYO TRANSFER 290, 293 (1988).

9. A concern with physical matching was especially prevalent in older child adoption but has been replaced somewhat in recent years with a greater emphasis on matching a child's needs with what a particular family has to offer. See, e.g., Miles Hapgood, *Older Child Adoption and Knowledge Base of Adoption Practice*, in ADOPTION: ESSAYS IN SOCIAL POLICY, LAW, AND SOCIOLOGY 76 (Philip Bean ed., 1984).

10. The widespread practice of secrecy in adoption, although less often practiced today, may have reflected the parents' desire to pretend that a child was their biological issue.

11. Although single parent adoption is legal in every state, agencies give preference to married couples, and only heterosexuals can legally marry. COMM. FOR SINGLE ADOPTIVE PARENTS, THE HANDBOOK FOR SINGLE ADOPTIVE PARENTS (Hope Marindin ed., 1990). Couples that are openly lesbian or gay (that is, one partner did not seek to adopt as a single person) have only recently been allowed to legally adopt.

12. Domar & Seibel, *supra* note 4, at 24-26.

13. Lalos et al., *supra* note 7, at 478.

husband.”¹⁴ A physical “match” between the male partner and semen donor is still a part of AID procedure, which takes into account the characteristics of the husband and the characteristics the couple desires in a child.¹⁵

Sharing characteristics may become an issue where only one parent is genetically related to the child. One author attributes a greater concern for what has been called “genetic narcissism” to men¹⁶ and considers that women may place a higher value on the relation created through pregnancy and childbirth.¹⁷ Other authors suggest that men may be more likely to see infertility as related to sexual performance¹⁸ while women may view the inability to become pregnant as a lack of femininity.¹⁹ The impact of infertility expresses itself differently in men and women, but the desire to have children may be equally strong and complex in both.

Those who have not experienced infertility may take genetic and biological parenthood for granted. Some might question the motives of infertile individuals and couples who seek treatment. Yet why should we question the motives of an infertile couple seeking to have a child any more than we examine the motives of those who do not have a fertility problem? The fertile do not usually find themselves in the position of having to explain their desire to conceive and bear a child. Considering that genetic and biological parenthood is highly valued in our society, it seems unfair to demand that the infertile provide greater justification for their desire to reproduce than we require of the fertile population.

14. Levie, *An Inquiry into the Psychological Effects on Parents of Artificial Insemination with Donor Semen*, 59 EUGENICS REV. 97, 103-04 (1967).

15. AMERICAN FERTILITY SOCIETY, *New Guidelines for the Use of Semen Donor Insemination: 1990*, in 1 FERTILITY AND STERILITY 1S, 4S-5S (Supp. 1990) [hereinafter *AFS Semen Donor Guidelines 1990*].

16. In her critique of surrogate motherhood, Barbara Katz Rothman points to the greater value, in her view, of the relationship between a birth mother and her child than genetic ties. BARBARA KATZ ROTHMAN, *RECREATING MOTHERHOOD: IDEOLOGY AND TECHNOLOGY IN A PATRIARCHAL SOCIETY* 243 (1989).

17. Seventy-five percent of both men and women in the Swedish study felt it was important to have a biologically related child. Lalos et al., *supra* note 6, at 479. Mothers themselves do not universally share this view, of course. In a Dutch study, half of the infertile women interviewed said that using a surrogate gestational mother was an acceptable alternative in their quest for a child, indicating that carrying a child in pregnancy was not in itself the key desire. Helen Bequaert Holmes & Tjeerd Tymstra, *In Vitro Fertilization in the Netherlands: Experience and Opinions of Dutch Women*, 4 J. IN VITRO FERTILIZATION & EMBRYO TRANSFER 116, 120 (1987).

18. Judith Lasker & Susan Borg, *Secrecy and the Newborn Reproductive Technologies*, in *NEW APPROACHES TO HUMAN REPRODUCTION: SOCIAL AND ETHICAL DIMENSIONS* 133, 140-41 (Linda M. Whiteford & Marilyn L. Poland eds., 1989).

19. Domar & Seibel, *supra* note 4, at 25.

B. THE PSYCHOLOGICAL ASPECTS OF INFERTILITY

People who suffer from infertility experience feelings of anxiety, guilt, depression, anger, denial and isolation. Half of the women and fifteen percent of the men beginning treatment in one IVF program said that infertility was the most upsetting experience in their lives.²⁰ Although until recently the focus has been on the emotional impact of infertility on women,²¹ both men and women find infertility stressful. They may express their anxiety about infertility differently, but both men and women may feel a sense of failure or sexual inadequacy, and a loss of control.²²

The frustration the infertile feel is compounded by a lack of sympathy from others who have not experienced infertility. As Domar and Seibel note, "[b]ecause infertility results in the loss of something that has never been, . . . its impact often goes unnoticed by the general population."²³ One woman undergoing IVF treatment described her sense of isolation from others:

This is a very lonely state of affairs. . . . Some friends accuse me of being obsessed with finding an adopted child or finding a surgical alternative. But then, these are women who have children (natural) and the various, complicated steps necessary and/or finding another specialist and the risks, odds, etc., of surgery are foreign to them. So, the result appears to be "obsession" to them. This just increases frustration for me.²⁴

The lengths to which couples and individuals will go to conceive a child attest to the intensity of the pain of infertility. Treatment itself involves great physical and emotional investment, discomfort, financial expense, and inconvenience. It may last several years until pregnancy is achieved or the patient decides either to seek alternative forms of parenthood or to remain childless.

20. Ellen W. Freeman et al., *Psychological Evaluation and Support in a Program of In Vitro Fertilization and Embryo Transfer*, FERTILITY & STERILITY, Jan. 1985, at 48, 50.

21. Domar & Seibel, *supra* note 4, at 25. The authors note that only eighteen percent of 121 articles written between 1948 and 1985 focused on male fertility, and prior to 1970, the few studies that were done on the subject emphasized the physiological, not the psychological, aspects of men's experience. For more information on the psychological impact of infertility, see BARBARA ECK MENNING, *INFERTILITY: A GUIDE FOR THE CHILDLESS COUPLE* (1988).

22. MENNING, *supra* note 21, at 24-25.

23. *Id.* at 24.

24. Sandra R. Leiblum et al., *Unsuccessful In Vitro Fertilization: A Follow-Up Study*, 4 J. IN VITRO FERTILIZATION & EMBRYO TRANSFER 46, 49 (1987).

Clinicians have begun to recognize the need for appropriate counseling at all stages of diagnosis and treatment, including the period before treatment begins.²⁵ Some suggest that the couple—but especially the individual with the fertility problem—needs to “grieve” or “mourn” as a means of adjusting and recognizing the infertile condition before beginning a fertility program.²⁶ Patients must also face the possibility of failure. Infertility treatment is not a panacea: Although success rates for pregnancies are improving,²⁷ couples need to recognize that “virtually half . . . will never be the parents of a biologic child.”²⁸

The trauma of infertility presents challenges to a couple’s relationship. Yet studies show that marital partners who created families using AID have divorce rates that are the same or lower than a demographically matched population.²⁹ Although dealing with an infertility problem causes stress, studies indicate a high rate of marital survival, even for those couples whose treatment is unsuccessful.³⁰ For example, Hearn and colleagues suggest that we may underestimate “the positive aspects of those relationships that survive infertility.”³¹ To prevent negative psychological effects on the individual or couple, some clinicians advocate psychological counseling as an intrinsic part of each stage of infertility treatment.³²

III. ALTERNATIVE REPRODUCTION AS A RESPONSE TO INFERTILITY

The reproductive arrangements available to infertile couples are known as “noncoital” because they involve procreation without sexual intercourse. The type of procedure individuals or couples employ

25. Domar & Seibel, *supra* note 4, at 34.

26. Aphrodite Clamar, *Psychological Implications of Donor Insemination*, 40 AM. J. PSYCHOANALYSIS 173, 174 (1980).

27. See discussion of success rates, *infra* text accompanying notes 68-94.

28. Domar & Seibel, *supra* note 4, at 26.

29. The difference in the separation rates in one study of Norwegian AID families in contrast to a matched non-AID population was not statistically significant. Erik Bendvold et al., *Marital Break-Up Among Couples Raising Families by Artificial Insemination by Donor*, 51 FERTILITY & STERILITY 980, 982 (1989). These authors suggest that other studies exaggerated the high separation rate of infertile couples because they did not compare separation rates to populations that were demographically similar.

30. M.T. Hearn et al., *Psychological Characteristics of In Vitro Fertilization Participants*, AM. J. OBSTETRICS & GYNECOLOGY, Feb. 1987, at 269, 273. It should be noted, however, that IVF programs may select for patients whose marriages appear stable, *id.* at 269, thus increasing the likelihood of adjusting to treatment failure.

31. *Id.* at 273.

32. Domar & Seibel, *supra* note 4, at 34.

depends on the cause of infertility. For example, if a woman has blocked or absent fallopian tubes or her partner has a low sperm count, *in vitro* fertilization (IVF) can be used. In IVF, an egg is removed from the woman's ovary and fertilized with the man's sperm in a petri dish. If fertilization occurs, the resulting embryo is placed in the woman's uterus two days later.

In some cases, one or both of the partners are unable to provide the gamete to create a child, or the woman is unable to carry the fetus. Consequently, if the individual or couple desires a child, a third party—a donor of sperm, eggs, or embryos, or a surrogate—is required. Sometimes a combination of third parties will be used.

If a man produces no sperm, his female partner can be inseminated with sperm from a donor. Similarly, if the woman cannot provide an egg, she can call on the aid of a female donor to provide an egg. The donation of sperm or eggs or both can be done in conjunction with *in vitro* fertilization or can be done by transferring the sperm or egg into the woman's body for fertilization.

Another option for women who cannot produce eggs is to use an egg that has been fertilized inside another woman, with the recipient's husband's sperm. This technique is known as embryo transfer after *in vivo* fertilization. If neither member of the couple can provide a gamete, the couple can use a donated embryo. The use of a donated egg or embryo allows the recipient woman to have a biological relationship with the child via pregnancy even though she has no genetic relationship with the child.

Some women can provide the genetic component for reproduction, but not the gestational one. Such a woman may decide to create an embryo with her partner and then transfer the embryo to a surrogate gestational mother (also known as an IVF surrogate carrier) for gestation only. The process can be accomplished in conjunction with either *in vitro* fertilization and transfer or *in vivo* fertilization and transfer. After birth, the child will be reared by the genetic parents.

If a woman can provide neither the genetic nor the gestational component for reproduction, she can call upon a surrogate mother (rather than a surrogate gestational mother). Her partner's sperm can be used to inseminate a surrogate mother who agrees to carry the child for the pregnancy and then release the infant at birth for rearing by the couple.

All of these techniques allow one or both of the rearing parents to have a biological bond to the child (genetic, gestational, or both). Except

in the case of standard *in vitro* fertilization, these methods also involve using the aid of one or more third parties for a biological component of reproduction.³³ The authors of a Dutch study on fertile women and women involved in an IVF program concluded:

To our respondents, the genetic origin of a child seemed relatively unimportant, since a majority approved adoption, donor eggs, and donor sperm. Biological carrying of a child was also of little importance, since half approved surrogate gestation. Just what, then, is 'a child of one's own'? Perhaps for many infertile couples a child of one's own is any baby that a medical team creates specifically for a given couple, using their egg, their sperm, and/or their womb when possible but substituting when necessary.³⁴

Alternative reproduction, then, has the goal of helping infertile individuals and couples to create a "child of their own."

Although alternative reproduction is generally used by people with infertility problems, one aspect of it—gamete donation—may be used by people who carry a genetic defect that they do not want to risk passing on to their children. At least 33 percent of artificial insemination practitioners have inseminated women whose husbands did not want to pass on a potential genetic defect.³⁵ Egg donation or embryo donation may be used for similar reasons.

IV. OVERVIEW OF CONCERNS ABOUT THE USE OF ALTERNATIVE REPRODUCTION

A. UNNATURALNESS, INVASIVENESS, AND EUGENICS

There are a variety of concerns about alternative reproduction. At the most fundamental level, criticism of the new reproductive technologies seems to be based on a resistance to medical intervention in what many believe should be a "natural" process.³⁶ For some critics, the

33. Another variation is possible—that is for the rearing parents-to-be to contract for a child with no biological tie to them. They could use the combination of an egg donor, a sperm donor, and a surrogate gestational mother. Such a contract pregnancy is beyond the scope of this Article. It clearly raises different legal and ethical concerns than do the techniques in which one or the other rearing partner has a biological link to the child.

34. Holmes & Tymstra, *supra* note 17, at 120.

35. Martin Curie-Cohen et al., *Current Practice of Artificial Insemination by Donor in the United States*, 300 NEW ENG. J. MED. 585 (1979).

36. Anthropologists point out that reproduction is no more "natural" than any other social practice. See, e.g., Lynn Morgan, *Where Does Life Begin: A Cross-Cultural Perspective on the Personhood of Fetuses and Young Children*, in ABORTION RIGHTS AND FETAL "PERSONHOOD" 97-114 (Edd Doerr & James W. Prescott eds., 1989). Even in societies that do not share our technologically sophisticated medical system, people use various techniques to encourage conception, select the sex

objectionable aspect of these technologies is that they separate reproduction from conjugal intercourse.³⁷ Others may resent these techniques because they increase what they consider an already excessive intervention into family life by medicine. Feminist critics, who might support medical innovation leading to better contraception or safer methods of abortion, are skeptical about the effects reproductive technologies will have on women.³⁸

Medical intervention in reproduction also raises the spectre of eugenics, where the health system assists those who can afford it, while doing relatively little to assist others in claiming the right that we view as deserving of protection: the right to bear children. Some clinics are selective of the couples who receive treatment, for example, and may discriminate against those who do not fit a certain profile of "good" parents.³⁹ When a clinic or a couple selects a certain kind of donor or surrogate, the clinic or couple is implying that some gametes are superior to others. Some critics ask whether these technologies encourage a view that only "perfect" children are desirable, a position that disfavors the handicapped. In addition, some view payment for gametes and embryos as commodifying what should be a private and noncommercialized process of human relations, and view paying a surrogate for her services as akin to prostitution.⁴⁰

Concerns have also been raised about physical and psychological risks faced by individuals who participate in alternative reproduction. In addition, when people participate in medical procedures or social arrangements that are controversial or unpopular, they may face possible condemnation by others.

of a child, ease pregnancy, manipulate the fetus *in utero*, and so forth. See, e.g., WENDA TREVATHAN, *HUMAN BIRTH* (1987). How we view and practice reproduction is not only a biological given, but also a cultural construction.

37. CONGREGATION FOR THE DOCTRINE OF THE FAITH, *INSTRUCTION ON RESPECT FOR HUMAN LIFE IN ITS ORIGIN ON THE DIGNITY OF HUMAN PROCREATION* (1987).

38. In her study of women, the medical system, and reproduction, Emily Martin views reproductive technologies not as a disjunction, but as merely an extension of the existing tendency to view women as "laborers" who "produce" perfect "products." EMILY MARTIN, *THE WOMAN IN THE BODY: A CULTURAL ANALYSIS OF REPRODUCTION* 145 (1987). Martin considers that one of the long-term goals of reproductive technologies is to bypass women so that reproduction becomes a relation between the medical practitioner and the offspring. In her view, these technologies seek to control women who become mere obstacles to medicine's more fundamental interest: the well-being of the fetus. *Id.* at 144-48.

39. See, for example, the discussion of recipient couple selection in Carole Edwards, *Ovum Transfer—The Good Enough Parent*, at 3 (unpublished manuscript, on file at Harbor-UCLA Medical Center).

40. ANDREA DWORKIN, *RIGHT-WING WOMEN: THE POLITICS OF DOMESTICATED FEMALES* 181-88 (1983).

B. CONCERNS FOR THE COUPLE

Both men and women have infertility problems, in roughly equal proportions. In infertile couples, forty percent of the time the infertility is due to the male, forty percent of the time it is due to the female, and twenty percent of the time it is due to a combined problem. In order to discern the cause of infertility, clinics need to view the infertile couple as a unit. Yet no matter what form of alternative reproduction is chosen, it is the woman who takes the medical risk.⁴¹ At most, the man will be asked to give a sperm sample—a simple and painless procedure. On the other hand, besides the usual risks of pregnancy and childbirth, the woman may have to undergo hormonal stimulation, medical intervention for egg retrieval and embryo insertion, or other procedures that are still experimental or whose long-term effects are unknown. The woman may risk infection if she uses a donated gamete or embryo.

Couples also face potential harm from misleading information or poor quality service. When the first IVF child, Louise Brown, was born, the event received worldwide attention. Yet it has been suggested that Louise Brown's mother had no idea that the IVF program she had entered was so experimental. Instead, she presumed that hundreds of children who had been conceived outside of their mothers' wombs had already been born.⁴² A survey conducted by the Office of Technology Assessment (OTA) found that only half the IVF clinics had achieved a successful birth,⁴³ yet it is unlikely that the clinics disclosed that fact to potential patients. Artificial insemination clinics, too, have misled patients—for example, by not informing them about how lax the screening process was or by making it appear that by choosing a donor with a certain listed characteristic (e.g., musical ability), the resulting child would necessarily inherit that characteristic.⁴⁴ Couples also run a slight risk of having a child by a different donor than intended, as in a recent

41. Judith Lorber suggests that a fertile woman who undergoes IVF when her partner is infertile makes what she calls a "patriarchal bargain," that is, she bears a risk to solve a medical problem that is not hers. Because she may be able to become pregnant with donor insemination, or the couple could adopt, undergoing IVF is a risk she takes to preserve the relationship with the man. Judith Lorber, *Choice, Gift, or Patriarchal Bargain? Women's Consent to In Vitro Fertilization in Male Fertility*, 4 HYPATIA 23 (1989).

42. Judith Lorber, *Gender Politics and In Vitro Fertilization Use*, WOMEN & HEALTH, Jan. 1988, at 122.

43. OFFICE OF TECHNOLOGY ASSESSMENT, *supra* note 4, at 9.

44. LORI ANDREWS, *NEW CONCEPTIONS: A CONSUMER'S GUIDE TO THE NEWEST INFERTILITY TREATMENTS INCLUDING IN VITRO FERTILIZATION, ARTIFICIAL INSEMINATION, AND SURROGATE MOTHERHOOD* 158 (1985).

New York case.⁴⁵ Additionally, when couples contract with a surrogate, there is the possibility that the surrogate will not comply with her advance agreement and that the couple will not have the parental relationship with the child that they expect.

Medically assisted reproduction involves the outlay of large amounts of money. The costs involved make some reproductive technologies readily available only to the well-to-do. The average cost to a couple for infertility diagnosis and *in vitro* fertilization is \$22,217.⁴⁶ The couple who contracts with a paid surrogate will spend at least \$25,000: approximately \$10,000 for the surrogate mother, \$10,000 for the agency that arranges the procedure, as well as related miscellaneous costs.⁴⁷ So far, fertility treatment has been a largely private sector endeavor, although there is some call for greater federal government interest in research and treatment.⁴⁸ The question of whether insurance policies should cover some or all of the medical procedures remains unsettled. Third party arrangements such as surrogacy are unlikely to be covered, however, and financing for surrogate arrangements so far has come from the couple, as in adoption.

C. CONCERNS FOR THE DONORS AND SURROGATES

These arrangements not only affect the individual or the couple who intends to rear the child, but also present potential physical and psychological risks to third party participants—the gamete donors, embryo donors, and surrogates. Some individuals may be better suited for participation than others, and it is important that these third parties be aware of the potential psychological and social effects of their involvement in these arrangements.

While sperm donors face virtually no physical risk, donors of eggs or embryos and surrogate mothers do face serious physical risks in assisting individuals or a couples in the creation of offspring. Surrogate mothers face all the risks of pregnancy and childbirth. Some egg donors

45. A thirty-year-old woman sued a sperm bank in 1990 for mistakenly using another man's sperm for insemination, instead of that of her dying husband. The woman, who is white, as was her husband, had a child who was, by the mother's description, black. *Mother Sues Sperm Bank, Charging A Mixup Among Donors*, N.Y. TIMES, Mar. 9, 1990, at A14.

46. OFFICE OF TECHNOLOGY ASSESSMENT, *supra* note 4, at 143.

47. MARTHA A. FIELD, SURROGATE MOTHERHOOD: THE LEGAL AND HUMAN ISSUES 25 (1988).

48. COMM. ON GOV'T OPERATIONS, INFERTILITY IN AMERICA: WHY IS THE FEDERAL GOVERNMENT IGNORING A MAJOR HEALTH PROBLEM?, H.R. DOC. NO. 389, 101st Cong., 1st Sess. 33, 35 (1989).

may need to undergo an invasive procedure called laparoscopy, which is performed under anesthesia.⁴⁹ Although a woman may donate an egg or embryo using a method that does not require anesthesia, such as ultrasound-guided egg retrieval or lavage (a nonsurgical technique involving the flushing of a liquid through the uterus), she still risks infection and ectopic pregnancy from these alternative procedures.

There are additional psychological and symbolic risks to sperm donors, egg donors, embryo donors, and surrogates. These individuals may later regret the fact that they do not have an ongoing relationship with the children they helped to create.

Surrogate motherhood raises a number of concerns about the effects on women. The woman who acts as a surrogate runs the same health risks as any woman who undergoes artificial insemination, pregnancy and childbirth. The social, ethical, legal and psychological implications, however, are more complex. Is the surrogate being exploited by a couple who can afford to "buy" her reproductive services? When she hands over the child after birth, is she "selling" her baby? The questions of commodification of women and children, and of the exploitation of women that surrogacy arouses should caution us to consider the potential dangers of all reproductive options.

D. CONCERN FOR THE CHILD

The children created through alternative reproductive measures face risks as well. A child created through alternative reproductive techniques may face physical risks as well as psychological trauma and social alienation.

Such children appear to run a slightly higher risk of having certain congenital abnormalities, but these seem to be related to characteristics of the particular parents, not to the reproductive technologies themselves. The potential for psychological harm also exists. Little is known about the psychological effects of the new technologies on the resulting children. There is concern that the rarity of children born through alternative reproduction may cause them to feel like "freaks" or to cause others to treat them that way. However, the ranks of children created through alternative reproduction are growing so dramatically that by the

49. Laparoscopy is the direct visualization of the ovaries and the exterior of the fallopian tubes and uterus by means of an instrument introduced through a small incision below the navel. It can be accompanied by egg removal via an instrument introduced through another small incision to puncture the ovarian follicle and suck out an egg. ANDREWS, *supra* note 44, at 276.

time such children reach the age of comprehension, there will be a sufficient number of them that it is likely they will not feel odd.

The most serious psychological concerns revolve around the child's reactions to the involvement of surrogates and donors. Like adoptees, the children created with the aid of these parties may feel the need to obtain medical or other information about their nonrearing biological parents.⁵⁰

The effects on the individuals seeking to have children through alternative reproductive technology, the third parties seeking to assist them, and the children they produce must all be considered together in the process of evaluating each reproductive procedure and arrangement. What degree of risk may one party undergo in order to assist another? What about the possible medical risks that may only appear when the participants are older? To what degree is any negative public attitude toward these technologies a factor that may harm the participants psychologically?

V. LIMITATIONS ON THE RESEARCH

Only a modest number of studies address the effects of alternative reproduction. The lack of empirical data is due to several factors. First, the short history of some technologies limits the possibilities for study. Because IVF has been used successfully only since 1978, acknowledged paid surrogate motherhood since 1980, and embryo cryopreservation, embryo lavage and GIFT since 1984, the children born as a result of these arrangements are still young. Moreover, because birth defects have a low incidence in the normal population, many thousands of children born of a given technique must be studied before doubling or tripling of birth defects can be discerned in the particular population.

The lack of follow-up data on the couples and children connected with *in vitro* fertilization and related embryo technologies is due, in part, to the lack of governmental funding for any research involving human embryos. Only recently has that barrier been broken with NIH funding for a short term follow-up study of the IVF children from a single center⁵¹ and for a five year follow-up study on the maternal health effects of the IVF process.⁵²

50. Lori B. Andrews, *Yours, Mine and Theirs*, 18 PSYCHOL. TODAY, Dec. 1984, at 20, 22.

51. This was a study of IVF children from the Jones Institute in Norfolk, Virginia.

52. That study began in October 1989 and will administer questionnaires to patients of nine centers at six month intervals to determine whether the women show an enhanced susceptibility to cancer, endocrine problems, and other health risks.

Some of the alternative reproductive techniques, especially the more recently developed ones, have been used by relatively few people. Sample sizes for these methods are thus limited to small numbers of women, men, and children. Not all of the people who have used these procedures are willing to participate in follow-up studies. Rates of participation appear to be lower than in other types of medical research that also have small sample sizes, presumably because of the social controversy that surrounds assisted reproduction.

People may be reluctant to respond to studies about particular techniques. For example, follow-up studies of AID typically lack sufficient samples,⁵³ because many couples—perhaps a majority—choose to keep the AID origin of their child a secret.⁵⁴ The desire to maintain secrecy means that these couples respond poorly to research that seeks them out.

In addition, the quality of an individual's or a couple's experience with medically assisted reproduction or surrogate motherhood may affect response rates. Studies of certain techniques may inspire only the successful and enthusiastic patients to respond, or may rely only on those subjects who are dissatisfied or harmed by the procedure, such as those who have sought counseling to deal with the problem. Additionally, data may be skewed because follow-up studies carried out by the same clinicians who performed the procedures may be biased towards recording positive experiences.

53. A recent study by Bernstein notes the difficulty in obtaining follow-up information about AID. In order to evaluate a donor insemination program, he sent confidential questionnaires to twenty-eight couples who had conceived through AID and delivered five years previously. Thirteen questionnaires were undeliverable; they were returned marked address unknown. Fifteen were received, but only eight couples responded—just twenty-nine percent of the original population. J. Bernstein, *Methodologic Problems in Long Term Follow-Up after Donor Insemination* 0-066, 1989 Abstracts of the Scientific Paper and Poster Sessions, 45th Annual Meeting of the American Fertility Society, at 528 (November 13-16, 1989, San Francisco) [hereinafter AFS Meeting Abstracts 1989]. Questionnaires by mail have generally low response rates (a response rate of thirty-four percent is considered typical), making this research method inadequate when dealing with small numbers of people. See Leiblum et al., *supra* note 24, at 47.

54. The majority (eighty-four percent) of forty-three AID couples studied in Australia whose children were born between 1975 and 1977 reported three years later that they "do not plan to tell their children of their AID origins." John Leeton & June Backwell, *A Preliminary Psychosocial Follow-Up of Parents and Their Children Conceived by Artificial Insemination by Donor (AID)*, 1 *CLINICAL REPRODUCTION & FERTILITY* 307, 310 (1982). Thirty-eight felt the children did not have a right later in life to receive information about their genetic father. *Id.* at 309. Though the couples generally maintained secrecy to ensure that AID origins would remain unknown to their children, twenty-six said they had told one or two friends or relatives. Other studies showed similar attitudes and behaviors related to the question of secrecy. See, e.g., Christine E. Clayton & Gabor T. Kovacs, *AID Offspring: Initial Follow-Up Study of Fifty Couples*, 1 *MED. J. AUSTRALIA* 338, 339 (1982); Christine Manuel et al., *Handling of Secrecy by AID Couples*, in *HUMAN ARTIFICIAL INSEMINATION & SEMEN PRESERVATION* 421 (Georges S. David & Wendel S. Price eds., 1980).

The response rate in a study may also be influenced by the stage of treatment that is being examined. Studies done prior to and during treatment (for example, studies which are coordinated with the clinical procedure) seem to earn more patient cooperation than follow-up studies.⁵⁵ Patients may feel that once a healthy child is born, there is no further need to interact with the medical system. Yet studies that are limited to the clinical experience fail to provide enough information about the participants' well-being in the family setting. More comprehensive information about not only the medical results but the psychological and social long-term effects of reproductive technologies on patients and their families is needed.

Given the dearth of good information on the effects of the alternative reproductive arrangements, the foremost policy question is whether, in a state of uncertainty, reproductive arrangements should be allowed, facilitated, restricted, or prohibited. Another way of thinking about this is to ask who has the burden of proof—must opponents of the procedures prove that there are actual harms before the procedures are restricted, or must those in favor of allowing the procedures prove that no serious harms are possible?

Given the uncertainty of the effects of the procedures, the answer depends in part on the value of enabling infertile couples to have children and the weight of evidence (based on other types of human reproductive arrangements, previous animal research, and so forth) that the arrangement at issue presents an unacceptable risk. If the value placed on having children is high and there is no convincing evidence of an accentuated risk, then the burden should be on opponents to prove specific harms.

Such an approach is consistent with the Constitution's protection of an individual's fundamental right to privacy in making decisions about

55. See, e.g., Lieblum et al., *supra* note 24, at 47 n.4.

procreation.⁵⁶ The government may infringe upon that right only to further a compelling state interest in the least restrictive manner possible.⁵⁷

Unfortunately, much of the public policy debate about reproductive arrangements arises from erroneous speculation about the manner in which services are provided and about their future effects. Despite the limitations mentioned above, empirical research on new reproductive technologies as well as studies on older arrangements (such as AID and adoption) suggest the direction that policy should take.

A recent report to Congress by the Committee on Government Operations regarding the problem of infertility in the United States illustrates the importance of accurate information.⁵⁸ The report notes that opposition among some members of Congress to funding for *in vitro* fertilization research was based on the supposition that "excess" embryos were "being poured down the drain like so much garbage."⁵⁹ Dr. Gary Hodgen of the Jones Institute of Reproductive Technology in Norfolk,

56. See, e.g., *Carey v. Population Servs. Int'l*, 431 U.S. 679 (1977); *Roe v. Wade*, 410 U.S. 113 (1973); *Griswold v. Connecticut*, 381 U.S. 479 (1965). The precedents according constitutional protection to the decision to bear a child coitally logically extend to the decision to bear a child noncoitally. It is not the coitus itself that this right protects, but the fundamental nature and importance of having a child. Consequently, a federal district court held that the right to privacy encompasses a right to use reproductive technologies such as *in vitro* fertilization and embryo cryopreservation. *Lifchez v. Hartigan*, 735 F. Supp. 136 (N.D. Ill. 1990).

One commentator has argued that since couples using *in vitro* fertilization "cannot contribute to every aspect of reproduction . . . [t]heir interest in the child is logically less than the natural model and thus should not receive the same level of protection." Comment, *The Use of In Vitro Fertilization: Is There a Right to Bear or Beget a Child by Any Available Medical Means?*, 12 PEPP. L. REV. 1033, 1057 (1985). However, a couple using *in vitro* fertilization does so to have their genetic child and rear him or her according to their values—a goal that is at the heart of the rationales for the protection of family decisions. The fact that the couple uses technology (to bypass the physical problem of, say, a blocked fallopian tube) to start the pregnancy should no more diminish their fundamental right to procreate than would the fact that they used technology (such as a Caesarean section) to assure a successful pregnancy. The argument that lacking a physical component disqualifies someone from the level of constitutional protection traditionally accorded a fundamental right is not persuasive, particularly when means are readily available to overcome that physical disability. The argument that the physical handicap negates the fundamental nature of the right is akin to saying that a mute does not have a right to free speech because he or she cannot talk. Clearly, in that case, the mute still has a fundamental right to express himself or herself in other ways.

A related argument has been set forth that the right to privacy does not encompass a decision involving medical intervention in childbearing because consultation of medical personnel puts the decision in a public, rather than private, realm. But the very cases that established the right to privacy with respect to childbearing involved situations in which access to medical services was necessary (to obtain contraceptives or an abortion). So there is a recognition that the protection in private family activities does not depend on the location in which those activities take place or on the need to involve a third party to effectuate a family decision.

57. See, e.g., *Roe v. Wade*, 410 U.S. 113, 155 (1973).

58. COMM. ON GOV'T OPERATIONS, *supra* note 48.

59. *Id.* at 18.

Virginia, presented evidence from clinical practice and testified that their *in vitro* fertilization program has “never, not ever, discarded or allowed an embryo to die. Not ever. That is in fact the operating philosophy of nearly every program in America. So there is no wanton discard of embryos.”⁶⁰

Similarly, policy makers have focused on the concern that money paid to a surrogate amounts to coercion and causes potential ill effects. Consequently, all states that have adopted laws restricting or forbidding surrogate motherhood focus almost exclusively on paid surrogacy. The proponents of these laws have overlooked the fact that many women who have been paid surrogates say that they would have been surrogates even without payment.⁶¹

Rather than relying on the speculation or conjecture that reproductive technologies inspire, it is important to consider the empirical evidence on the effects—and the potential effects—of reproductive technologies before making legal or policy decisions that would regulate their research and clinical use.

VI. *IN VITRO* FERTILIZATION, GIFT, ZIFT, CRYOPRESERVATION, AND RELATED TECHNOLOGIES

A. MEDICAL ASPECTS

If a woman has blocked or absent fallopian tubes, or her partner has a low sperm count, or the couple has one of a variety of other infertility problems, the couple can use *in vitro* fertilization (IVF).⁶² The woman is given fertility drugs to stimulate her production of eggs, which are then retrieved. Formerly, the most common means of retrieving eggs was laparoscopy, a surgical intervention. In 1989, in contrast, data from 163 clinics that practice IVF showed that eighty-seven percent used a non-surgical technique—ultrasound-guided transurethral or transvaginal

60. *Id.* at 19.

61. For example, at New York legislative hearings on surrogate motherhood, Mary Beth Whitehead said she would have been a surrogate even if she had not been paid.

62. See generally HUMAN *IN VITRO* FERTILIZATION AND EMBRYO TRANSFER (Don P. Wolf & Martin M. Quigley eds., 1984) (reviewing various methods of *in vitro* fertilization and embryo transfer); FOUNDATIONS OF *IN VITRO* FERTILIZATION (Christopher M. Fredericks et al., eds., 1986). For a discussion of the legal issues raised by *in vitro* fertilization, see George T. Annas & Sherman Elias, *In Vitro Fertilization and Embryo Transfer: Medicolegal Aspects of a New Technique to Create a Family*, 17 FAM. L.Q. 199 (1983); Dennis M. Flannery et al., *Test Tube Babies: Legal Issues Raised by In Vitro Fertilization*, 67 GEO. L.J. 1295 (1979).

retrieval⁶³ (up from fifty-seven percent in 1987⁶⁴). This reduces the risk of infection and other complications and eliminates the need for general anesthesia.

Although more than two dozen eggs have been collected in a single attempt, a woman will generally produce three to five eggs. The eggs are then fertilized in a petri dish. Two days later, the resulting embryos can be placed in the woman's uterus. Because of the risks associated with multiple gestation, both to the woman and to any resulting fetuses, generally only three or four embryos are placed in the woman. If the couple has produced a greater number of embryos, the couple can choose to cryopreserve the extra embryos for a subsequent attempt at *in vitro* fertilization, donate the embryos to another couple, or discard the excess embryos. Some clinics that do not have cryopreservation capabilities and that oppose discard of embryos have policies of fertilizing only the number of eggs that can safely be implanted at one time.

The best results in cryopreservation occur with embryos of one to four cells. Different freezing methods and media are used depending upon the developmental stage of the embryo.⁶⁵ Protective chemicals prevent damage to the cells, and control of the freezing speed protects tissue from forming crystals. Thawing also requires a controlled speed and environment to minimize damage to the cells.

Patients whose infertility is not due to tubal factors may be able to utilize GIFT as an alternative to IVF.⁶⁶ In the GIFT procedure, the IVF egg retrieval technique is used, but the egg and sperm are not combined in a petri dish. Instead, the gametes are placed directly in the fallopian tubes so that fertilization takes place in its natural environment. This

63. Medical Res. Int'l and the Soc'y for Assisted Reproductive Technology, The Am. Fertility Soc'y, *In Vitro Fertilization-Embryo Transfer (IVF-ET) in the United States: 1989 Results from the IVF-ET Registry*, 55 FERTILITY & STERILITY 14, 15 (1991) [hereinafter *1989 IVF-ET Registry*].

64. Medical Res. Int'l and the Soc'y for Assisted Reproductive Technology, The Am. Fertility Soc'y, *In Vitro Fertilization-Embryo Transfer in the United States: 1988 Results from the IVF-ET Registry*, 53 FERTILITY & STERILITY 13, 19 (1990) [hereinafter *1988 IVF-ET Registry*].

65. Neri Laufer et al., *In Vitro Fertilization*, in INFERTILITY, *supra* note 4, at 498.

66. For a description of the GIFT procedure, see R. Asch et al., *Gamete Intra Fallopian Transfer (GIFT): A New Treatment for Infertility*, 30 INT'L J. FERTIL. 41 (1985); Alexander M. Dlugi, *Gamete Intra Fallopian Transfer*, in INFERTILITY, *supra* note 4, at 471.

technique has a higher pregnancy rate than IVF,⁶⁷ and seems particularly useful for some types of infertility, such as endometriosis, poor sperm motility, or unexplained infertility.

Zygote intrafallopian transfer (ZIFT) is an intermediate procedure between GIFT and standard IVF.⁶⁸ ZIFT is usually indicated for male infertility when the woman has at least one healthy fallopian tube. This procedure allows documentation of fertilization because it occurs *in vitro* as in IVF; however, ZIFT has higher rates of pregnancy than IVF, because, as in GIFT, the zygote is placed directly into the fallopian tube at an early developmental stage.

In vitro fertilization is still used more often than GIFT or ZIFT. IVF treats a number of causes of infertility, but is especially indicated for women with tubal problems—still the most common cause of infertility in women. IVF is also indicated for a number of male infertility problems and for unexplained infertility.

B. SUCCESS RATES

Researchers have sought to gather data on success rates. However, it has been difficult to obtain meaningful information about success rates because the medical reports vary in how they define “success.”⁶⁹ They differ in whether they deem a success a pre-clinical pregnancy, a clinical pregnancy, or a live birth, and whether they measure success per cycle, per embryo retrieved, per embryo transferred, or per patient.

A national registry has been established for IVF, GIFT, and ZIFT pregnancies, which has attempted to standardize the manner of reporting outcomes. The United States Registry has supplied figures about IVF, GIFT, and ZIFT procedures for every year from 1985 through 1989.⁷⁰ For 1989, the Registry counted 183 clinics as its members nationwide

67. Dlugi, *supra* note 66, at 477-78. One study reported that six out of eight patients became clinically pregnant through GIFT. Daniel Navot & Zev Rosenwaks, *Ovum Donation*, in *INFERTILITY*, *supra* note 4, at 513, 522. The 1989 *IVF-ET Registry*, *supra* note 63, at 18, reports a clinical pregnancy rate with GIFT of approximately thirty percent for participating clinics.

68. For a description of the ZIFT procedure, see S. Silber et al., *New Treatment for Infertility Due to Congenital Absence of Vas Deferens*, 1987 *LANCET* 850.

69. The Australian IVF statistics for 1987, for example, offer three meanings for “pregnancy”: it can be pre-clinical (or biochemically discernible pregnancies that result in spontaneous abortion), clinical (“any type of pregnancy except those diagnosed only by measuring levels of human chorionic gonadotrophin”) or live birth (“a pregnancy resulting in one or more live births,” that is, where the infant shows signs of life after delivery of a pregnancy of at least twenty weeks’ gestation). NAT’L PERINATAL STATISTICS UNIT, FERTILITY SOC’Y OF AUSTL., *IVF AND GIFT PREGNANCIES: AUSTRALIA, AND NEW ZEALAND*, 1987, at 66 (1988) [hereinafter *NPSU 1987*].

70. 1989 *IVF-ET Registry*, *supra* note 63, at 14.

and 135 of these reported their practices and outcomes. For 1989, the clinics reported that overall 17,970 women underwent 24,183 stimulation cycles with a retrieval rate of eight-four percent. 4,598 clinical pregnancies resulted in 3,472 live births and 4,736 babies born.⁷¹ Ninety-eight percent of the 163 clinics that responded to the Registry reported at least one live birth after IVF, GIFT, or ZIFT.⁷²

With respect to *in vitro* fertilization, there were 15,392 retrievals, with a eighteen percent clinical pregnancy rate per retrieval and a fourteen percent live birth rate.⁷³ The procedure produced 2,876 babies.⁷⁴ Additionally, there were 23,468 embryos frozen.⁷⁵ For those women who tried to achieve pregnancies with frozen embryos, eleven percent of transfer cycles resulted in clinical pregnancies and eight percent resulted in live births.⁷⁶

With respect to GIFT, 133 clinics performed 3,652 retrievals, with 1,112 resulting in a clinical pregnancy (thirty percent) and 848 (twenty-three percent) resulting in a live birth.⁷⁷ Forty-nine (thirty-seven percent) of the clinics performing GIFT reported no live births.⁷⁸ Some clinics reported undertaking GIFT in combination with IVF. In such cases, there was a thirty-one percent clinical pregnancy rate and a

71. 1989 IVF-ET Registry, *supra* note 63, at 15. The United States Registry has been keeping statistics since 1985. Australia and New Zealand have records going back to 1979, and the latest are for 1987. See NAT'L PERINATAL STATISTICS UNIT, FERTILITY SOC'Y OF AUSTR., IN VITRO FERTILIZATION PREGNANCIES: AUSTRALIA AND NEW ZEALAND, 1979-1985 (1987); NAT'L PERINATAL STATISTICS UNIT, FERTILITY SOC'Y OF AUSTR., IVF AND GIFT PREGNANCIES: AUSTRALIA AND NEW ZEALAND, 1986 (1987). The rates of clinical pregnancies at twenty Australian and New Zealand clinics for 1987 was 13.2 and the rate of live-birth pregnancies was 9.5 per 100 oocyte retrieval cycles after IVF. NPSU 1987, *supra* note 69, at 5. The rates were higher if expressed in terms of the number of women who reached the stage of egg retrieval rather than the number of treatment cycles overall. The rate of GIFT success was higher than IVF success: there were 25.6 clinical pregnancies and 17.4 live-birth pregnancies per 100 oocyte retrieval cycles after GIFT. *Id.* at 7. But GIFT is not normally used for women whose infertility is related to tubal defects, the cause of roughly half of the infertility of the cohort for this year in the Australian report. *Id.* at 10. Of the total number of clinical pregnancies, 69.7% resulted in live births, *id.* at 9, a rate that is similar to the combined percentage for all years of the National Perinatal Statistics Unit report from 1979 to 1987.

72. 1989 IVF-ET Registry, *supra* note 63, at 15.

73. *Id.* at 15.

74. *Id.* at 16, 20.

75. *Id.* at 20.

76. *Id.*

77. *Id.* at 18.

78. *Id.*

twenty-six percent live birth rate.⁷⁹ The ZIFT procedure was undertaken at seventy-nine clinics.⁸⁰ Of 908 retrievals, twenty-one percent resulted in clinical pregnancy and seventeen percent resulted in a delivery.⁸¹

There is some disagreement about the number of cycles in which a couple should continue to try these techniques. One recent study suggests that couples should not be encouraged to continue IVF attempts beyond four cycles, noting their findings that in 163 IVF pregnancies studied, over ninety-five of pregnancies occurred by the fourth cycle.⁸² This contrasts with the findings of Wilkes and his colleagues,⁸³ who claim that success rates are roughly equal in every cycle.

To put the pregnancy rates of IVF, GIFT, and ZIFT in perspective, it is useful to recall the success rate of conjugal intercourse. After one year of unprotected intercourse, an estimated ninety percent of women become pregnant.⁸⁴ For any given cycle, an estimated twenty to twenty-five percent of fertile young women become pregnant.⁸⁵ Some observers argue that low success rates in each IVF treatment cycle should be compared with the low rates in natural conception. One author even suggests that the natural rate may eventually be exceeded by IVF.⁸⁶

A number of factors influence the success or failure of a treatment. Success rates for IVF vary by cause of infertility, with tubal disease the most difficult cause to treat successfully.⁸⁷ The clinics' success rates overall may vary because some clinics specialize in certain procedures or types of infertility problems. The likelihood that use of IVF, GIFT, or ZIFT will result in a live birth varies a great deal depending not only on the cause of infertility, but also on the quality of the treatment procedures. Extremely variable success rates among clinics may be due in part to differences in techniques and treatments; differences in the volume of

79. *Id.* at 19.

80. *Id.*

81. *Id.*

82. A. Hershlag et al., How Many Cycles Should Patients Have in an In Vitro Fertilization Program?, No. P-120, AFS Meeting Abstracts, *supra* note 53, at S109 (1989).

83. Charles A. Wilkes et al., *Pregnancy Related to Infertility Diagnosis, Number of Attempts, and Age in a Program of In Vitro Fertilization*, 66 *OBSTETRICS & GYNECOLOGY* 350, 352 (1985).

84. Mabelle M. Seibel, *Workup of the Infertile Couple*, in *INFERTILITY*, *supra* note 4, at 2.

85. Peter Rogers, Letter to the Editor, 148 *MED. J. AUSTRALIA* 206 (1988).

86. Georgeanna Seegar Jones, *Update on In Vitro Fertilization*, 5 *ENDOCRINE REV.* 62, 74 (1984).

87. See Wilkes et al., *supra* note 83, at 350. The 1988 IVF-ET Registry, *supra* note 64, at 15, reports that for the year 1988, "the clinical pregnancy and delivery rates [for IVF] were highest for couples with male immune problems."

patients treated also skew the data. In the Registry data, for example, four IVF clinics accounted for twenty-one percent of all clinical pregnancies,⁸⁸ and three GIFT clinics accounted for twenty-three percent of the GIFT deliveries.⁸⁹

Infertile couples as consumers need to know a particular clinic's overall success rates in order to evaluate the likelihood of their own success before they enter a program. Information about specific clinics is only sporadically available, even though the ethics guidelines of the American Fertility Society recommend that clinics give patients information about their success rates.⁹⁰ One specialist has suggested that forcing clinics to report success rates might cause them to turn away couples who have little likelihood of success, in order to maintain high success rates.⁹¹

C. DEMOGRAPHICS OF COUPLES UNDERGOING IVF

Some studies have attempted to collect data on the background and psychological status of couples seeking IVF. This data would probably be similar with respect to couples seeking GIFT and ZIFT as well. Two hundred couples seeking IVF treatment studied by Freeman and her colleagues fit the following profile: most were highly educated and were of middle to upper economic status; the mean age of the women was thirty-two, that of the men, thirty-four years; three-fourth of the women worked; and half had been in infertility treatment for four or more years.⁹²

Psychological and social data are available for couples who enter infertility treatment programs because such assessments are often part of the initial medical workup.⁹³ In one study of three hundred married couples entering an IVF program, the authors found that most couples "exhibited closer marital relationships, a more conservative approach to life, a higher quality of life, and emotional adjustment and coping comparable to that of a normal population."⁹⁴ The profile of these couples showed general emotional stability but low tolerance for the lack of control many experience when undergoing IVF treatments.

88. 1989 IVF-ET Registry, *supra* note 63, at 18.

89. *Id.* at 15.

90. Ethics Comm. of the Am. Fertility Soc'y, *Ethical Considerations of the New Reproductive Technologies*, 53 FERTILITY & STERILITY 1S, 765 (Supp. 2, June 1990).

91. COMM. ON GOV'T OPERATIONS, *supra* note 48, at 27 (testimony of Dr. Alan DeCherney).

92. Freeman et al., *supra* note 20, at 50.

93. Seibel, *supra* note 84, at 2.

94. Hearn et al., *supra* note 30, at 269.

D. PHYSICAL RISKS TO THE WOMAN

In vitro fertilization and related technologies were introduced into medical practice without sufficient advance analysis of their potential effects. The federal government has been reluctant to support research that would allow limited trials of new reproductive technologies,⁹⁵ although such controlled studies have helped assess the safety of other novel medical procedures related to reproduction such as, for example, chronic villi sampling.⁹⁶ Because research funding has not been available, there is concern that patients are "serving as guinea pigs for those treatments that are not yet perfected."⁹⁷ Consequently, the extent of potential physical risks of IVF to participating women is unknown.⁹⁸ There may be an enhanced risk of ectopic pregnancy,⁹⁹ and an increased use of caesarean section, with its attendant physical risks.¹⁰⁰ The hormones used to stimulate the ovaries may, like DES or birth control pills, have long-term effects not predicted at the present time.

95. HEALTH SCIENCES POLICY DIVISION, COMM. OF THE INSTITUTE OF MED. & BD. ON AGRICULTURE, THE NAT'L RES. COUNCIL, MEDICALLY ASSISTED CONCEPTION: AN AGENDA FOR RESEARCH (1989).

96. Chorionic villi sampling is a prenatal diagnostic procedure in which a sample of tissue is taken from the membrane surrounding the fetus in the first trimester of pregnancy to determine whether the fetus suffers from particular genetic or chromosomal defects. *See, e.g.,* Hogge et al., *Prenatal Diagnosis by Chorionic Villi Sampling: Lessons of the First 600 Cases*, 5 *PRENATAL DIAGNOSIS* 393 (1985); OFFICE OF TECHNOLOGY ASSESSMENT, 98TH CONG., 2D SESS., HUMAN GENE THERAPY, BACKGROUND PAPER 65, app. A (Comm. Print 1984).

97. Hon. Ted Weiss, *Additional Views of Hon. Ted Weiss*, in COMM. ON GOV'T OPERATIONS, *supra* note 48, at 35.

98. Because GIFT and ZIFT are so new, data on the effects on participating women are scarce. Some of the same risks that accompany IVF are present, however, especially the complications of hormonal hyperstimulation, multiple births, and ectopic pregnancies.

99. Ectopic pregnancies most often occur among women whose infertility is due to tubal problems. V.C. Karande & J.T. Flood, *Analysis of Ectopic Pregnancies Resulting from In Vitro Fertilization (IVF) and Embryo Transfer (ET)*, No. P-145, AFS Meeting Abstracts, *supra* note 53, at S 119 (1989). In Australia in 1987, 22% of clinical pregnancies in women with tubal causes of previous infertility resulted in ectopic pregnancies. NPSU 1987, *supra* note 69, at 16. The Australian data suggests that some clinics had better success at avoiding ectopic pregnancies than others, pointing to differences in techniques of embryo transfer as a possible contributing factor. *Id.* at 5-6. Because tubal causes account for most of the female infertility that can be explained, there is reason to be concerned about this risk.

100. Women who become pregnant through IVF deliver by caesarean section at higher rates than other pregnant women. The Australian rates for IVF pregnancies were about three times higher than for the general population—almost forty-four percent of IVF deliveries were by caesarean. Australian In Vitro Fertilization Collaborative Group, *In-Vitro Fertilization Pregnancies in Australia and New Zealand, 1979-1985*, in 148 *MED. J. AUSTR.* 429, 434 (1988). Rates were not quite as high for women pregnant by GIFT. The reasons for this are unclear, but the Australian *In Vitro* Fertilization Collaborative Group notes that the women told them it was decided by the specialist based on their history of infertility rather than on problems that arose in the pregnancy.

E. PSYCHOLOGICAL RISKS TO THE COUPLE

Infertile patients express great concern and anxiety about their treatment. Even after pregnancy is achieved, the woman and her partner may not feel at ease until after a child is born. One study, for example, showed that women pregnant through IVF were more anxious than surrogate mothers (women who are selected in part because they have had successful pregnancies in the past).¹⁰¹ IVF and GIFT patients tend to remain concerned about the outcome of treatment and to feel a greater emotional investment in the fetus than surrogates or other women who are not being treated for infertility. But IVF patients may feel no greater anxiety than patients undergoing other forms of technological intervention into reproduction. One study reported that a group of women who had undergone IVF and GIFT treatment were no more anxious than a comparison group of women who had sought genetic counseling because of advanced maternal age.¹⁰²

Seibel and Levin conducted a study of three hundred married couples accepted into an IVF program by interviewing them and interacting with them throughout their course of treatment.¹⁰³ Anxiety about success was evident at all stages, and both men and women feared failure. Some felt anxious about the successful retrieval of healthy eggs, and some men felt ashamed about having sperm that were unable to fertilize an egg. Some couples sensed a loss of control as they allowed clinicians to carry out a task they failed to perform themselves—conception. After the conceptus was inserted into the woman, the couple experienced another anxious period as they waited to see if implantation would occur. Then they had to wait two more weeks to find out if the woman's hormonal levels had changed, a first indicator of pregnancy. Siebel and Levin report that even the one couple out of six who achieves success continues to feel insecure about the pregnancy and do not see their treatment as a success until they can hold a baby in their arms.¹⁰⁴ Those who are not successful must decide whether to try again or to discontinue treatment.

Obstetricians may view a "high-risk" or unusual pregnancy as necessarily involving a "high-risk" delivery, but more comparative data is needed to determine why this has occurred.

101. See Anthony E. Reading & Hilary Hanafin, *Early Reactions to Pregnancy in Women Acting as Surrogate Mothers* (unpublished manuscript, n.d.).

102. ANTHONY READING ET AL., *ATTITUDES AND ANXIETY LEVELS IN WOMEN CONCEIVING THROUGH IN VITRO FERTILIZATION AND GAMETE INTRAFALLOPIAN TRANSFER* 95-99 (1989).

103. Mabelle M. Seibel & Susan Levin, *A New Era in Reproductive Technologies: The Emotional Stages of In Vitro Fertilization*, 4 *J. IN VITRO FERTILIZATION & EMBRYO TRANSFER* 135 (1987).

104. *Id.* at 139.

Despite the psychological trauma of IVF, many unsuccessful participants appear willing to continue treatment as long as there is some degree of hope. In one study of twenty-eight women who had participated unsuccessfully in one or more trials of IVF, all but two said they would participate in "any new reproductive options" that might result in a biological pregnancy.¹⁰⁵ None regretted having participated in the IVF program "knowing what they know now," that is, after having gone through the long physical and emotional trials involved in infertility treatment. Although based on a small sample, these findings are consistent with other research that echoes the contention that, even after unsuccessful IVF, "both husbands and wives usually express satisfaction at having tried all possible alternatives for achieving a biological pregnancy."¹⁰⁶

A Dutch study has reported that "nearly all" participants in one survey were very satisfied with their clinical treatment and would recommend IVF, even those women who did not have successful pregnancies.¹⁰⁷ The respondents felt that the psychological pain, that is, the anxiety about the success or failure of the procedures, was more substantial than any physical difficulties.¹⁰⁸

F. PHYSICAL EFFECTS ON THE CHILDREN

When *in vitro* fertilization was first proposed, some commentators said that it should be prohibited due to the risk that it might create genetically damaged children.¹⁰⁹ Follow-up on the over 10,000 IVF children born to date indicates that the proportion of children born with anomalies is slightly greater than that of the overall population. There have been reports of anomalies with GIFT as well.¹¹⁰ However, the women seeking infertility services are not representative of the general population. It is likely that the increase in anomalies can be attributed to the advanced age of the women giving birth through *in vitro* fertilization compared with the population at large (due in part to the delay entailed by the investigation and treatment of infertility problems).

105. Leiblum et al., *supra* note 24, at 46.

106. *Id.* at 48.

107. Holmes & Tymstra, *supra* note 17, at 116.

108. *Id.* at 119.

109. Paul Ramsey, *Shall We "Reproduce"? I. The Medical Ethics of In Vitro Fertilization*, 220 JAMA 1346 (1972); Editorial, *Genetic Engineering in Man: Ethical Considerations*, 220 JAMA 721 (1972).

110. For information on chromosomal abnormalities and congenital malformations, see text accompanying notes 123-25.

Australia has made a concerted effort to follow up their IVF children through its Perinatal Statistics Unit. In a survey of 1,510 clinical pregnancies resulting from *in vitro* fertilization in twelve clinics located in Australia and New Zealand between 1979 and 1985, ectopic pregnancies, spontaneous abortion, preterm delivery and perinatal death were more common than in pregnancies resulting from natural conception.¹¹¹ Other studies have found that the number of children born with the chromosomal defect of trisomy is slightly higher than average.¹¹² There is also concern that the children of IVF generally run a higher risk of other health problems that develop later in life, problems which may go unrecognized without follow-up.¹¹³

For the period from 1979 to 1985, the rate of abnormalities in Australia was 2.3 percent (reporting from thirteen clinics).¹¹⁴ In the first three years of reporting to the National Perinatal Statistics Unit in Australia (from 1981 to 1983), however, the overall incidence of "major congenital malformations" in fetuses and infants in the general population was 1.5 percent.¹¹⁵ In more recent statistics available for Australia, the rate of major malformations among 2,543 births and terminations for IVF was 2.2 per cent in 1987, and among 680 births from GIFT¹¹⁶ (reporting from twenty clinics), 3.1 percent.¹¹⁷

Lancaster found "more infants than expected with two types of congenital malformation—namely, spina bifida and transposition of the great vessels."¹¹⁸ National statistics for Australia in 1987 also support these findings.¹¹⁹ There was also a higher number of anomalies of the umbilical cord, which can lead to problems at delivery, for *in vitro* embryos.¹²⁰

111. Australian In Vitro Fertilization Collaborative Group, *supra* note 100, at 434.

112. This is based on reports presented at the Fourth World Congress on In Vitro Fertilization, Melbourne, Australia (Nov. 19, 1985): R. Edwards, *The European Experience*; R. Marrs, *The American Experience*; P. Lancaster, *The Australian Experience*.

113. Fiona Stanley, *In-Vitro Fertilization—A Gift for the Infertile or a Cycle of Despair?*, 148 *MED. J. AUSTL.* 425 (1988).

114. Australian In Vitro Fertilization Collaborative Group, *supra* note 100, at 434.

115. Paul A.L. Lancaster, *Health Registers for Congenital Malformations and In Vitro Fertilization*, 4 *CLINICAL REPRODUCTION & FERTILITY* 27, 30 (1986).

116. NPSU 1987, *supra* note 69, at 14.

117. *Id.* at 17.

118. Paul A. Lancaster, *Congenital Malformations After In-Vitro Fertilization*, *LANCET*, Dec. 12, 1987, at 1392.

119. NPSU 1987, *supra* note 69, at 14.

120. G. Burton & D.M. Saunders, *Vasa Praevia: Another Cause for Concern in In Vitro Fertilization Pregnancies*, 28 *AUSTL. & N.Z. J. OBSTETRICS GYNAECOLOGY* 180, 181 (1988).

In Great Britain, the largest number of births have occurred in the program of IVF pioneer Robert Edwards at Bourn Hall. In a study of 1,521 IVF pregnancies over an eight year period,¹²¹ there was a 2.6 percent incidence rate of major congenital abnormalities. This rate is similar to those reported for Australia (2.2 percent) and for France (3.0 percent) that the English authors cite.

There has been less extensive follow-up of the children of alternative reproduction in the United States.¹²² The Registry reports cases of anomalies in IVF, GIFT, and ZIFT pregnancies, but does not provide comparison data to the population as a whole. Of 2,811 IVF pregnancies, thirty-three had chromosomal abnormalities and twenty-five had congenital malformations.¹²³ Of 1,112 GIFT pregnancies, twelve had chromosomal abnormalities and twelve had congenital malformations.¹²⁴ Of the 190 ZIFT pregnancies, there was one with a chromosomal abnormality and there were two with congenital malformations.¹²⁵ Another United States study of thirty-nine IVF pregnancies producing forty-five infants showed that such infants were not predisposed to problems of low birth weight or early gestational age.¹²⁶

A rate of abnormality higher than that found in the general population may not mean that the procedures of IVF, GIFT, ZIFT or cryopreservation themselves cause problems. The women who seek infertility treatment compose a special population. As the Australian Perinatal Statistics Unit report points out, "Women who have experienced periods of infertility are usually older, have frequently had atypical reproductive histories, and may have other health problems adversely affecting the outcome of pregnancy."¹²⁷ In other words, there is evidence that the anomalies affecting some children are not due to the treatments themselves, but to the population that uses these treatments.

121. P. Rainsbury et al., *Born from Bourn—Analysis of the Outcome of 947 Deliveries Resulting from IVF Treatment at Bourn Hall*, No. 0-119, AFS Meeting Abstracts 1989, *supra* note 53, at 550.

122. For the first reported case of Down's Syndrome in the United States in a child conceived through *in vitro* fertilization, see Christopher H.C. Hsiung et al., *The First Reported Case of Down Syndrome in the Southern California Fertility Institute's In Vitro Fertilization and Embryo Transfer Program*, 4 J. IN VITRO FERTILIZATION & EMBRYO TRANSFER 312 (1987).

123. 1989 IVF-ET Registry, *supra* note 63, at 17.

124. *Id.* at 19.

125. *Id.* at 20.

126. Michael P. Diamond et al., *Weight of Babies Conceived In Vitro*, 4 J. IN VITRO FERTILIZATION & EMBRYO TRANSFER 291, 292 (1987).

127. NPSU 1987, *supra* note 69, at 4.

Another reason for the increase in anomalies may be that more multiple pregnancies result when IVF, GIFT, or ZIFT is used. These procedures make multiple gestation more common because hormones are used to produce more than one egg per cycle, and several embryos (or, in the case of GIFT, gametes) are implanted in a single cycle.

In most IVF procedures, up to four embryos are transferred to the uterus. For the GIFT technique, four eggs are considered the optimum number.¹²⁸ Beyond that point, pregnancy rates do not seem to improve with greater numbers of eggs or embryos.¹²⁹ There is an increased risk of perinatal death in IVF pregnancies due to the greater likelihood of multiple births. The Australian statistics show that the perinatal death rate in 1987 was twice as high in multiple births as in single births.¹³⁰ Multiple births are also considered a risk factor because of the tendency of such infants to be born with low birth weights.

G. PSYCHOLOGICAL AND SOCIAL EFFECTS ON CHILDREN

It appears that children born through IVF and other technologies face a slightly higher risk of physical anomalies, especially when multiple births occur. However, the psychological and social risks that children conceived through IVF face may be the lowest among all the offspring of reproductive technologies. Born of the egg and sperm of their rearing parents, the only thing that differentiates them from most children is that conception took place *in vitro* or with other medical assistance. There is no concern about "genealogical bewilderment," a longing or interest in one's unknown genitors, because the rearing parents are the genetic parents. The parents may even boast to the child of his or her special origin, because the inconvenience, discomfort, risk, and expense that they went through to produce the child only demonstrates how much they wanted him or her. Medical intervention in reproduction no longer carries much stigma; by contrast, the use of third parties (egg donors, sperm donors, embryo donors, or surrogate mothers) in assisted reproduction is much more controversial.

128. Alan S. Penzias et al., GIFT: How Many Eggs to Transfer, No. P-050, AFS Meeting Abstract 1987, *supra* note 53, at S81; T.B. Pool et al., Multiple Pregnancies in Zygote Intrafallopian Transfer (ZIFT) with Controlled Ovarian Hyperstimulation (COH) and Leuprolide Acetate (Lupron), No. P-049, AFS Meeting Abstracts 1989, *supra* note 53, at S81.

129. Anibal A. Acosta et al, *The Indications for In Vitro Fertilization*, 113 VA. MED. 216, 220 (1986).

130. NPSU 1987, *supra* note 69, at 13.

VII. DONOR GAMETES AND DONOR EMBRYOS

A. MEDICAL ASPECTS

When a man is infertile or has a genetic defect that he does not wish to pass on to his offspring,¹³¹ his female partner can conceive with sperm from a donor.¹³² This can be accomplished through *in vitro* fertilization with donor sperm, in which the woman's egg is fertilized with the donor's sperm in a petri dish. More commonly, however, fertilization is achieved through the traditional insemination technique whereby the semen is placed inside the cervix with a syringe. An Office of Technology Assessment survey estimated that between 1986 and 1987, there were 30,000 births to women undergoing artificial insemination by donor.¹³³

If a woman is infertile because she does not produce eggs or if she is the carrier of a genetic defect that she does not wish to pass on to a child, she may wish to conceive using a donated egg.¹³⁴ There are three possible sources of donated eggs. Patients undergoing *in vitro* fertilization may have excess eggs that they would be willing to donate.¹³⁵ Such eggs can be fertilized with the recipient's husband's sperm. Women who are undergoing pelvic surgery for other reasons (such as tubal ligation for sterilization) may be willing to have an egg surgically removed at the same time. And, lastly, women not undergoing any procedure for their own health may nonetheless be willing to submit to a surgical removal or transvaginal or transurethral aspiration of an egg. The risk to the donor in the latter situation has been lessened by the possibility of extracting eggs through ultrasound-guided recovery rather than through the riskier procedure of laparoscopy under anesthesia.¹³⁶ Under the riskier laparoscopy procedure the majority of egg donors were women undergoing IVF in treatment of their own infertility. Most of the IVF patients, however,

131. According to one survey, 33% of practitioners have inseminated women whose husbands did not want to pass on a potential genetic defect. Curie-Cohen et al., *supra* note 35, at 585.

132. See, e.g., HUMAN ARTIFICIAL INSEMINATION AND SEMEN PRESERVATION (Georges David & Wendel S. Price eds., 1980). For a discussion of the legal issues raised by artificial insemination, see Jeffrey M. Shaman, *Legal Aspects of Artificial Insemination*, 18 J. FAM. L. 331 (1979-80); George Smith, *Artificial Insemination Redivivus: Permutations Within a Penumbra*, 2 J. LEG. MED. 113 (1981).

133. OFFICE OF TECHNOLOGY ASSESSMENT, 100TH CONG., 2D SESS., ARTIFICIAL INSEMINATION PRACTICE IN THE UNITED STATES: SUMMARY OF A 1987 SURVEY, at 3 (Comm. Print 1988). This is an increase from the 6,000 to 10,000 birth rate of AID children reported in a 1979 survey. Curie-Cohen et al., *supra* note 34.

134. See, e.g., Peter Lutjen et al., *The Establishment and Maintenance of Pregnancy Using In Vitro Fertilization and Embryo Donation in a Patient With Primary Ovarian Failure*, 307 NATURE 174 (1984).

135. *Id.*

136. 1988 IVF-ET Registry, *supra* note 64, at 19.

now choose to fertilize and cryopreserve their excess eggs for later embryo transfer attempts rather than donate them.¹³⁷

In addition, a donor can provide an egg through a technique known as embryo transfer after *in vivo* fertilization, in which sperm from the husband of the recipient is used to inseminate the donor woman.¹³⁸ Five days after the donor woman conceives, the embryo is flushed out of her womb in a nonsurgical procedure known as embryo lavage and is then transferred to the womb of the recipient woman.¹³⁹ This technique does not necessarily require hormonal stimulation because a single fertilized egg can be retrieved.¹⁴⁰ There is a risk, however, that the donor will retain the fertilized egg as a pregnancy if the embryo is not successfully retrieved.¹⁴¹

The use of donor eggs is still relatively rare. The Australian statistics for 1987 show that donated eggs were used in the treatment of sixty-six women.¹⁴² The United States IVF Registry recorded that forty-eight of the 163 clinics responding had performed IVF with donor eggs.¹⁴³

While sperm can be used fresh or frozen for AID or for use in IVF, eggs must generally be used fresh or preserved after fertilization has occurred. Although a few pregnancies have been reported with the use of frozen eggs,¹⁴⁴ rates of egg survival after freezing, thawing and cleavage are low.¹⁴⁵ Developing better techniques to preserve eggs—much in the way sperm can be preserved—might avoid the moral problems surrounding frozen embryos.

Some couples may wish to use a donated embryo, either because neither can provide the genetic component for reproduction or because a donated egg is not available. Embryos most often become available for donation when other couples have cryopreserved embryos in excess of

137. Mark V. Sauer et al., *Establishment of a Nonanonymous Donor Oocyte Program: Preliminary Experience at the University of Southern California*, 52 FERTILITY & STERILITY 433, 435 (1989).

138. See, e.g., Maria Bustillo et al., *Nonsurgical Ovum Transfer as a Treatment in Infertile Women: Preliminary Experience*, 251 JAMA 1171, 1172 (1984).

139. *Id.*

140. *Id.*

141. *Id.*; Navot & Rosenwaks, *supra* note 67, at 518.

142. NPSU 1987, *supra* note 69, at 7.

143. 1989 IVF-ET Registry, *supra* note 63, at 20.

144. The two earliest pregnancies with cryopreserved eggs were reported in Australia and West Germany. Christopher Chen, *Pregnancy After Human Oocyte Cryopreservation*, LANCET, Apr. 19, 1986, at 884, 884; J.F.H.M. van Uem et al., *Birth After Cryopreservation of Unfertilized Oocytes*, LANCET, Mar. 28, 1987, at 752.

145. Laufer et al., *supra* note 65, at 498.

what they need in their own infertility treatment.¹⁴⁶ The use of a donor embryo, like the use of a donor egg, allows the recipient woman to have a biological relationship with the child via pregnancy even though they have no genetic relationship. Embryo donation is still relatively rare, however. For example, for 1986, only four women were reported to have received donated embryos in Australia.¹⁴⁷

B. SUCCESS RATES

Success rates of procedures using donor gametes and embryos generally are similar to those of the same procedures without the aid of donors. For example, the rate of pregnancy resulting from the use of donor sperm is roughly the same as with coital conception. In Australia, the rate of IVF pregnancies resulting from procedures using donor gametes and embryos is reported as similar to results for all IVF techniques.¹⁴⁸

The technique of artificial insemination is highly successful, with a mean rate of pregnancy of seventy to seventy-five percent per patient over the course of her treatment.¹⁴⁹ Yet there is a great variation among clinics and among types of patients. The mean success rate of clinics ranges from forty to eighty-five percent.¹⁵⁰ If the patient is subfertile herself, the mean success rate is only forty-eight percent.¹⁵¹ The majority of women who become pregnant by AID do so by the sixth cycle.¹⁵²

With respect to the use of donor eggs in conjunction with IVF, the United States clinics in 1989 reported a twenty-one percent live delivery rate out of 328 patients and 377 transfers, with three chromosomal abnormalities and three congenital malformations.¹⁵³ There is some indication that when fresh eggs or embryos from a donor are used, IVF pregnancy rates are higher than when the woman's own fresh embryo is placed in

146. The cryopreservation of embryos allows a greater number of transfer attempts with fewer invasive procedures for egg retrieval for the woman undergoing IVF. Embryo freezing allows the couple to keep any extra fertilized eggs for use in repeated cycles of embryo transfer. As a result, there are fewer "extra" embryos to donate to other infertile couples. Donation of frozen embryos by couples undergoing IVF will occur only when the couple has had the children they desire or has decided to discontinue attempts at pregnancy.

147. NPSU 1987, *supra* note 69, at 7.

148. *Id.* at 11.

149. Loy & Seibel, *Therapeutic Insemination, in INFERTILITY*, *supra* note 4, at 210.

150. *Id.*

151. *Id.*

152. *Id.*

153. 1989 IVF-ET Registry, *supra* note 63, at 20.

her body because, in the former case, the recipient woman has not been exposed to hormonal hyperstimulation for egg retrieval.¹⁵⁴

C. SCREENING DONORS

Various professional guidelines exist for the screening of sperm donors, egg donors, and embryo donors,¹⁵⁵ but there is evidence that the medical screening of sperm donors is lax.¹⁵⁶ A survey by the Office of Technology Assessment Technology in 1987 found that only twenty-two percent of AID practitioners reported testing for HIV¹⁵⁷ and only forty-four percent screened donors for genetic disorders for which they were at high risk.¹⁵⁸ Even among those physicians who undertake genetic screening, not all use appropriate criteria. For example, sixty-one percent of practitioners would reject a healthy donor with a family history of Duchenne's muscular dystrophy, even though there is no chance a donor would pass on this X-linked disorder unless he himself has the disease.¹⁵⁹

154. Mark V. Sauer et al., *Simultaneous Establishment of Pregnancies in Two Ovarian Failure Patients Using One Oocyte Donor*, 52 FERTILITY & STERILITY 1072 (1989).

155. See, e.g., AM. ASSOC. OF TISSUE BANKS PROVISIONAL STANDARDS addendum 2, at 22 (Sept. 1984). The 1990 American Fertility Society guidelines for donor insemination revise their earlier recommendations to reflect increased concern about sexually transmitted diseases (STD) and acquired immune deficiency syndrome (AIDS) in particular. AFS Semen Donor Guidelines 1990, *supra* note 15, at 1S. Donors should be men who have none of the risk factors for AIDS (e.g., any homosexual contact in the last eight years, intravenous drug use, sexual partners in AIDS risk groups) and potential donors are tested to determine current HIV status. *Id.* at 6S-7S. If a donor has none of these risk factors and is seronegative for cytomegalovirus (CMV), then further serological tests and urethral cultures are performed. The serological tests at this point include those for hepatitis-B, HIV and other sexually transmitted diseases. If these are negative, semen samples are taken and cryopreserved. The donor is then tested again after 180 days to assure an HIV-negative status and only then is the sperm released for use.

Genetic screening is recommended to minimize the transmission of genetic disorders. *Id.* at 8S (1990). Only a few artificial insemination practitioners perform genetic screening of sperm donors through chromosomal analysis. Most gain the bulk of their screening information from the patient's medical and family history. In addition, some artificial insemination practitioners may check for diseases that are prevalent in certain populations (such as thalassemia in Mediterranean populations and sickle cell disease in African-Americans), but even this sort of cursory genetic screening is not systematically performed in U.S. clinics. In one clinic, semen of deficient quality (volume, density, motility and normality of form) and cytomegalovirus sero-positive samples were the most common causes for rejection of donors. B.A. Mixon et al., Donor Screening for Therapeutic Insemination, No. P-169, AFS Meeting Abstracts 1989, *supra* note 53, at S129.

156. The psychological screening of sperm donors is also minimal. Colin D. Matthews et al., *Screening of Karyotype and Semen Quality in an Artificial Insemination Program: Acceptance and Rejection Criteria*, 40 FERTILITY & STERILITY 648 (1983).

157. OFFICE OF TECHNOLOGY ASSESSMENT, *supra* note 133.

158. *Id.*

159. *Id.* at 10.

A 1986 *New England Journal of Medicine* article noted that screening procedures to reduce the incidence of sexually transmitted disease "are usually cursory."¹⁶⁰ The most serious problem involves acquired immune deficiency syndrome (AIDS). There is currently no method available to test semen for the presence of the HIV virus.¹⁶¹ Blood can be tested for the virus, but antibodies to the virus in the donor's blood may not appear until several months after the semen is affected.¹⁶² Thus, even if the sperm donor has a negative blood test for HIV at the time of a fresh semen donation, he can transmit the virus to the recipient. For that reason, the use of fresh semen has been banned in some countries, such as Australia, and such a ban has become the policy at some clinics in the United States.¹⁶³ Some clinics have adopted the following procedure to minimize the AIDS threat: The sperm donor is tested for the virus at the time he donates the sperm. A number of samples (perhaps ten) of his sperm are frozen and he is then tested again three to six months later. If the second test is negative, the frozen sperm are released for use. In 1988, the Food and Drug Administration, in conjunction with the Centers for Disease Control, adopted regulations requiring the freezing of sperm and retesting of the donor.¹⁶⁴ The American Fertility Society has followed suit with a similar standard.¹⁶⁵

AIDS is not the only risk that accompanies the use of fresh sperm. There are a number of other sexually transmitted diseases that similarly have an incubation period or that can only be identified through a test that takes too long to accomplish in the time between the collection of the fresh semen and its use.¹⁶⁶

Despite the fact that the risk of the transmission of HIV and other infectious diseases can be minimized by the use of frozen semen, many practitioners find it more convenient to use fresh semen, and do not give recipients a choice. Some argue that fresh semen is preferable because

160. Laurene Mascola & Mary E. Guinan, *Screening to Reduce Transmission of Sexually Transmitted Diseases in Semen Used for Artificial Insemination*, 314 *NEW ENG. J. MED.* 1354 (1986).

161. *Id.* at 1357.

162. *Id.*

163. In 1985, transmission of HIV via artificial insemination was reported. *See Four Australian Women Gets AIDS from Sperm Bank*, *CHI. TRIB.*, July 26, 1985, § 1, at 5.

164. OFFICE OF TECHNOLOGY ASSESSMENT, *supra* note 4, at 170.

165. Edwin P. Petersen et al., *AID and AIDS—Too Close for Comfort*, 49 *FERTILITY & STERILITY* 209 (1988).

166. Mascola & Guinan, *supra* note 160, at 1357.

frozen semen has a slightly lower success rate¹⁶⁷ due to the shorter lifespan of frozen semen in the reproductive tract. This drawback may be partially eliminated with more careful cryopreservation techniques.¹⁶⁸ A recent study showed that quality control of specimens at commercial sperm banks affected the fertility potential of sperm.¹⁶⁹ Concentration of cryopreserved sperm¹⁷⁰ and the use of intrauterine rather than intravaginal insemination techniques¹⁷¹ also appears to improve pregnancy rates. The success rate of insemination with frozen semen may also be enhanced if more attention is paid to the timing of the insemination.¹⁷²

Some physicians maintain that the reason they do not need to do genetic testing or other detailed medical examinations on donors is that the primary source of donors is medical students. However, for-profit sperm banks are tapping a pool of donors that is much larger than just medical students. In addition, even when the donors are medical students, it is unlikely that the donors will always recognize any genetic disorders in their family history and disclose them. A study of 168 donor applicants at the University of North Carolina School of Medicine demonstrated the problem of relying on donors' self-reports. According to the researchers, "a majority of donors having a positive family history [of genetic disorder] did not recognize the condition as being genetic even if the individual had had medical training."¹⁷³

When detailed genetic screening was done in one program, 11.4 percent of potential donors were rejected on that basis.¹⁷⁴ In an Australian study, 2.9 percent of potential donors were rejected on the basis of karyotyping (an examination of the donor's chromosomes).¹⁷⁵

167. *Id.* at 1354 (citing studies finding a pregnancy rate of ten to fifteen percent lower with frozen semen); see also Mary Wood et al., *Decreased Pregnancy Rates and Poor Pregnancy Outcome with Cryopreserved Spermatozoa*, No. 0-117, AFS Meeting Abstracts 1989, *supra* note 53, at S49.

168. ANDREWS, *supra* note 44, at 161.

169. W.C. Baird et al., *Cryopreserved Donor Semen: A Laboratory Comparison of Five Commercial Sperm Banks*, No. 0-043, AFS Meeting Abstracts 1989, *supra* note 53, at S18.

170. S. Kuslis & D. Maier, *Sperm Concentration Improves Quality and Efficacy of Marginal Semen Samples in a Donor Sperm Program Using Cryopreservation*, No. P-089, AFS Meeting Abstracts 1989, *supra* note 53, at S97.

171. S.A. Rothmann et al., *Replacement of Fresh with Cryopreserved (CP) Sperm in a Donor Insemination (DI) Program*, No. P.096, AFS Meeting Abstracts 1989, *supra* note 53, at S100.

172. ANDREWS, *supra* note 44, at 161.

173. M. Christie Timmons et al., *Genetic Screening of Donors for Artificial Insemination*, 35 FERTILITY & STERILITY 451 (1981).

174. *Id.* at 453.

175. See, e.g., Matthews et al., *supra* note 147, at 653.

Less is known about the screening of egg donors than sperm donors. Egg donation is currently done on an experimental basis at a limited number of clinics, and there is some anecdotal evidence that, in that setting, screening of women who apply to be egg donors is extensive. A donor must undergo psychological and intelligence¹⁷⁶ screening and a complete medical history and examination, including HIV testing.¹⁷⁷ In one study, laboratory screening for egg donors included serological testing for CMV, syphilis, HIV, and hepatitis B and cultures for herpes, gonorrhea, chlamydia and cytomegalovirus.¹⁷⁸ Most clinicians interview the potential egg donors at length and the information gleaned from such interviews, and from more structured psychological tests such as the MMPI, is used to assess the motivation of the potential donor and the acceptability of the candidate. The information is also used to assure that the woman will not be adversely affected by the procedure. However, when a woman who is undergoing IVF decides to donate an excess egg or embryo, there often has not been comparable genetic screening on her. Thus the family genetic history of the IVF donor of an egg or embryo is not as well known.

D. ANONYMITY OF DONORS

The majority of donors of sperm, eggs, or embryos remain anonymous to the couple and to the child.¹⁷⁹ In the view of some clinicians, confidentiality has been an "important requisite" of the donor insemination procedure.¹⁸⁰ Some recipients of donor sperm also prefer to use a donor who will remain anonymous so that there is no threat that the donor will intervene in their lives. Even when the child knows its donor origins, the parents might prefer that he or she have no contact with the genetic mother or father.

Typical of the viewpoint of clinicians offering artificial insemination is the following statement:

176. Intelligence screening was introduced in one program because of expressed concerns by prospective parents about the genetic contribution of the donor in this respect. Edwards, *supra* note 39, at 2, 3.

177. Navot & Rosenwaks, *supra* note 67, at 519 (1990).

178. *Id.*

179. The American Fertility Society refers to anonymity in the context of donor eggs, for example, as a "desirable goal." American Fertility Society, *supra* note , at 44S. An Australian group suggested that there were no "adverse psychosocial sequelae" of that country's policies regarding donor sperm, which is currently anonymous. John Leeton, *The Use of Donor Sperm in the Management of Male Infertility in Australia*, 28 AUSTL. & N.Z. J. OBSTETRICS & GYNECOLOGY 324, 324 (1988).

180. Loy & Seibel, *supra* note 149, at 208.

It is our practice to destroy all records after 1 year to ensure confidentiality and to prevent either the donor seeking out any resultant offspring or the reverse. Because only donors with a negative medical and genetic history are used, we feel that providing medical data about them is unnecessary. Furthermore, we believe that anonymity is one of the most important requisites of this procedure.¹⁸¹

Part of the reason that confidentiality is stressed by the clinicians providing artificial insemination, some of whom were sperm donors themselves earlier in their professional careers, is fear that the donor might be found financially responsible for the child. This possibility, though, has been ameliorated in states that have adopted statutes providing that the husband of the sperm recipient is the legal father.¹⁸²

Confidentiality and early destruction of records presents potential risks to children created with donor gametes. Record destruction prevents practitioners from identifying and ceasing to use the gametes of a specific donor whose sperm or egg was used in the conception of a child who shows a defect. It also makes it impossible to contact a gamete donor whose genetic offspring later develops a genetic disorder to let the donor know that his or her potential children are at genetic risk.

Because of such concerns, the American Fertility Society recommends that permanent, confidential records of sperm, egg, or embryo donors be kept and be made available on request, "on an anonymous basis, to the recipient and/or any resulting offspring."¹⁸³ Some commentators go even further and recommend the use of non-anonymous

181. *Id.*

182. There are at least thirty-one such states: ALA. CODE § 26-17-21 (1986); ALASKA STAT. § 25.20.045 (1983); ARK. CODE ANN. §§ 9-10-201, -202 (Michie 1987); CAL. CIV. CODE § 7005 (West 1983); COLO. REV. STAT. § 19-6-106 (1986); CONN. GEN. STAT. §§ 45-69f to 69n (1987); FLA. STAT. ANN. § 742.11 (West 1987); GA. CODE ANN. §§ 74-101.1, -9904 (Harrison Supp. 1988); IDAHO CODE § 39-5401 (1988); ILL. ANN. STAT. ch. 40, para. 1453 (Smith-Hurd Supp. 1988); KAN. STAT. ANN. §§ 23-128 to -130 (1988); LA. CIV. CODE ANN. art. 188 (West Supp. 1989); MD. EST. & TRUSTS CODE ANN. § 1-206(b) (1974); MD. GEN. PROV. CODE § 20-214 (1987); MICH. COMP. LAWS ANN. § 333.2824 & 700.111 (West 1980); MINN. STAT. ANN. § 257.56 (West Supp. 1989); MO. ANN. STAT. § 210.824 (Vernon Supp. 1989); MONT. CODE ANN. §§ 333.2824 & 40-6-1-6 (1987); NEV. REV. STAT. § 126.061 (1986); N.J. STAT. ANN. § 9:17-44 (West Supp. 1989); N.M. STAT. ANN. § 40-11-6 (Michie 1986); N.Y. DOM. REL. LAW § 73 (McKinney 1988); N.C. GEN. STAT. § 49A-1 (1988); OHIO REV. CODE ANN. §§ 3111.30-38 (Baldwin 1987); OKLA. STAT. ANN. tit. 10, §§ 551-553 (West Supp. 1987); ORE. REV. STAT. §§ 109.239, .243, .247, 677.355, .360, .365, .370 (1987); TENN. CODE ANN. § 68-3-306 (1987); TEX. FAM. CODE ANN. § 12.03 (West 1986); VA. CODE ANN. § 64.1-7.1 (Michie 1980); WASH. REV. CODE ANN. § 26.26.050 (West 1986); WIS. STAT. ANN. § 767.47(9) (West 1985), § 891.40 (West Supp. 1986); WYO. STAT. § 14-2-103 (1988).

183. *AFS Semen Donor Guidelines 1990*, *supra* note 15, at 9S.

donors. Proponents of non-anonymous sperm donation have recommended guidelines for such a policy.¹⁸⁴ They recommend not only that donors be screened, but that they be limited to contributing to no more than three offspring, and that their records be kept so that later contact with the child would be possible. Such proposals have generated much controversy. There is concern that sperm banks would be unable to attract donors if the procedure became non-anonymous. There is no evidence to support that concern, however. In fact, at the Sperm Bank of Northern California, seventy-five percent of donors agreed to provide a name and address so that the child would be able to contact them when the child reached the age of eighteen. Adoption experts suggest that there are also considerable psychological benefits for some children in knowing their genetic parents. Like the small percentage of adoptive children who seek out their genetic parents, some children of gamete and embryo donation may desire to find their genetic parent or parents to resolve feelings of "genealogical bewilderment."¹⁸⁵ Even those couples who plan to keep the child's genetic origins a secret may face this problem. The physicians who advocate that couples maintain secrecy may overestimate the couple's ability to maintain secrecy and the desirability of maintaining secrecy. Sometimes if the child is not told of the unique arrangements surrounding his or her conception, the information may come out in a damaging way, for example, at the time of the parents' divorce.¹⁸⁶

In addition to the potential physical and psychological harms of not being able to get information about the donor, anonymous gamete donation presents the threat of incest (by marriage between half-siblings, or even between a sperm donor and his own daughter).¹⁸⁷ The likelihood of this in a large, transient society is low, however.

The use of known donors is more common in egg donation than in sperm donation because eggs are relatively more difficult to obtain than sperm. In one university clinic, ten patients with ovarian failure received eggs from non-anonymous donors, including sisters, personal friends, and compensated participants chosen by the patient and her partner. None of the donors suffered complications resulting from the procedure and most returned to work the next day. Their eggs were fertilized by

184. ANNETTE BARAN & REUBEN PANNOR, *LETHAL SECRETS* 167-72 (1989).

185. See ANDREWS, *supra* note 44, at 258-61.

186. *Id.* at 257.

187. This and other taboos are discussed from a psychiatric perspective in Bernard Rubin, *Psychological Aspects of Human Artificial Insemination*, 13 *ARCHIVES GEN. PSYCHIATRY* 121, 123 (1965).

the recipient's husband's sperm *in vitro* and transferred to the recipient using the standard procedures for IVF. Six of the ten patients became pregnant.¹⁸⁸

There is concern about the use of known egg donors because the donation procedure involves some risk.¹⁸⁹ Relatives may not feel free to decline to participate in a procedure that will help a family member. If the donor of sperm, eggs, or embryos was a relative or friend, all parties need to consider the implications of the genetic parent remaining a close friend of the child's family.¹⁹⁰

E. PAYMENT FOR GAMETE AND EMBRYO DONATION

The American Fertility Society Guidelines specify that there should be no substantial payment to gamete or embryo donors, although compensation for time, expenses, or inconveniences incurred by the donor is acceptable.¹⁹¹

Paying egg donors has been discouraged by the American Fertility Society so that women will not submit themselves to significant health risks for money,¹⁹² yet the reduced risks under new methods and the greater need for donor eggs may lead more programs to pay egg donors for their inconvenience, just as most programs have traditionally done for sperm donors. One clinic reports that egg donors were given financial consideration for only the "direct and indirect costs of their participation" such as their transportation or missing work.¹⁹³

Payment for embryos is expressly prohibited under some state laws, while payment for egg donation is not as strictly regulated.¹⁹⁴ Legal limitations on payment may reflect social benefits that place greater value on embryos than on gametes. A similar abhorrence surrounds the idea of

188. Sauer et al., *supra* note 128, at 433-36 (1989).

189. Ethics Comm. of the Am. Fertility Soc'y, *supra* note 90, at 44S. With the less risky methods of retrieving oocytes now available, this concern should be much reduced.

190. Edwards, *supra* note 39, at 5 (discussing cases in which the egg donor was known to the recipient).

191. Ethics Comm. of the Am. Fertility Soc'y, *supra* note 90, at 37S (regarding sperm donors); *id.* at 49S (regarding egg donors); *id.* at 46S (regarding embryo donors). A subsequent AFS guideline regarding sperm donors reiterates that position, stating that while payment to sperm donors "will vary from area to area, [payment] should not be such that the monetary incentive is the primary factor." *AFS Semen Donor Guidelines 1990*, *supra* note 15, at 4S.

192. Ethics Comm. of the Am. Fertility Soc'y, *supra* note 90, at 48S.

193. Elizabeth A.D. Kennard, *A Program for Matched, Anonymous Oocyte Donation*, 51 *FERTILITY & STERILITY* 655, 660 (1989).

194. LORI B. ANDREWS & AMI S. JAEGER, *Legal Aspects of Infertility*, in *INFERTILITY*, *supra* note 4, at 548.

paying surrogate mothers, again suggesting the special value given to both reproductive tissues after conception and the processes of pregnancy and birth.

F. DEMOGRAPHICS OF INDIVIDUALS AND COUPLES WHO USE GAMETE OR EMBRYO DONATION

Couples who use donor eggs are from the same population that uses IVF generally. One commentator has reported that couples who use AID are also socioeconomically similar to IVF couples¹⁹⁵ although the lower cost and relative simplicity of this treatment makes it potentially available to people of lower socioeconomic status. Artificial insemination by donor is increasingly used by single, fertile women, including lesbian women, who prefer to have a child without involving a known male partner.¹⁹⁶

Recipient couples in a program offering embryo transfer after *in vivo* fertilization were described as "well educated, professionally employed, and relatively affluent."¹⁹⁷ There is some indication that clinics are biased in favor of more affluent and educated couples who fit more comfortably into a standard social and psychological profile.¹⁹⁸ The clinicians' stereotypes about what constitutes a good marriage or family situation may combine with prohibitive costs to eliminate or discourage a wider range of recipient couples from using reproductive technologies.

G. THE SPERM DONOR

Typical sperm donors tend to be medical or health science students who are between twenty and twenty-seven years old, unmarried, white, and middle class.¹⁹⁹ That they are medical students may have more to do with their proximity to clinics than to any other factor. Their youth reduces the risk of age-related problems of sperm quality. Sperm donors are generally matched with recipient couples for race, Rh factors, and physical resemblance (in, for example, height and coloring).²⁰⁰

195. Clamar, *supra* note 26, at 8.

196. *New Guidelines for the Use of Semen Donor Insemination: 1990*, in 53 FERTILITY & STERILITY 1S, 13S (Supp. 1990) set forth an "unmarried recipient consent form," suggesting that AID for single women is becoming more common.

197. Edwards, *supra* note 39, at 2. For a discussion of recipient couple selection, see *id.* at 3.

198. *Id.* at 3.

199. Loy & Seibel, *supra* note 149, at 205.

200. *Id.* at 208.

H. THE EGG DONOR

The profile of the typical egg donor is a woman who is young and healthy, and matches some of the characteristics of the recipient couples or women. Donors are categorized by physical characteristics such as weight, height, eye and hair color, national origin, and blood type. In one program, potential donors are photographed and the donor is specifically "matched" to the infertile couple.²⁰¹

Donors at one center, most of whom were recruited by media announcements, were described as "generally less affluent and less well educated than the recipients. They were younger (averaging twenty-eight years of age) and were either full time homemakers or were employed in clerical or blue collar occupations."²⁰² Some of the donors were known to the recipients; these women tended to be of a more comparable socioeconomic status to the recipients.

One study found that egg donor candidates tended to be women who reported histories of family trauma or reproductive trauma, events that may have influenced their decision to become donors.²⁰³ The anonymous, volunteer egg donors in one study were found to have experienced a greater number of reproductive traumas or family problems than control subjects, but this was not a statistically significant difference.²⁰⁴

In a non-anonymous program, all donors had previously given birth and were between twenty-four and thirty-four years of age. Most chose not to be financially compensated.²⁰⁵

I. THE EMBRYO DONOR

The primary donors of embryos are couples who are undergoing IVF and decide to donate excess embryos. This group is older than the average sperm donor or the average egg donor (who is not herself an IVF patient).²⁰⁶

201. Kennard et al., *supra* note 193, at 655.

202. Edwards, *supra* note 39, at 4.

203. Kennard et al., *supra* note 193, at 658.

204. J. Blankstein et al., Oocyte Donation Using Matched, Anonymous Donors: Donor Selection and Screening, No. P-201, AFS Meeting Abstracts 1989, *supra* note 53, at S141. Carole Edwards, *supra* note 39, also describes "unresolved issues arising from previous abortions or other losses" as a secondary motivation for egg donors.

205. Sauer et al., *supra* note 137, at 433-36.

206. The average IVF patient is thirty-two years old, *see supra* text accompanying note 92, while the average donor is twenty-eight years old, *see supra* text accompanying note 202.

J. PHYSICAL RISKS OF GAMETE OR EMBRYO DONATION TO THE RECIPIENT INDIVIDUAL OR COUPLE

The recipient woman faces the possibility of acquiring an infectious disease from a donor when improper screening is done. The American Fertility Society recommends that precautions be taken to avoid the transmission of infectious disease from donors to recipients.²⁰⁷ Proper screening reduces but cannot fully eliminate the possibility of transmission of disease, however.

K. PSYCHOLOGICAL EFFECTS OF GAMETE OR EMBRYO DONATION TO THE RECIPIENT INDIVIDUAL OR COUPLE

Couples who produce a child with donor gametes usually express satisfaction with the assisted reproductive procedures that helped them accomplish this. In a 1954 study of thirty-eight couples who had successfully had a child with AID, all said they desired another AID child.²⁰⁸ Eighty-five percent of couples in a more recent study who had a child by AID said they would use AID again.²⁰⁹

The women found that the most stressful aspects of AID were invasive medical procedures and waiting for pregnancy. Three of the men reported persistent feelings of guilt and inadequacy; their self-esteem was affected by their need to use AID. These feelings may cause couples to keep their use of AID a secret. While most studies show that couples do not intend to tell the child, most couples do inform one or two individuals who are close family or friends.²¹⁰ In an Australian follow-up study of fifty AID couples, thirty-four said they would not tell the children and nine were unsure. Seven thought they would inform the child.²¹¹

Donor insemination is a sensitive matter for many couples and often entails emotional difficulties for the infertile male partner. In a quantitative assessment of the psychological well-being of couples who were candidates for artificial insemination by donor (AID), or by husband (AIH),

207. *AFS Semen Donor Guidelines 1990*, *supra* note 15. These guidelines are not necessarily followed by clinics, however.

208. Clamar, *supra* note 26, at 174.

209. M. Rodocker, *A Follow-Up Study of Couples Who Have Successfully Completed Artificial Insemination by Donor (AID) Treatment*, AFS Meeting Abstracts 1989, *supra* note 53, at S93.

210. Lasker & Borg, *supra* note 18, at 135.

211. Clayton & Kovacs, *supra* note 54, at 339.

and of fertile couples,²¹² researchers found that AIH couples scored similarly to the fertile couples. Among AID couples, women scored similarly to control subjects, but men had significantly lower scores than their fertile counterparts. This finding suggests that the men felt a sense of inadequacy or a lack of control in relation to their infertility.

Early concerns about the symbolic meaning of donor insemination focused on whether a woman becoming pregnant by a man other than her husband would hurt the couple's relationship. Yet donor insemination does not seem to create a threat to the marriage. Eight couples studied recently by Bernstein²¹³ viewed the procedure as a success, and all but one individual viewed their marriage as unchanged or stronger since AID. A Norwegian study found that the marital separation rate for couples who had given birth to children after AID did not differ significantly from the separation rate of a comparable, demographically matched non-AID population.²¹⁴ Other studies suggest that the divorce rate of AID couples is lower than the non-AID average;²¹⁵ we can therefore assume that the divorce rate for AID couples is equal to or less than for couples generally.

It has been suggested that legal fathers may reject the genetic offspring of other men.²¹⁶ However, empirical psychological studies find that establishing relations with a child who is not genetically related does not seem to be a major problem for the legal father in families using AID. Apparently, these fathers generally have no trouble bonding with their children.²¹⁷

Less is known about whether the recipients of donor eggs and embryos have the same concerns as the AID parents about secrecy. All of the techniques that use donors, however, may put stress on either parent or on the marriage because of embarrassment surrounding infertility.

Certain psychological risks face both the woman and her partner, who must come to terms with the idea that half or all of their child's genes derive from a donor. The use of donor sperm or eggs in the same IVF techniques has a different psychological impact than the use of the

212. A.G. Shrednick & R.J. Paulson, The Use of the Patient Information and Assessment Form (PIAF) in the Evaluation of Infertile Couples Who Are Candidates for Artificial Insemination by Donor (AID) or Husband (AIH) Sperm, No. 0-065, AFS Meeting Abstract 1989, *supra* note 53, at S28.

213. Bernstein, *supra* note 53, at 528.

214. Bendvold et al., *supra* note 29, at 982.

215. Clamar, *supra* note 26, at 175.

216. BARAN & PANNOR, *supra* note 184.

217. Bernstein, *supra* note 53, at 528.

couple's own gametes. In a recent article, Mahlstedt and Greenfelt state that infertility specialists should consider the possibility that "assisted reproductive techniques with donor gametes are psychologically different from procedures using the biological gametes of both parents in conceiving a child."²¹⁸ These authors suggest that the use of reproductive technologies with donor gametes is "psychologically different" from procedures that use the couple's own egg and sperm.²¹⁹ Further, they believe that it is time "to stop pretending that once the child is in the couple's arms, they will not give another thought to how it all happened."²²⁰ The use of donor gametes may be kept secret from the child, and the secret itself may then become a burden in parent-child relations. Another concern may be lingering doubts about other aspects of the donor's health and his or her genetic characteristics that may not be immediately apparent in the child.

The experience of parents whose children are related genetically to only the mother or father may resemble the experience of step-parents. Any feelings of exclusion experienced by the nongenetic parent may be balanced by the awareness that the child was created in a cooperative effort by the couple,²²¹ of which even the nongenetically related parent has been a part of the process from the start.

L. PHYSICAL RISKS TO DONORS

Sperm donors face no physical danger when they donate semen, and women who donate eggs face less risk today than even a few years ago. Properly performed egg retrieval through transvaginal or transurethral ultrasound-directed follicle aspiration presents few risks, as it involves no surgery and no general anesthesia. In over three hundred cases of egg retrieval using aspiration at one clinic, not a single pelvic or vaginal infection was encountered.²²² Still, any invasive procedure may be uncomfortable or inconvenient, and may present some risk of infection.

Women who undergo *in vivo* fertilization and retrieval but are not exposed to hormonal stimulation face the risks of infection—caused by the sperm or by the retrieval procedure—and ectopic pregnancy. The

218. Patricia P. Mahlstedt & Dorothy A. Greenfelt, *Assisted Reproductive Technology with Donor Gametes: The Need for Patient Preparation*, 52 FERTILITY & STERILITY 908, 909 (1989).

219. *Id.*

220. *Id.*

221. Holmes & Tymstra, *supra* note 17, at 120.

222. Sauer et al., *supra* note 137, at 436.

major risk for women who undergo follicular aspiration is the unknown long term effects of hormonal stimulation.

M. PSYCHOLOGICAL RISKS TO DONORS

Technical developments change the patterns of physical risk for donors. New techniques resolve some moral dilemmas but raise new ones. Psychological and social considerations about the well-being of donors may be changed by technical innovations, but should not be presumed to disappear.

Some sperm donors later feel remorse about the fact that they have created children whom they may never see. Because most sperm donors have traditionally been young, unmarried men, they often have not started their own families and do not realize what it means to be a father. Later on, when they do have children of their own, sperm donors may experience regret about the artificial insemination children they have created who are out there in the world, who might be in need, and yet who are not in contact with them.²²³ The ramifications of the donor's actions may not emerge until years later. One study of men who had been sperm donors earlier in their lives found that some regretted their former cavalier attitudes when they began to think of the existence of their own biological children with whom they had no contact or relationship.²²⁴

Egg donors may experience similar doubts about the desirability of foregoing contact with the child. When the donor knows the recipient couple, all involved parties will have to forge new types of relations for which little precedent exists. They are likely to face psychological and social challenges that only begin when the child is born.

The embryo is often viewed as an entity of a different order of importance than the unfertilized egg or sperm. Donors may be more attached to embryos (and experience accentuated regret about lack of contact with the resulting child). Despite lacking the legal status and the actual capacity for autonomous life, the embryo is considered by some to be an incipient child, while gametes are not viewed in this manner.

N. PHYSICAL RISKS TO THE CHILD

With respect to artificial insemination, a 1983 French study of 2,052 artificial insemination children found a lower malformation rate than

223. Research of psychologist Aphrodite Clamar, reported in ANDREWS, *supra* note 44, at 267.

224. Research of psychotherapist Annette Baran, reported in ANDREWS, *supra* note 44, at 267.

among children conceived normally, with slight evidence of a higher proportion of trisomies,²²⁵ probably due to the fact that the women are older than the average mother.

Currently, the greatest physical risk to children conceived through reproductive technologies seems to be the possibility of developing an infectious or genetic disease that was passed on from the donor of sperm, eggs, or embryos.²²⁶ Children may also be subject to physical risks related to lack of access to appropriate medical or other information about a donor.

O. PSYCHOLOGICAL RISKS TO THE CHILD

The primary psychological concern regarding children created with the aid of gamete or embryo donation is the possibility that such children will suffer from genealogical bewilderment. Some psychologists postulate that children cannot develop fully psychologically unless they demythologize their biological parents—which may require tracking down and meeting the donor.²²⁷

But genealogical bewilderment is not necessarily harmful to the child. Even in instances of adoption—in which the child does not have a biological link with either rearing parent—evidence indicates that the children fare as well as nonadopted children in terms of adjustment and achievement.²²⁸

VIII. SURROGATE MOTHERHOOD

A. MEDICAL ASPECTS

If a woman can provide neither the genetic nor the gestational component for reproduction, she and her partner can call upon a surrogate mother.²²⁹ Her partner's sperm can be used to inseminate a surrogate mother who will carry the fetus for the pregnancy and then release the

225. Federation CECOS, J.F. Mattei & B. Le Marec, *Genetic Aspects of Artificial Insemination by Donor (AID): Indications, Surveillance, and Results*, 23 *CLINICAL GENETICS* 132 (1983).

226. See William G. Johnson et al., *Artificial Insemination by Donors: The Need for Genetic Screening*, 304 *NEW ENG. J. MED.* 755 (1981); David N. Shapiro & Raymond J. Hutchinson, *Familial Histiocytosis in Offspring of Two Pregnancies After Artificial Insemination*, 304 *NEW ENG. J. MED.* 757 (1981).

227. For a report of Dr. Zellig Bach's position, see ANDREWS, *supra* note 44, at 265.

228. See, e.g., Teasdale & Owens, *Influence of Paternal Social Class on Intelligence and Educational Level in Male Adoptees and Non-Adoptees*, 56 *BR. J. EDUC. PSYCHOL.* 3 (1986).

229. For a description of the surrogate motherhood procedure, see NOEL P. KEANE & DENNIS L. BREO, *THE SURROGATE MOTHER* (1981). For a discussion of the legal issues involved, see M. Louise Graham, *Surrogate Gestation and the Protection of Choice*, 22 *SANTA CLARA L. REV.* 291

infant at birth for rearing by the couple. Since the late 1970s, an estimated four thousand children have been born to surrogate mothers.²³⁰

In some instances, a couple can provide the genetic components for reproduction, but the woman cannot provide the gestational component. The woman may have no uterus or a malformed uterus. Or, the woman may have a medical condition, such as severe hypertension or diabetes, that makes pregnancy dangerous to her. Also, the woman may have a condition such as phenylketonuria that makes pregnancy potentially risky to the fetus.

In cases where gestation is impossible or inadvisable, the couple can have its embryo transferred to a second woman for gestation. The latter woman is known as a surrogate gestational mother, an IVF surrogate, or a surrogate carrier. The transfer can occur after the first woman's egg has been fertilized through *in vitro* fertilization.²³¹

The first birth of an infant conceived by IVF and carried by a gestational surrogate occurred in 1986.²³² The method can involve synchronizing the infertile woman's hormonal cycle to the cycle of the surrogate, retrieving the eggs from the infertile woman by transvaginal follicular aspiration, routine *in vitro* fertilization, and transfer of the resultant embryo to the surrogate. Or the couple's embryo can be frozen and later implanted into the surrogate carrier, avoiding the need for synchronizing cycles.

There is an additional group of patients who have recently been drawn to gestational surrogacy. These are couples who have undertaken numerous unsuccessful attempts at IVF with the embryo being transferred into the wife. Although there is no apparent reason the wife could not carry their embryo to term, their failure to achieve a pregnancy in that manner after repeated attempts causes some couples to turn to a gestational surrogate to carry their embryos. There is some evidence that implantation occurs more easily when the embryo is transferred to a surrogate, rather than back into the wife. This may be because the wife

(1982). For a sample surrogate contract, see Katie Marie Brophy, *A Surrogate Mother Contract to Bear a Child*, 20 J. FAM. L. 263 (1982).

230. Martin Kasindorf, *And Baby Makes Four: Johnson v. Calvert Illustrates Just About Everything That Can Go Wrong in Surrogate Births*, L.A. TIMES, Jan. 20, 1991, Magazine, at 10.

231. In the first case of a surrogate gestational mother, a couple conceived through *in vitro* fertilization, but the resulting embryo could not be gestated in the wife because she had undergone a hysterectomy. Wulf H. Utian et al., *Successful Pregnancy After In Vitro Fertilization and Embryo Transfer from an Infertile Woman to a Surrogate*, 313 NEW ENG. J. MED. 1351 (1985).

232. Wulf H. Utian et al., *Preliminary Experience with In Vitro Fertilization-Surrogate Gestational Pregnancy*, 52 FERTILITY & STERILITY 633 (1989).

has undergone hormonal stimulation for egg retrieval.²³³ Pregnancy rates for IVF surrogacy are higher than for traditional IVF in part because “a uterus exposed only to endogenous hormones may be anticipated to be more ‘receptive’ to the embryos than a uterus that has been stimulated by exogenous hormones.”²³⁴ In addition, pregnancy may be more likely in the surrogate than in the female IVF partner because the surrogate is generally younger.

There is some debate about whether an anonymous surrogacy process, in which the contracting couple and the surrogate do not meet or develop a relationship, is preferable to those arrangements where the two parties keep in close contact and possibly develop a friendship.

B. SUCCESS RATES

There is little reported data on the pregnancy rate in surrogate motherhood. When artificial insemination is used, however, the pregnancy rate should at least equal the mean pregnancy rate of seventy percent to seventy-five percent reported when donor insemination is performed on the fertile wife of an infertile man.²³⁵

C. SCREENING OF SURROGATES

Prospective surrogates are usually screened by the arranging clinic or center for general and reproductive health.²³⁶ They also undergo tests in some centers to ascertain intellectual level, emotional stability, and personality traits.²³⁷ The purpose of psychological screening is to ascertain that the woman’s motives for participating are positive ones and that she shows no signs of psychopathology that would make acting as a surrogate harmful to herself or other parties.

233. Pierre Jouannet et al., *Cryopreservation and Infertility*, in *INFERTILITY*, *supra* note 4, at 532.

234. Wulf H. Utian et al., *supra* note 232, at 636.

235. Loy & Seibel, *supra* note 149, at 210.

236. Approximately sixty percent of the surrogacy births were arranged through established centers. Rita Resnick, *Surrogate Mothers: The Relationship Between Early Attachment and the Relinquishing of a Child 10* (1989) (unpublished Ph.D. dissertation, The Fielding Institute). Births that are arranged privately may not involve psychological or health screening of surrogates.

237. Jeanne E. Fish, *Surrogate Motherhood: Profile for Success 6-7* (n.d.) (unpublished manuscript, prepared at The Hagar Institute, Kansas). Based on the tests and profiles of surrogates at this center, Fish found that surrogates were less assertive and more passive/dependent than women who were rejected by the clinic.

D. PAYMENT TO A SURROGATE

The American Fertility Society Ethics Committee discourages, but does not prohibit, payment to surrogates. It states that “[a]lthough it would be preferable that surrogates not receive payment beyond compensation for expenses and their inconvenience, the Committee recognizes that in some cases payment will be necessary for surrogacy to occur.”²³⁸ The majority of surrogate mothers are paid for their services; the fee is generally around \$10,000. Initially, surrogacy contracts provided the bulk of the payment only after the birth of a live baby, leading to criticism of the arrangement as “baby selling.” Now surrogacy contracts provide for payments of equal amounts throughout the pregnancy, so that the surrogate will receive a pro rata portion if she miscarries and will receive the full amount if she carries the pregnancy to term, but the fetus is stillborn.

Some people view any payment to a surrogate as socially and morally repugnant, and at least four states prohibit payment to surrogates.²³⁹ Most surrogates are no less than middle class, however, and tend to use their monetary compensation to enhance their lives, not for bare survival.²⁴⁰ Still, the commodification of motherhood invites the possibility of exploitation; it equates pregnancy and childbirth with other kinds of “work,” and potentially diminishes the symbolic value of gestation. When the professionals arranging surrogacy contracts earn more than the surrogate herself, critics may view this situation as further proof of the commodification of women’s bodies.²⁴¹

Some critics of surrogacy suggest that commercialization should be outlawed, but private arrangements should not be forbidden. All states except Arizona²⁴² currently allow unpaid surrogacy. Cases where, for example, a woman whose twin sister is unable to have a child undergoes artificial insemination with her brother-in-law’s sperm and relinquishes the child after birth to the couple²⁴³ receive greater public acceptance than surrogate agreements among strangers. Yet unpaid surrogacy may

238. Ethics Comm. of the Am. Fertility Soc’y, *supra* note 90, at 67S, 73S.

239. FLA. STAT. ANN. § 63.212 (West Supp. 1991); MICH. COMP. LAWS ANN. §§ 722.859 (West Supp. 1991); UTAH CODE ANN. SEC. § 76-7-204(1)(9)(a) (Supp. 1991); WASH. REV. CODE ANN. § 26.26.230 (West Supp. 1991).

240. Andrews, *supra* note 3, at 72, 76.

241. Sara Ann Ketchum, *Selling Babies and Selling Bodies*, 4 HYPATIA 116, 123 (1989).

242. ARIZ. REV. STAT. ANN. § 25-218 (1991).

243. See, e.g., Juliette Zipper & Selma Sevenhuijsen, *Surrogacy: Feminist Notions of Motherhood Reconsidered*, in REPRODUCTIVE TECHNOLOGIES: GENDER, MOTHERHOOD AND MEDICINE 119, 128 (Michelle Stanworth ed. 1987).

involve greater coercion than paid surrogacy. If payment is banned, the infertile woman is forced to pressure a friend or relative into acting as an unpaid surrogate. The pressure in a relationship—entwined by past guilts, rivalries, and other emotional minefields—may be more coercive than the dynamics of an arms-length commercial surrogacy arrangement with a stranger.

Still, the opinion prevails that every child should be “begotten in the mysterious love-act between husband and wife”²⁴⁴ and not through arrangements with third parties, contracts, and medical intervention. Proponents of such a view do not appreciate the benefits of these arrangements for the infertile, how they may enhance the lives of donors and make possible the lives of the children created.

E. DEMOGRAPHICS OF THE COUPLE

The couples who most often seek out a surrogate motherhood arrangement are white, professional married couples in their thirties.²⁴⁵ A surrogate arrangement is not easily available, however, in part because of cost. The expense to the contracting couple may reach \$25,000 or more, a factor that limits this reproductive option to the well-to-do.²⁴⁶ Because of the cost of surrogacy arrangements, and because the couples are generally older than the surrogate, the couple tends to be wealthier and better educated than the surrogate.²⁴⁷

Couples who contract with surrogate mothers are likely to be those who have investigated their infertility and have even undergone some attempts at conception by other means, such as IVF. Some women know at an early age that they are unable to bear children, but other couples may suffer from unexplained infertility, only to discover after many years that the woman is unable or unlikely to bear children, or that she should avoid pregnancy for genetic or health reasons.

F. DEMOGRAPHICS OF THE SURROGATES

The profile of the typical surrogate mother generally resembles the eighty-nine women studied by Hilary Hanafin.²⁴⁸ The women in her sample, on the average, were twenty-eight years old, were married with

244. *Id.* at 132.

245. FIELD, *supra* note 47, at 25.

246. However, the cost of adoption can be just as high, and the wait for a child is often long.

247. Compare to the demographics of surrogate mothers, *infra* text accompanying notes 248-53.

248. Hilary Hanafin, *Surrogate Parenting: Reassessing Human Bonding 2* (Aug. 28, 1987) (unpublished paper presented at A.P.A. Convention, New York). Similar demographics were noted

two children, were employed full-time, and had thirteen years of formal education. Most were white and in a middle-range income bracket. These women were in good health, had positive experiences in their past pregnancies, and enjoyed being pregnant. The personalities of women who are attracted to surrogacy appear within the normal range, as defined by psychological studies. They have been described as women who show a sense of control of their own lives and who have little concern about conformity.²⁴⁹ They are no more altruistic than other similar women; they have been shown to have their own interests in mind as well.²⁵⁰

Recent psychological studies of surrogates show the following reasons for these women's decisions to participate. Some said they were impressed by the plight of infertile friends or relatives.²⁵¹ Others said they enjoyed pregnancy, but did not want to raise another child themselves. They enjoyed parenting and wanted to help others who were unable to have children to become parents.²⁵² A few surrogates said the prospect of payment was attractive, but none of the women in Hanafin's study said that money was the deciding factor for their participation.²⁵³

G. EFFECTS ON THE COUPLE

Recent studies on the outcomes of surrogacy arrangements show that all but a few cases of surrogate arrangements go smoothly, with all parties satisfied with their involvement.²⁵⁴ Few couples experience the controversy and complications that faced the Sterns in the famous Baby M case in 1987, and few surrogates encounter the difficulties faced by Mary Beth Whitehead. Nevertheless, the Sterns are perceived as the stereotypical contracting couple, just as Mary Beth Whitehead is often viewed as the typical surrogate. The Baby M case, a dispute over custody, was atypical.

of the surrogates studied by LeeAnne Turner, *An Examination of Selected Demographic and Personality Variables of Surrogate Mothers 14-17* (Aug. 1988) (unpublished master's thesis, Tennessee State University). In a footnote, Martha Field describes the "statistically typical [surrogate] candidate [as] a twenty-five-year-old Christian married woman with a high school education and at least one child." FIELD, *supra* note 47, at 162.

249. Turner, *supra* note 248, at 27.

250. *Id.* at 25.

251. Fish, *supra* note 237, at 2.

252. Turner, *supra* note 248, at 26.

253. Fish, *supra* note 237, at 4; Hanafin, *supra* note 248, at 3.

254. See Kathy Forest & David MacPhee, *Surrogate Mothers' Grief Experiences and Social Support Networks* (1989) (unpublished manuscript, available at Department of Human Development and Family Studies, Colorado State University); Hanafin, *supra* note 248, at 7.

H. EFFECTS ON THE SURROGATE

All surrogate mothers run the risk of infection from the sperm or embryo²⁵⁵ and face the possibility of medical problems related to pregnancy and birth. In both gestational surrogacy and surrogate motherhood, a woman carries a pregnancy and gives birth to a child for an infertile couple, but only in traditional surrogate motherhood is the birth mother also genetically related to the child.

Several psychological factors need to be assessed in any evaluation of the surrogacy process. Yet studies of surrogates suffer from many of the same limitations as the studies on other reproductive technologies. Most of the studies involve women who volunteer to participate, often in relation to their involvement with a surrogacy center. The biases of the centers may affect what questions are asked and may skew the evaluation of questionnaire results. The studies often use standard psychological tests, such as the MMPI, that are useful for comparison to other groups, but which cannot accurately predict how having a child and giving the child up will affect the surrogate. Further, these studies tend to focus on the surrogate's expressed responses to questionnaires rather than in-depth studies that view the surrogate in relation to her family, other surrogates, and the contracting couple.

Psychological tests are intended in part to assess whether any unhealthy motives might influence a surrogate to participate, such as grief response to traumatic reproductive experiences in the past. Turner reports that "previous loss of a fetus prior to birth may influence a woman's decision to become a surrogate mother."²⁵⁶ More than one study shows that a number of surrogates in the samples had abortion experiences that may have influenced their decision.²⁵⁷ Surrogate mother Elizabeth Kane's decision to have a child for another couple was influenced by a combination of experiences: a teenage pregnancy that resulted in giving up a child for adoption and a miscarriage that preceded the eventual births of the three healthy children she was raising when she became a surrogate.²⁵⁸ All of these experiences made Kane appreciate

255. Screening is not standardized in private arrangements and even in some surrogacy centers.

256. Turner, *supra* note 248, at 28.

257. Philip J. Parker, *Motivation of Surrogate Mothers: Initial Findings*, 140 AM. J. PSYCHIATRY 117, 118 (1983); Hanafin, *supra* note 248, at 2. Thirteen percent of the women in Hanafin's sample had had more than one abortion. The fact is only meaningful compared to the rate of abortion for a demographically matched population, however, so the importance of this factor is unknown. *Id.*

258. ELIZABETH KANE, BIRTH MOTHER 2, 12 (1988).

parenthood and sympathize with the situation of the infertile.²⁵⁹ Women like Kane and Mary Beth Whitehead, the surrogate mother in the Baby M case, view their participation as motivated by a desire to help others through offering a service they feel qualified to provide.

Despite the unusual circumstances of the surrogacy arrangement, studies suggest that surrogates do not experience high degrees of anxiety about the pregnancy or its outcome. One study of twelve surrogates at six and ten weeks gestation showed that they had more confident attitudes about the pregnancy and less fear of losing the pregnancy than did a comparison group of thirty women who became pregnant through IVF.²⁶⁰ Surrogates also tend to be younger than IVF mothers and younger than the women in the contracting couples. Perhaps because many had uncomplicated previous pregnancies, the surrogates demonstrated low anxiety levels related to the process and also showed a lower level of attachment to the fetus as compared to a group of patients undergoing IVF.²⁶¹

One of the major psychological concerns about surrogate mothers is that they may suffer after relinquishing the child because of the "attachment" or "bonding" that is presumed to be an important aspect of pregnancy, childbirth, and the post-partum period. Some research suggests there is a correlation between a surrogate's attachment to her own parents and children and her ability to relinquish the newborn to the contracting couple.²⁶² Several reports suggest that when the surrogate knows the couple or the adopting women, she feels more at ease about separating from her child. Indeed, the ties a surrogate develops with the contracting couple may be more important than is often realized. In a study of forty-one surrogates, twenty-two percent of the women felt that giving up the baby was the most emotionally difficult aspect of the experience, but twenty-five percent said that the most difficult aspect was losing contact with the contracting parents.²⁶³ The same study found that seventy-five percent of the women considered the most rewarding part of their experience to be the "creation of a family, giving the gift of life, seeing the beautiful baby, or seeing the couple's happiness,"²⁶⁴ suggesting

259. *Id.* at 14-31.

260. Reading & Hanafin, *supra* note 101, at 2-3.

261. *Id.* at 7.

262. Resnick, *supra* note 236.

263. Forest & MacPhee, *supra* note 254, at 17. The conclusions of Hilary Hanafin, *supra* note 248, at 5, in her study of eighty-nine surrogates in the Los Angeles area were similar.

264. Forest & MacPhee, *supra* note 254, at 21.

that the surrogates viewed the arrangement as a collaboration between the couples and themselves.

A surrogate gestational mother may be even less likely to bond to the child, because she is not genetically related to it. In a psychiatric follow-up one year after the birth of the first IVF-surrogate gestational child, the physicians who carried out the procedure found that both the surrogate and the infertile couple reported favorable attitudes toward the experience.²⁶⁵ According to the physicians, the surrogate gave the child to the infertile couple "without any qualms," had undergone "extremely little emotional disturbance," and had made no strong attachment to the child.²⁶⁶

In later telephone interviews with the surrogate and her husband two and three years after the birth of the child, the physicians reported that neither the surrogate nor her husband expressed any regrets. The surrogate and her husband had since had another child of their own.²⁶⁷ The infertile couple reported feeling extreme pleasure and joy about the outcome of the arrangement.²⁶⁸

It is difficult to generalize about the psychological effects of surrogacy from just one case. It is questionable, however, to presume that a mother of any kind necessarily goes through a specific type of bonding process. Critics of surrogacy such as Barbara Katz Rothman value the process of "growing" a child over other aspects of motherhood.²⁶⁹ In her view, both types of surrogate mothers, regardless of whether they are genetically related to the child, experience the most important aspect of being a mother. In this view, surrogacy represents a threat to the sanctity of the mother/child bond. Yet even birth mothers in traditional arrangements may or may not experience this bonding. How a mother feels about her child is socially constructed rather than naturally given, and varies among individuals in our own society as well as cross-culturally.

Empirical studies of surrogates suggest that most remain committed throughout their pregnancy to creating the child for another couple to

265. Wulf H. Utian et al., *supra* note 232, at 634.

266. *Id.*

267. *Id.*

268. *Id.*

269. ROTHMAN, *supra* note 16, at 243.

raise. Of twenty-six women who had children via surrogate arrangements at one center, only one displayed a negative response to the experience.²⁷⁰ Of the twenty out of thirty-seven surrogates who responded to a follow-up questionnaire by Hanafin, none reported any regrets about participation. Hanafin concludes that the minimal literature to date suggests that "surrogate mothers do not exhibit pathological personalities and appear to function well both before and after the birth."²⁷¹

I. EFFECTS ON THE CHILD

Professionals appear to know least about the effects on the child. This is because most of the children born in relation to surrogacy contracts are still quite young, and, after the emotionally trying process involved in the child's creation, their families may not be eager to participate in follow-up studies. Therefore, most of what we can discern about the children of surrogacy must be extrapolated from data about other arrangements and practices that are similar but more common. For example, the situation of a child born through a surrogate arrangement resembles that of an adopted child, except that the former will be related to one or both of the rearing parents. Although surrogacy involves the same medical procedure as AID, surrogacy has a very different social meaning. Most rearing parents of a child born through a surrogate arrangement tell the child of its origins. One factor in this decision is the difficulty of keeping such an arrangement secret when it is obvious that the contracting woman has not been pregnant.

While adoption is now widely accepted and AID is quite commonly used, surrogacy, by contrast, is novel and controversial. This novelty presents the greatest potential for creating psychological harm. How the child handles growing up as the product of an unusual arrangement is likely to depend on the attitude of the rearing parents and the quality and consistency of the relationship (or lack of relationship) with the surrogate mother. Hanafin's study of eighty-nine surrogates and adopting couples found that all parties agreed that "knowing each other" benefited the children.²⁷² In some cases, the surrogate's husband and children also grew close to the other family.²⁷³

270. Fish, *supra* note 237, at 7.

271. Hanafin, *supra* note 248, at 8.

272. *Id.* at 7.

273. Andrews, *supra* note 3. Ketchum, *supra* note 241, at 124, notes that the surrogate family forms an attachment during pregnancy.

IX. THE SOCIAL EFFECTS OF ALTERNATIVE REPRODUCTION

The involvement of third parties in the creation of a child threatens our common assumptions about family. Critics may view third party arrangements as intrusions into the sanctity of the emotional bonds of family and as fragmentations of the normally integrated process of reproduction. Alternatively, such arrangements can challenge the definition of "family," creating a greater interdependence among individuals and families, or may be vehicles for creating new family forms.²⁷⁴

Some observers view surrogacy as simply the inverse of donor insemination, because infertile women and single men can contract with a surrogate in the same way that infertile men and single women can seek the assistance of a sperm donor. However, what is being "donated" in the two arrangements is hardly comparable. Surrogate motherhood involves a third party in a way that is distinct from all the other technologies. The third parties in other technologies are gamete or embryo donors who have no direct involvement with the gestation and birth processes.²⁷⁵ The surrogate mother's involvement is unique because it includes substantial medical risks and entails the rupture of a symbolically powerful relationship, venerated by our society, between birth mother and child.

Many critics believe that surrogacy exacerbates the already devalued place of women in our society. Critics such as Andrea Dworkin view surrogacy as akin to prostitution.²⁷⁶ Surrogacy is often criticized for treating women as "rented wombs." The segmentation of the reproductive process—in which one woman carries a conceptus that will become a child intended for others—conjures up images of the woman as "vessel," that is, as a mere container and nurturer who works in the interests of others. According to this view, women become objects rather than persons with wills of their own.

Although surrogates themselves say they derive a sense of pride and satisfaction from helping others in this way, some critics argue that women's willingness to act as surrogates is no endorsement of the arrangement. Instead, they suggest that such altruism, which motivates

274. For a discussion of the effect on family, see Thomas C. Shevory, *Rethinking Public and Private Life Via the Surrogacy Contract* (1989) (unpublished paper presented to the American Political Science Association).

275. Ketchum, *supra* note 241, at 117. Donating sperm is not even equivalent to donating ova, because the latter entails a potential medical risk while the former does not.

276. DWORKIN, *supra* note 40, at 181-88.

a woman to take a risk on behalf of someone else, should be discouraged because women have traditionally tended to concern themselves with the needs of others. This critique condemns women who agree to participate in these programs and who are willing to give up their children.²⁷⁷ Yet behind this condemnation may lie other concerns, as Zipper and Sevenhuijsen note: "The Surrogate Mother has become . . . the personification of anxieties about unpredictable technological and social developments."²⁷⁸

X. DIRECTIONS FOR FUTURE RESEARCH

Alternative reproduction provides new options for infertile people, and for those who do not wish to pass on a genetic defect to their children. However, many observers fear that increased technological intervention in procreation creates more problems than it resolves. They express concern about the effects these technologies might have on the physical and psychological well-being of the individuals involved and the children they produce. They also question the symbolic consequences of these technologies on our views of personhood, reproduction, and the family.

Because women must undergo the majority of medical interventions, the availability of these technologies may compel women to submit themselves to procedures that are risky and that may not even produce the desired result. These technologies may make poor and minority women vulnerable to exploitation. The policy debates thus far, however, have generally failed to inquire into the actual experiences of women in these arrangements. The debates have often seemed trapped in a belief that all women feel the same about pregnancy and reproduction. But the developments surrounding abortion and contraception over the past thirty years have demonstrated that not all women relate to all pregnancies in the same way. A woman may choose not to be a rearing mother at all. She may choose to lead a child-free life by not getting pregnant. If she gets pregnant, she may choose to abort. Pregnancies may have a variety of meanings, as does genetic linkage. Some women feel they are doing something important for themselves and society when they participate in reproductive technologies.

While it might be argued that certain reproductive technologies should be prohibited because of potential physical or psychological harm

277. Zipper & Sevenhuijsen, *supra* note 243, at 119-20.

278. *Id.* at 138.

to the users, these harms must be viewed in the proper context. The potential psychological harms of using a procedure, for example, must be weighed against the potential psychological harm of *not* using the procedure. Researchers from the social sciences²⁷⁹ and medicine²⁸⁰ have long recognized that inability to bear a child is psychologically traumatic. Techniques that involve the use of donor gametes, where one rearing parent will not be genetically related to the child, might seem to cause psychological strain on the infertile individual or to the couple. Yet, the psychological literature suggests that users of IVF and AID are satisfied with the procedure.²⁸¹ Thus, banning a technique based on potential psychological harm might lead to greater psychological difficulties. Based on the empirical evidence to date, the physical or psychological risks of alternative reproduction are comparable to other risks we allow people to run in various aspects of their lives (such as the risks of normal reproduction or reproduction assisted by fertility drugs or surgery).

The uneasiness about reproductive technologies results in part from its effect on areas of life that we simultaneously view as sacred and take for granted. People begin to feel uneasy when “*mater semper certa est*” is no longer true. Surrogate motherhood, for example, causes us to question the meaning of the mother/child bond, a bond that some consider the one unquestionable, necessary, and inescapable truth.

All of these novel reproductive procedures and arrangements force us to examine relations we now take for granted. The implicit assumptions about the natural way of conceiving and bearing a child needs to be as fully examined as these more exotic methods. It is worth considering some of the same dangers inherent in so-called natural reproduction that are merely exaggerated by assisted technologies.

Some people fear medical intervention into what they perceive as a natural realm of private life. However, the way humans reproduce has never been thoroughly “natural”; an examination of the multitude of ways different societies construe family and parenthood makes that clear.

279. See, e.g., BARBARA MENNING, *INFERTILITY: A GUIDE FOR THE CHILDLESS COUPLE* (1977).

280. Ellen Bresnick & Melvin Taymor, *The Role of Counseling in Infertility*, 32 *FERTILITY & STERILITY* 154 (1979).

281. General satisfaction with AID seems to be widespread and consistent. See, for example, an early Dutch study by Levie, *An Inquiry into the Psychological Effects on Parents of Artificial Insemination with Donor Semen*, 59 *EUGENICS REV.* 97, 97-105 (1967), and the more recent results in John Leeton & June Blackwell, *A Preliminary Psychosocial Follow-Up of Parents and Their Children Conceived by Artificial Insemination by Donor (AID)*, 1 *CLINICAL REPRODUCTION & FERTILITY* 307 (1982). For a discussion of IVF patient satisfaction, see Holmes & Tymstra, *supra* note 17; Lieblum et al., *supra* note 24.

Furthermore each society, including our own, believes that its way is the natural one. Reproductive technologies intervene in our own idea of nature. They disturb what we consider a natural order and fragment what ideally are integrated social processes.

Those who view these technologies with optimism suggest that they create the possibility of more inclusive and positive forms of family collaboration. Whether these technologies serve to reinforce the status quo or allow new possibilities depends on the discourse that surrounds them. For "[i]t is not technology itself that complicates theory and strategy. What makes it complicated are the *terms* in which technology and its social consequences are spoken about, as well as the power relations surrounding it."²⁸² The legal policies surrounding both traditional and alternative reproduction should be designed with the issues of power and its social consequences in mind.

282. Zipper & Sevenhuijsen, *supra* note 243, at 120.