



SCHOOL OF LAW
CASE WESTERN RESERVE
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**Health Matrix: The Journal of Law-
Medicine**

Volume 10 | Issue 2

2000

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Available at: <https://scholarlycommons.law.case.edu/healthmatrix/vol10/iss2/7>

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“THE ORIGINAL SEXIST SIN”: REGULATING PRECONCEPTION SEX SELECTION TECHNOLOGY

Rachel E. Remaley[†]

“We should not choose the sexes of our children because to do so is one of the most stupendously sexist acts in which it is possible to engage. It is the original sexist sin.”¹

I. INTRODUCTION

ACCURATELY SELECTING THE SEX OF A CHILD has been a goal of many civilizations throughout history.² Accordingly, superstition has created many outrageous practices for producing a child of the desired sex at the time of conception and just as many silly indications for determining the sex of a child in the womb.³ For instance, recommendations for producing males in-

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¹ Joni Danis, *Sexism and “The Superfluous Female”: Arguments for Regulating Pre-Implantation Sex Selection*, 18 HARV. WOMEN’S L.J. 219, 241 (1995) (quoting Tabitha M. Powledge, *Unnatural Selection: On Choosing Children’s Sex*, in THE CUSTOM-MADE CHILD 193, 196 (Helen Holmes et al. eds., 1981)).

² See PETER SINGER & DEANE WELLS, MAKING BABIES: THE NEW SCIENCE AND ETHICS OF CONCEPTION, 150 (1985) ((pointing out that people have tried to choose the sex of their children since ancient times); see also Marilyn H. Karfeld, *Selecting a Baby’s Gender Raises Ethical Questions: Scientists Develop Method So Parents Can Pick Their Child’s Sex. Is It the Right Thing to Do?*, CLEVELAND JEWISH NEWS, Sept. 25, 1998, available in 1998 WL 11351325 (explaining that “[p]arents have always been interested in selecting the sex of their offspring” and even “[i]n the Talmud, the rabbis instruct men in the proper method to conceive a male child”); MARY ANNE WARREN, GENDERCIDE: THE IMPLICATIONS OF SEX SELECTION 6 (1985) (describing preconception folklore prescriptions for controlling a child’s sex).

³ See, e.g., Owen D. Jones, *Sex Selection: Regulating Technology Enabling the Predetermination of a Child’s Gender*, 6 HARV. J.L. & TECH. 1, 3-7 (1992) (presenting a thorough discussion of many historically symbolic and biologic methods of preselecting the sex of children); see also, Frederic Golden, *Boy? Girl? Up to You*,

clude having sex in dry weather when the moon is full, the nut harvest is plentiful, and there is a north wind.⁴ Also, women were encouraged to pinch their husband's right testicle before intercourse or to dress in men's clothing at bedtime on their wedding nights.⁵ For lack of an effective preconception method of selecting the sex of one's child, many parents throughout history have resorted to selective abortion and infanticide to guarantee the sex of their children.⁶ These practices have generally been frowned upon, although the superior value of male children in most cultures has remained a driving force for their utilization.

More recently, advances in assisted reproductive technologies have provided parents with an accurate method of selecting the sex of their children before conception. At this time, two methods that provide the best prospects for sex selection are pre-implantation genetic diagnosis (PGD) of embryos and sperm-sorting through flow cytometry. The ethical and legal dilemmas presented by pre-

TIME, Sept. 21, 1998, at 82, 82 (explaining sex selection techniques of early history, such as Greek men lying on their right side during intercourse to produce male children, French men tying off the left testicle during intercourse to produce males, and German and Danish practices of placing hammers and scissors under the bed to produce boys or girls, respectively); *Will it be a Girl or a Boy?* (visited Feb. 15, 1999) <<http://www.childbirth.org/articles/boyorgirl.html>> (presenting various methods for evaluating the sex of a baby, including: where the mother is carrying the extra weight associated with pregnancy, whether the mother prefers the heel or slices from the middle of a loaf of bread, whether the mother looks good during pregnancy, what color of yellow the mother's urine is, whether she has been craving sweet or salty and sour foods, and many others); Chinese Lunar Calendar (visited Feb. 15, 1999) <<http://www.holodeck.com/pregnancy/chinese-cal.html>> (presenting a calendar that reportedly allows parents to plan the sex of their child based on the woman's conceiving age and the month of conception); Centre Jonas International Natural Fertility – Gender Selection, (visited Jan. 21, 1999) <<http://www.usmev.com.au/gender.htm>> (selling fertility kits which provide not only a schedule of fertile days for the year, but also a “chance to choose the sex of your two children . . . in the pre-conception stage” based on information that the mother provides in her application).

⁴ See WARREN, *supra* note 2, at 6 (quoting Letty Cottin Pogrebin, GROWING UP FREE: RAISING YOUR CHILD IN THE 80'S 82 (1981)).

⁵ See *id.* (providing additional folklore methods for couples to control the sex of their children).

⁶ See Vicki G. Norton, *Unnatural Selection: Nontherapeutic Pre-implantation Genetic Screening and Proposed Regulation*, 41 UCLA L. REV. 1581, 1600 (1994) (noting that the use of sex-selective abortions has skewed gender ratios in countries such as India and China, while countries such as the United States do not perceive a need to regulate abortion based on sex-selection); see also Danis, *supra* note 1, at 224 (stating that the earliest form of sex selection was Infanticide, particularly the killing or neglect of female infants)(citations omitted); Olivia P. Judson, *Killing the Sex Ratio*, 372 NATURE 503, 503 (1994); See generally WARREN, *supra* note 2 (stating that the evidence of anti-female gendecide is clear and unambiguous).

conception methods of sex selection vary in many ways from those presented by post-conception techniques. Therefore, an analysis of whether and perhaps how, the legal framework designed to protect and regulate post-conception selection methods applies to pre-conception selection methods is in order.

There are many reasons why parents desire to have the ability to select their children's sex. Using assisted reproductive technologies to select sex was developed to prevent the transmission of sex-linked genetic diseases.⁷ However, in its relatively unregulated state, reproductive technology is open to non-therapeutic use. As one author has noted, "[m]ost sex selection has no relationship to genetic disorders. It is solely for the sex desired by the parents."⁸ Non-therapeutic reasons for sex selection include religious, social, and economic pressures put on parents to produce children of a certain sex.⁹ So long as parents, for whatever reason, continue to desire one sex over another, society will be faced with the prospect of the increased use of sex selection techniques and its resultant effects on children, parents, medical providers, and the public.

This Note will discuss the unique legal and ethical dilemmas presented by preconception sex selection techniques. Part II offers some background of the medical aspects of the two procedures on which the Note focuses: PGD and sperm-sorting through flow cytometry. Part III offers an analysis of preconception sex selection techniques within the current constitutional framework of reproductive rights. Part IV provides an analysis of regulation in the reproductive technologies field and how they may be applied to preconception sex selection techniques, and suggestions for regulation specific to preconception sex selection.

⁷ See John A. Robertson, *Genetic Selection of Offspring Characteristics*, 76 B. U. L. REV. 421, 449 (1996).

⁸ Dorothy C. Wertz, *Sex Selection*, in *ENCYCLOPEDIA OF BIOETHICS* 2212, 2213 (Warren Thomas Reich ed., 1995) (providing an overview of the ethical, medical, and legal aspects of modern sex selection techniques).

⁹ Committee on Ethics, American College of Obstetricians & Gynecologists, *ACOG Committee Opinion: Sex Selection*, 56 INT'L J. GYN. & OB., 199, 199 (1997) [hereinafter Committee on Ethics] (discussing the ethical considerations and arguments relevant to sex selection).

II. BACKGROUND

A. Pre-implantation Genetic Diagnosis

In 1989, pre-implantation genetic diagnosis (PGD) was performed for the first time.¹⁰ As of May 1999, less than two-hundred babies have been born of PGD.¹¹ PGD was developed to serve a therapeutic purpose: to identify and deselect genetically abnormal embryos prior to implantation, thus providing parents who are at high-risk of producing children with genetic abnormalities with another option besides the often troublesome experience of in-utero diagnosis and abortion or, alternatively, the birth of a genetically abnormal child.¹² PGD can be used to diagnose many diseases, including cystic fibrosis, Tay-Sachs disease, Duchenne's muscular dystrophy, Fragile X, and Down syndrome.¹³

In the pre-implantation genetic diagnosis procedure, the mother is given hormones to stimulate her ovaries to process more than one egg per cycle. Then her eggs are retrieved and combined with the father's sperm in a petri dish.¹⁴ Following fertilization of the egg, when the embryo is between the six and ten cell phase, a cell, called a blastomere, is removed and examined for genetic abnormalities or, in the case of sex selection, for X and Y chromosomal composition.¹⁵ At this stage of division, the cells of the embryo are pluripotent,¹⁶ and

¹⁰ See *American Society for Reproductive Medicine Fact Sheet: Pre-implantation Genetic Diagnosis* (visited Jan. 21, 1999) <<http://www.asrm.org/Patients/FactSheets/preimpl.html>> (explaining the background and basic processes of PGD); see also *Pre-Implantation Genetic Diagnosis* (visited Sept. 17, 1999) <http://www.religious.tolerance.org/abo_pgd.htm> (discussing the procedure of pre-implantation genetic diagnosis, including both the advantages and objections).

¹¹ See Patricia Anstett, *Test Reveals Gene Defects Much Earlier: In Vitro Procedure Finds Sickle-Cell Trait* (visited July 5, 1999) <<http://www.freep.com/news/health/qsickle12.htm>> (discussing the use of pre-implantation genetic diagnosis to check for the sickle cell trait).

¹² See Robertson, *supra* note 7, at 449 (providing a discussion of PGD, its uses, and alternatives).

¹³ See Richard J. Tasca & Michael E. McClure, *The Emerging Technology and Application of Pre-implantation Genetic Diagnosis*, 26 J.L. MED. & ETHICS 7, 7 (1998) (describing genetic disorders that can be diagnosed with pre-implantation genetic diagnosis procedures).

¹⁴ See Norton, *supra* note 6, at 1593-96 (providing a very good and understandable general description of pre-implantation genetic diagnosis procedures).

¹⁵ *Id.*

¹⁶ A pluripotent cell is one that has not been differentiated (permanently destined to become certain tissues of the body, such as heart, lung, liver, skin, etc.). Therefore, a pluripotent cell still has the potential to become any of the various types of tissues found in a human being. *Id.* at 1594.

therefore, the removal of one cell is not thought to harm the developing embryo. Those embryos having the desired characteristics are implanted through invitro fertilization (IVF),¹⁷ and those that do not have the desired composition are either donated to an adoptive couple or are discarded.¹⁸

Although PGD provides good prospects for deselection of an embryo affected with one of many identified genetic abnormalities, its use is still limited by the fact that, for many diseases, scientists are unable to identify the specific mutations causing the abnormality and therefore, detection prior to fertilization is impossible.¹⁹ To summarize, certain diseases cannot be genetically detected, but are linked to a sex chromosome in such a way that only boys of the prospective parents in question can be affected.²⁰ In order to prevent the birth of an affected male child, pre-implantation genetic selection has been offered to parents to select females who are, necessarily, unaffected. Therefore, like PGD itself, use of PGD for sex selection was developed for a therapeutic purpose.²¹ But, “[s]cience does not operate in a vacuum; context influences how a technology is used”²² and sex selection using PGD for non-therapeutic purposes is quickly becoming reality.

¹⁷ *Id.* at 1596.

¹⁸ See Pre-Implantation Genetic Diagnosis, *supra* note 10 (discussing the process of embryo implantation).

¹⁹ See Anne-Marie Nagy et al., *Scientific and Ethical Issues of Pre-implantation Diagnosis*, 30 ANNALS OF MED. 1, 3 (1998). “Up to now, 300 X-linked disorders have been described which represent 16% of the recessive monogenic diseases. For most of them, a specific diagnosis of the deleterious mutation is not commonly available. The female sex selection remains the only alternative to avoid an affected child”. *Id.*

²⁰ An X-linked disorder is one in which the defective genetic trait is transferred along with the X chromosome. When a male child receives an X chromosome that is linked to the defect, he will be affected. But, when a female child receives an X chromosome that is linked to the defect, her other X chromosome, if unaffected, will dominate and she will thus be unaffected by the disease. Therefore, if it is determined that one, but not both, parents are carriers for the X-linked disorder, it is guaranteed that all female children will be unaffected.

²¹ See Robertson, *supra* note 7, at 449 (providing that a couple who undergoes noncoital IVF conception to employ PGD avoids the burden of prenatal diagnosis and the pain of ending an unwanted pregnancy).

²² J.A. Nisker & M. Jones, *The Ethics of Sex Selection*, in 7 ETHICAL DILEMMAS IN ASSISTED REPRODUCTION 41, 41 (F. Shenfield & C. Sureau eds., 1997).

B. Sperm-sorting

Another method of preselecting the sex of a child is to use sperm-sorting. Past methods of sorting sperm have been relatively unsuccessful and have received little support from the scientific community. But a new method developed recently by the Genetics & IVF Institute in Fairfax, Virginia, shows promise. The technique is based on a common method of sorting animal sperm for agricultural purposes that has been adjusted for use on humans.²³ It works by using a laser beam to detect dyed chromosomes within the sperm. Since X chromosomes have 2.8% more DNA than Y chromosomes, they glow brighter underneath the laser light. Following chromosomal detection, the sperm are sorted using an automated sorting machine.

III. ANALYSIS

In order to prevent discrimination against women and the potential of preconception selection of an embryo's sex, governmental regulation of PGD and sperm-sorting may be appropriate. Whenever the government seeks to restrict personal reproductive choices, issues of constitutional protection, specifically under the Substantive Due Process doctrine, arise. Despite the protection often provided to reproductive decisionmaking, it is clear that Substantive Due Process protection only extends so far and that the protection is not absolute, even when extended to a decision. Governmental interference is allowed in certain circumstances, depending on the degree of protection the reproductive decision demands and the severity and likelihood of the harms resulting from the unfettered freedom to make that decision. Because assisted reproductive technologies have not yet been given the same protections as other reproductive matters, we can merely hypothesize about the degree of protection that they will receive from the Supreme Court. Similarly, because the use of PGD and sperm-sorting for preconception sex selection is relatively cutting edge, the degree of harm likely to result from nonregulation is somewhat speculative. In light of these uncertainties, it is difficult to predict what forms governmental regulation should assume. Regardless, I will attempt to resolve some of these issues to determine if and how the government may regulate preconception sex selection given its status as a subset in the penumbra of reproductive decisions.

²³ See Golden, *supra* note 3, at 82 (discussing the application of sex selection technology used with animals to humans); see also Randeep Ramesh, *Can You Trust That Little Glow When You Choose Sex?*, THE GUARDIAN (Manchester, England), Oct. 6, 1998, at 14 (describing new sex-selection techniques).

A. Substantive Due Process – Procreative Liberty

Within the constitutional framework of the American legal system lies a recognized substantive due process right for persons to be free from undue interference by the states in making certain reproductive decisions. Whether or not preconception sex selection receives this constitutional protection is an unresolved issue.²⁴ Constitutional protection for reproductive technology is argued by some legal scholars, because “legal restrictions on use of noncoital reproductive techniques might preclude persons from the only reproduction possible for them [and] their procreative liberty would be limited significantly.”²⁵ But, that does not necessarily lead to the right to unbridled use of such technologies. If the reproductive decision in question is subject to protection, generally there must be a compelling state interest in order to restrict the right at all. In addition, any restrictions must be necessary, and thus narrowly tailored so as not to be over inclusive, for the accomplishment of those compelling state interests.²⁶ On the other hand, if the reproductive decision in question is not protected as a fundamental right, the state can restrict that decision in order to serve any rational state interest. Therefore, it is important to establish what constitutional protection sex selection through preimplantation genetic diagnosis or sperm-sorting receives under these doctrines. Consequently, an analysis of substantive due process doctrine and its application to preconception sex selection follows.

The substantive due process right to procreative liberty arose from cases challenging statutes, which restricted access to contraceptives, abortion services, and other private expressions of sexuality.²⁷ The right to avoid having children has been explicitly decided in many cases.²⁸ However, the right to have children “has not received

²⁴ See generally Danis, *supra* note 1, at 247-48 (discussing whether the potential constitutional right at issue should be defined broadly, as a right to make a reproductive choice, or narrowly, as the right to choose the sex of one's child).

²⁵ John A. Robertson, *Embryos, Families, and Procreative Liberty: The Legal Structure of New Reproduction*, 59 S. CAL. L. REV., 939, 954 (1986) (describing potential effects of restrictions on procreative liberty).

²⁶ See Jones, *supra* note 3, at 35-36 (discussing the application of the strict scrutiny standard of judicial review to sex-selection issues).

²⁷ See Roberstons, *supra* note 7 at 425-26 (1996) (citing *Griswold v. Connecticut*, 381 U.S. 479, 503 (1965), *Eisenstadt v. Baird*, 405 U.S. 438, 454-55 (1972), *Roe v. Wade*, 410 U.S. 113, 164-65 (1973), and *Casey v. Planned Parenthood*, 505 U.S. 833, 878-79 (1992)).

²⁸ See *id.*

the explicit legal recognition that the avoidance of procreation has.”²⁹ This is probably attributable to the fact that procreation is vastly accepted by society and thus has not been restricted by state law.³⁰ Despite the lack of direct case law protecting coital reproduction, the Supreme Court has recognized, *in dicta*, rights to reproduction within marital relationships.³¹ The protection spoken of arguably applies to both coital and non-coital reproduction.³² For instance, in the 1942 case, *Skinner v. Oklahoma*, the Court began its opinion: “[t]his case touches upon a sensitive and important area of human rights . . . which [is] basic to the perpetuation of a race – the right to have offspring.”³³ The Court went on to describe the legislation in question as dealing with “basic civil rights of man” and said that “[m]arriage and procreation are fundamental to the very existence and survival of the race.”³⁴ Similarly, in the 1972 case *Eisenstadt v. Baird*, the Court said that “[i]f the right of privacy means anything, it is the right of the *individual*, married or single, to be free from unwarranted governmental intrusion into matters so fundamentally affecting a person as the decision whether to bear or beget a child.”³⁵

Different Supreme Court Justices have determined the scope of substantive due process through different formulations throughout time. For instance, Justice Scalia looks to whether the right at issue has traditionally received protection in our society.³⁶ Other Justices look to whether the right can be restricted without “violating ‘those

²⁹ Robertson, *supra* note 25, at 955. See also Norton, *supra* note 6, at 1620 (explaining that the Supreme Court has not directly addressed whether substantive due process guarantees the right to bear children).

³⁰ See Robertson, *supra* note 25, at 955 (justifying the absence of legal recognition of the right to procreate).

³¹ See *id.* at 958 (discussing the Supreme Court’s recognition of a married couple’s right to procreate).

³² See *id.*

³³ *Skinner v. Oklahoma*, 316 U.S. 535, 536 (1942) (striking down, on equal protection grounds, a state law requiring sterilization of habitual criminals).

³⁴ *Id.* at 541.

³⁵ *Id.* at 453 (striking down, on equal protection grounds, a state statute permitting married persons access to contraceptives, but denying access to contraceptives for unmarried persons).

³⁶ See generally Nicole L. Cucci, *Constitutional Implications of In Vitro Fertilization Procedures*, 72 ST. JOHN’S L. REV. 417, 426 (1998) (discussing the Court’s reliance on tradition in finding rights to be fundamental and noting their reluctance to expand the substantive due process doctrine to encompass more rights); Michael H. v. Gerald D., 109 S. Ct. 2333, 2341-42 (1989) (defining the Court’s interpretation of fundamental rights rooted in the traditions of our society).

fundamental principles of liberty and justice which lie at the base of all our civil and political institutions.”³⁷

Use of sex selection technology to ensure the sex of one’s child purely for the satisfaction of the parent’s own desires cannot be said to fall into the substantive due process doctrines developed by any of these Justices, who based on their notions of tradition and respect for fundamental principles of society, have found increased protections for choices such as whether or not to have children.³⁸ Unlike those cases, sex selection does not deal with whether or not parents can have a child at all, but rather, which kind of child they will have.³⁹ Although parents for a long time have wished to select the sex of their children, choosing the sex of children has not been traditionally recognized and protected by society. Likewise, regulating sex selection would not violate basic principles of liberty and justice. In fact, by providing equal protection to society’s female citizens such regulation would promote America’s basic principles of liberty and justice. Accordingly, preconception sex selection will not fall into the substantive due process doctrine’s protection of fundamental reproductive rights.

By contrast, John Robertson, a widely published author on the topic of assisted reproductive technologies, argues that because a woman is constitutionally given the right to avoid reproduction for any reason, she is entitled to avoid reproduction for any specific reason.⁴⁰ Therefore, he concludes that states may not deny her information that would be imperative to her decision of whether or not to reproduce,⁴¹ such as information concerning the sex of the embryo. Constitutional protection of the right to pre-birth information, therefore, depends on the assumption that the information will be determi-

³⁷ Danis, *supra* note 1, at 249 (quoting *Griswold v. Connecticut*, 381 U.S. 479 (1965)(citations omitted)).

³⁸ See Jones, *supra* note 3, at 36-40 (providing an interesting and detailed discussion of why sex selection is not a fundamental right under the due process doctrine).

³⁹ See Danis, *supra* note 1, at 250 (arguing the inapplicability of the same standards of protection afforded to cases involving the fundamental rights of parents to produce or raise a child to cases involving the selection of the child’s sex).

⁴⁰ See Robertson, *supra* note 7, at 427. “If a couple would not reproduce if a child had gene A but would if it had gene B, procreative liberty should protect their decision not to reproduce in the first case and to reproduce in the second. Denying them information about A or B, or denying them the ability to make reproductive choices based on that information will interfere with their procreative liberty.” *Id.*

⁴¹ See *id.* at 425-27 (arguing that because reproductive liberty is a fundamental right, a state’s efforts to deny a person information that directly affects the reproductive decision of an individual would be prohibited).

native of whether the parents will choose to reproduce.⁴² It follows, from Robertson's argument, that if parents would consider the sex of their child determinative of their decision to reproduce, then the decision to select sex must be constitutionally protected. The problem that arises with this theory, and one which Robertson himself recognizes, is that there is no way to determine whether or not the information would be determinative of a parent's choice.⁴³ A subjective test used to ask parents whether they would have children even if they couldn't have access to such technology, but if parents wanted to use the procedure, they could easily lie and say that they would have no children if they cannot select their sex.⁴⁴ Therefore, a subjective test would not solve the problem. An objective test could be used to evaluate a reproductive decision based on whether a reasonable person would find such information determinative of his/her decision to reproduce. However, this procedure would fail to take into consideration the personal and differing views of reproduction held by the varying members of society.⁴⁵ So, an objective test would not solve the problem either.

In accord with my conclusions that sex selection does not receive protection as a fundamental right, another author proposed that a woman is given a constitutional right to have access to abortion services in order to terminate a pregnancy, because the courts have recognized the right not to have a child. She deduces that this right leads to a right to have a child, and thus to the right to access technology to have a child. However, she stresses that the right to have a child at all, and the right to select certain characteristics of that child, are entirely separate.⁴⁶ As I briefly discussed before, I am in agreement with this theory and feel that it exposes the major flaw in Robertson's argument. The right to not have a child for any reason does not logically encompass the right not to have a child for any specific reason. In developing the right to not have a child for any reason, the Supreme

⁴² See *id.* at 428-29 (stating that the scope of the pre-birth liberty right to select an offspring's characteristics depends on whether the selected characteristic is central or material to the reproductive decision and on the nature and probability of harm that flows from the selection effort).

⁴³ See *id.* at 430. "A crucial issue is how to measure the materiality of a particular genetic trait to a decision whether or not to reproduce." *Id.*

⁴⁴ See *id.* (describing the drawbacks of using a subjective standard in evaluating individual choice to select gender).

⁴⁵ See *id.* (suggesting that some combination of an objective and subjective test will emerge to resolve these differences).

⁴⁶ This discussion is found in Norton, *supra* note 6, at 1620-22 (describing the right to affirmative procreation based on past Supreme Court decisions and the relationship of the right to IGS and IVF).

Court, in *Roe v. Wade*, evaluated the burdens associated with carrying, delivering, and raising a child.⁴⁷ They concluded that the burdens were so large that the state could not interfere and force the woman to carry the child until the point when the embryo's interests outweighed the mother's interests in avoiding those burdens. The weight of the mother's burdens is significantly different when considering sex selection.⁴⁸ Since the burdens on the mother in carrying, delivering, and raising a child will exist whether the mother has a son or a daughter, these are not burdens which can be weighed against the state's interests. The burdens associated with carrying a child of one sex versus the other sex can only be the burdens associated with raising a daughter versus a son. These burdens are not compelling enough to lead to the conclusion that the state cannot interfere with the right to select sex in order to serve its interests.

Although comfortably concluding that preconception sex selection is not entitled to the protection of the strict scrutiny doctrine, I would be remiss if I didn't note that if the Supreme Court, tomorrow, found that it was entitled to protection as a fundamental right, we would not be surprised as stranger things have happened. My goal in this Note is to work through the constitutional analysis of preconception sex selection for the purpose of providing the background necessary to develop and evaluate a framework for workable and enforceable regulations of preconception sex selection. Therefore, I proceed from this point on the assumption that the Supreme Court would apply rational scrutiny to restrictions on preconception sex selection.⁴⁹ At the same time, however, I provide an analysis of how this framework would "play out" should preconception sex selection be recognized as a fundamental right.

⁴⁷ See April L. Cherry, *A Feminist Understanding of Sex-Selective Abortion: Solely a Matter of Choice?*, 10 WIS. WOMEN'S L. J. 161, 188 (1995) (discussing *Roe v. Wade* and noting that feminists are often afraid to speak in favor of legally restricting sex-selection technology for fear that such activity will lead to destruction of hard-won reproductive freedoms, but arguing that feminists should recognize that the social harms arising out of sex-selection necessitate regulation of the procedure).

⁴⁸ See *id.* at 186. "By identifying [a fetus'] sex we have particularized it, and hence decisions regarding aborting it are based on its projected individual characteristics instead of, or in addition to, concerns about the woman, her bodily integrity, and her life circumstances. The decision to abort is then based on the fetus' qualities, not the circumstances of the woman's life." *Id.*

⁴⁹ See Jones, *supra* note 3, at 42, cited with approval in *San Antonio Indep. Sch. Dist. v. Rodriguez*, 411 U.S. 1, 17 (1973); *U.S. Dep't of Agriculture v. Moreno*, 413 U.S. 528, 533 (1973) (finding that because sex selection will not be considered a fundamental right, "any court hearing a challenge to a law prohibiting sex selection would almost certainly apply the familiar 'minimum scrutiny' analysis, asking whether the law was 'rationally' related to a 'legitimate' state interest").

B. Legitimate and Compelling State Interests for Regulating Sex Selection

If the right to select the sex of one's child is not protected as fundamental, then the state may regulate that right merely by showing that the state has a legitimate state interest. However, if preconception sex selection is entitled to constitutional protection as a fundamental right, the state must have a compelling interest in order to regulate in a manner restricting that right.⁵⁰ For instance, in *Roe v. Wade*, the Supreme Court found that the State has a compelling interest in the potential life of a fetus following the point of viability, and thus may restrict abortion procedures after that point.⁵¹ Therefore, the next important stage in analysis is to determine whether there are interests implicated by the use of preconception sex selection, which adds up to a legitimate or compelling state interest.

1. Magnitude of the State's Interests

Before addressing the many state interests in regulating preconception sex selection, it is imperative to address the practical issue of whether or not preconception sex selection is likely to be utilized enough for the listed interests to actually arise. Although it may seem odd to begin an argument for a compelling state interest by addressing the most prominent argument against such an interest existing, it is imperative that the interests advanced actually have some likelihood of occurring. There is no need to regulate a theoretical problem that does not in actuality exist and there can be no compelling interest when the likelihood of harm is so little that there is no practical affect on society arising from the use of the activity that is proposed to be regulated.⁵² Therefore, what follows is a response to the primary argument against regulating sex selection technology: that no one will use reproductive technology to choose the sex of their children for non-therapeutic purposes.

⁵⁰ See *Roe v. Wade*, 410 U.S. 113, 155 (1973) (citing *Kramer v. Union Free School District*, 395 U.S. 621, 627 (1969); *Shapiro v. Thompson*, 394 U.S. 618, 634 (1969); and *Sherbert v. Verner*, 374 U.S. 398, 406 (1963) to establish that a compelling state interest must be present to justify limitations which constrain an individual's "fundamental rights" including constraints on the right to privacy in the context of abortion decision-making).

⁵¹ See Cucci, *supra* note 36, at 425 (discussing the Court's abortion jurisprudence in relation to the constitutional implications of in vitro fertilization and specifically citing *Roe v. Wade*, 410 U.S. 113 (1973)).

⁵² See generally ANDREA L. BONNICKSEN, *IN VITRO FERTILIZATION: BUILDING POLICY FROM LABORATORIES TO LEGISLATURES* 92 (1989); Jones, *supra* note 3, at 49 (discussing the pros and cons over proposed legislation of sex-selection).

There are many reasons why sex selection is likely to gain widespread usage. First, many individuals are likely to judge the value of a non-implanted embryo (in PGD) or sperm (in sperm-sorting) to be less than that of a developing fetus.⁵³ Therefore, individuals who had previously been deterred from selecting the sex of their child because of the burdens associated with terminating pregnancy, may consider using preconception techniques for choosing sex.⁵⁴ In summary, by lessening the ethical burdens associated with the value of the potential life being disposed of, preconception technology has opened up sex selection as an option for a greater number of people than that which was available when prenatal diagnosis/ abortion was the only technological option.

A second argument is that post-conception sex selection techniques carry greater physical burdens for the parents than preconception techniques.⁵⁵ In weighing the physical burdens of each technique, it must be noted that technological advances promise greater ease for both procedures in the near future. For instance, although the burdens associated with pre-implantation genetic diagnosis followed by invitro fertilization seem great, comparatively the burdens associated with sperm-sorting with artificial insemination do not.⁵⁶ And even less burdensome is the over-the-counter sex selection kit that is currently in development.⁵⁷ But, just as the burdens decrease for preconception techniques, so do those for prenatal diagnosis/ abortion. Detection of fetal sex, in utero, is possible increasingly closer to the time of conception. Thus, the

⁵³ See Arlene Judith Klotzko, *Special Delivery*, NEW SCIENTIST, Oct. 10, 1998, at 49.

⁵⁴ See Norton, *supra* note 6, at 1598-99 (explaining why new developments may increase the demand for pre-implantation diagnosis in addition to serving as an alternative for selective abortion); Wertz, *supra* note 8, at 2213 (stating that “[p]re-implantation embryo selection could offer an alternative to parents who would find abortion for sex selection morally objectionable” and “[a]lthough about one-third of the U.S. public favors use of preconception methods of sex selection...relatively few (5 percent) approve of prenatal testing and abortion for this purpose”); SINGER & WELLS, *supra* note 2, at 151 (stating that “couples might be more inclined to reject an embryo of the unwanted sex if it could be done without abortion”).

⁵⁵ See Norton, *supra* note 6, at 1599 (explaining how pre-implantation genetic screening may be both physically and psychologically easier on the parents).

⁵⁶ See generally SINGER & WELLS, *supra* note 2, at 151-52 (adding that male and female producing sperm are separated by 1) spinning them in a centrifuge, 2) using a weak electrical current to attract sperm of one electrical charge, and 3) suspending them in fluid so that the female sperm sink to the bottom).

⁵⁷ See Joannie M. Schrof, *Remove the Mystery by Sorting Sperm: Other devices that select the sex are coming*, U.S. NEWS & WORLD REP., Sept. 21, 1998, at 68 (discussing the potential to purchase sex-selection devices over the counter).

physical burdens often associated with late-term abortions are quickly being eliminated. It seems that between PGD and prenatal diagnosis/abortion, the race against time is on and only time will tell which technique will win the race to become the least physically burdensome procedure.

Currently, sperm-sorting definitely offers a less physically invasive and burdensome solution. As of 1993, sperm-sorting through flow cytometry only produced about twenty to forty sperm of the desired sex chromosome for each 1,000 sperm sorted.⁵⁸ Therefore, because there were not enough sperm produced for artificial insemination, the procedure had to be used in conjunction with IVF.⁵⁹ However, more recent reports indicate that the technique has been developed so that it can be used in conjunction with intrauterine insemination, a form of artificial insemination where the sperm are inserted into the woman's uterus.⁶⁰ Artificial insemination is less burdensome than IVF. For one thing, the "artificial" stage of artificial insemination is merely the unnatural introduction of sperm into the mother's body. After that, natural fertilization of the egg and implantation into the uterus occurs. On the other hand, in IVF there are more "artificial stages," requiring more technology and unwanted side effects, such as multiple pregnancies. IVF relies on artificial fertilization as well as artificial introduction of the developing embryos into the uterus. As one last consideration in determining the physical burdens associated with the procedures, it must again be noted that over-the-counter methods of selecting sex are in the development phases.⁶¹ Such products would nearly eliminate the physical burdens associated with sex selection technology.

A third reason that we can reasonably predict usage of pre-conception sex selection techniques is that it is the natural result of the trend in modern medical research for professionals to neglect

⁵⁸ See Benjamin E. Reubinoff & Joseph G. Schenker, *New Advances in Sex Preselection*, 66 FERTILITY & STERILITY 343, 346 (1996) (concluding that reliable preconceptual sex selection is possible by pre-implantation diagnosis or sperm separation by flow cytometry combined with IVF).

⁵⁹ See *id.* (adding that the combination of sperm-sorting and IVF significantly raises the cost and medical risks).

⁶⁰ See Kathleen Fackelmann, *It's a Girl!*, 154 SCI NEWS 350, 350 (1998) (discussing new technique that allows for sperm-sorting based on presence of X or Y chromosomes and subsequent sex selection of fetus); Klotzko, *supra* note 53.

⁶¹ See Schrof, *supra* note 57, at 68.

to set limits on technology or make it available.⁶² We can also derive such a conclusion from the clinical trend toward patient autonomy, which has prevented physicians from making independent choices about when they would be wise to offer a treatment and when they should decline to do so.⁶³ “[T]he consumer movement in the United States has forced doctors to be more open with patients. Many doctors now regard injecting their moral beliefs into the doctor-patient relationship as paternalistic.”⁶⁴ The adoption of the patient model has caused some doctors to feel paternalistic when they refuse to perform certain treatments.⁶⁵ Complete deference to patient autonomy in medical decisionmaking has been criticized. “Autonomy just runs rampant over any other ethical principal in this country...[a]nd it’s only going to increase.”⁶⁶ One survey of practitioners found that seventy-two percent of professionals in the field of genetics, ten percent more than in a previous survey done in 1985 would either perform the service or offer the patient a referral.⁶⁷ A 1990 study saw this number rise to eighty-five percent.⁶⁸ As another author humorously put it, “[e]verything is done by what the parents want. It’s me, me, me.”⁶⁹ This situation

⁶² See BONNICKSEN, *supra* note 52, at 48-50 (discussing pressures on doctors to make scientific progress, without consideration of the realistic needs of both patients and society).

⁶³ See Nisker, *supra* note 22, at 44 (citing a physician who argues that every couple has a right to know the sex of their baby because complete autonomy in patient decisionmaking is of the utmost importance in providing the best medical care); see also Jeanie Russell, “I’m the Most Hated Physician in America,” GOOD HOUSEKEEPING, May 1, 1998, at 108, 110. Russel quotes Dr. John Stevens as saying “I’m not pro-life or pro-choice. . . I’m just pro-patient. I maintain that the patient must be the one who decides, because it’s always the patient who’s bearing the ultimate burden of responsibility. People feel comfortable coming to see me because they know they won’t get a lecture. When one patient asked me how I feel about it, I said, ‘I don’t have any feelings I would share with you. You come to me because I am not a moralizing physician. I’m a pro-patient physician.’” *Id.*

⁶⁴ Dorothy C. Wertz & John C. Fletcher, *Fatal Knowledge? Prenatal Sex Diagnosis and Sex Selection*, HASTINGS CTR. REP., May/June 1989, at 22.

⁶⁵ See Lynne Marie Kohm, *Sex Selection Abortion and the Boomerang Effect of a Woman’s Right to Choose: A Paradox of the Skeptics*, 4 WM. & MARY J. WOMEN & L., 91, 111 (1997) (arguing that sex selection abortions will have a negative effect on women’s place in society); Wertz, *supra* note 64, at 22.

⁶⁶ Jeffrey Obser, *Drawing the Line: Experts and Parents Debate the Scope of Prenatal Diagnosis*, NEWSDAY, June 16, 1998, available in 1998 WL 2674278 (quoting Dorothy Wertz, director of the Shriner Center for Mental Retardation).

⁶⁷ See *id.* at 66 (citing a study by Deborah Wertz) (citations omitted).

⁶⁸ See Wertz, *supra* note 8, at 2213 (citations omitted).

⁶⁹ Karl Leif Bates, *Unnatural Selection: Picking Good Genes*, DETROIT NEWS, Jan. 31, 1999, available in 1999 WL 3914460 (quoting Arthus Caplan, a leading bioethicist at the University of Pennsylvania).

will allow patients wide access to preconception sex selection techniques. The willingness of physicians to encourage and offer treatments affects its usage, and with the new patient model, restrictions on access to preconception sex selection techniques cannot be expected.

Fourth, although critics argue that the monetary costs of sex selection techniques will act as a deterrent to their usage,⁷⁰ costs can be expected to decrease as preconception sex selection techniques become simpler and more commonly utilized.⁷¹ PGD is relatively expensive at this point because it must be accomplished through invitro fertilization, which can cost tens of thousands of dollars itself without even taking into consideration the costs associated with the genetic diagnosis procedure.⁷² Additionally burdensome is the fact that health insurers and governmental agencies are not currently willing to fund such procedures, meaning that patients must pay for them out of their pockets.⁷³ Contrary to the monetary burdens associated with PGD, sperm-sorting offers a relatively inexpensive option for fertile parents who wish to select the sex of their child.⁷⁴ The trial runs of the sperm-sorting technology done at the Genetics & IVF Institute reportedly cost a mere \$2,500 per try.⁷⁵ This is in contrast to pre-implantation genetic diagnosis, which is reported to cost \$3,500 per try, in addition to the \$8,500 IVF procedure.⁷⁶ And the same report predicted that "[a]s IVF perfects its technique and other clinics adopt it, the costs are expected to drop, putting gender choice within [the] reach of

⁷⁰ See Fackelmann, *supra* note 60, at 351 (noting views of two bioethicists, Arthur Caplan and Alta Charo, that sperm-sorting for sex selection may be cost-prohibitive).

⁷¹ See Norton, *supra* note 6, at 1597-99 (describing costs associated with nontherapeutic pre-implantation screening and offering reasons why costs could be expected to decrease).

⁷² See Jeffrey R. Botkin, *Ethical Issues and Practical Problems in Pre-implantation Genetic Diagnosis*, 26 J. L. MED. & ETHICS 17, 18 (1998) (discussing whether there is an actual demand for pre-implantation genetic diagnosis based on its cost and the lack of insurance coverage).

⁷³ See *id.*

⁷⁴ See Klotzko, *supra* note 53.

⁷⁵ See Golden, *supra* note 3, at 83 (noting the cost of undergoing human sperm selection); Ed Susman, *Sperm Sorting Allows Parents to Pick Pink*, BIOTECH. NEWSWATCH, Sept. 21, 1998, at 1, 3 (discussing the availability and price of sperm-sorting technology); Tim Friend, *Sex Selection: Does Procedure Work?*, USA TODAY, Sep. 10, 1998, at 10D (discussing the high costs associated with sperm-sorting).

⁷⁶ See Patricia Anstett, *supra* note 11.

hundreds of thousands of prospective parents.”⁷⁷ Another author speaking of new advances in sperm-sorting technology said, “[t]he fact that the procedure is simple and fairly inexpensive adds new urgency to the long-standing debate over would-be parents’ rights to ‘play God.’”⁷⁸ And the over-the-counter kit, previously mentioned, would be cheaper yet. As these alternatives to PGD exist or are in the making, it seems that parents do have an inexpensive avenue by which to pursue sex selection and are, therefore, not likely to be deterred by the costs associated with the procedures.⁷⁹

Fifth, without regard to which sex Americans prefer (discussed later), evidence suggests that parents in Western societies do have preferences for the sex of their children⁸⁰ and more than a few are willing to use technology to achieve the desired sex.⁸¹ In fact, one author citing a community study states that one-third of the American population favors use of preconception sex selection techniques.⁸²

Having found that use of preconception sex selection techniques is likely to be large enough to justify an evaluation of the interests involved, I have identified three categories of state interests for regulating preconception sex selection techniques. These categories are: interests of the embryos which will be deselected

⁷⁷ Golden, *supra* note 3, at 83 (discussing the improvement of sperm selection technology and its increased availability to the public).

⁷⁸ Schrof, *supra* note 57, at 68 (discussing ethical problems surrounding the increased availability of sex-selection devices).

⁷⁹ See generally Danis, *supra* note 1, at 231-32 (mentioning several methods of sex selection).

⁸⁰ See Patricia Aikins Murphy, *Fetal Sex Preference of Second-Trimester Gravidas*, 38 J. NURSE-MIDWIFERY 110, 112 (1993) (indicating that while the study does not show a general preference for a particular sex, it does show that parents do prefer one sex over the other).

⁸¹ See Roberta Steinbacher & Faith Gilroy, *Sex Selection Technology: A Prediction of Its Use and Effect*, 124 J. PSYCHOL., 283, 284 (1989). In this 1989 study, only 51 of 281 respondents indicated that they would be willing to use technology to select the sex of a child. However, the authors commented that “[t]he significance of these figures becomes apparent when one considers that these methods have not yet been widely advertised; they are, in effect, hypothetical for a majority of the respondents...[e]ven more important, when the results showing a strong preference for a son are combined with the increased availability of sex selection technology, a decrease in the number of firstborn daughters must be expected.” *Id.* See also Norton, *supra* note 6, at 1601 (discussing that a possible indication of American demand for sex selection is evidenced by an over-the-counter sex selection kit which was marketed in 1987 but removed from the market by the FDA because of unsubstantiated claims by the manufacturer).

⁸² See Kohm, *supra* note 65, at 110 (discussing sociological concerns regarding sex preference and birth order).

through implementation of these sex-selection techniques, interests of the future children who will be born of pregnancies utilizing these sex-selection techniques, and public interests.

2. Interests of the Embryos That Will Be Deselected

It is questionable whether or not the state has enough of a compelling interest in protecting the embryos that will be discarded during the sex selection procedure to override the rights of parents to reproductive privacy. Pro-life individuals and members of certain religious groups argue that life begins at fertilization, not conception, and thus the state has an interest in protecting embryonic life from discriminatory deselection based on non-therapeutic standards.⁸³ The moral propriety of discarding embryos depends on the value that we assign to those embryos in the first place. There are three general positions on the value of embryos and their resulting treatment in the framework of reproductive technology.⁸⁴

First, some critics of sex selection techniques argue that embryos are persons from the point of fertilization and should be treated as such, with all of the rights and protections that humans receive under the law.⁸⁵ This theory creates "an obligation to provide an opportunity for implantation to occur and tends to ban any action before transfer that might harm the preembryo or that is not immediately therapeutic . . ."⁸⁶ A directly competing view is that embryos are nothing more than mere property and may be transferred or disposed of at will, just like any other human tissue. This theory would require that no limitations be placed on owners of the embryo regarding its use or disposal.⁸⁷ An intermediate theory, which has received the most widespread acceptance, is that embryos deserve more respect than mere tissue because of their potential for human life, but do not deserve to be treated as humans

⁸³ See generally Sherylynn Fiandaca, *In-vitro Fertilization and Embryos: The Need for International Guidelines*, 8 ALB. L.J. SCI. & TECH. 337, 358-60, 370-72 (1998) (discussing various views on when an embryo attains moral status).

⁸⁴ See Judith F. Daar, *Regulating Reproductive Technologies: Panacea or Paper Tiger?*, 34 Hous. L. Rev. 609, 633-37 (1997) (discussing the three theories on an embryo's value and legal status).

⁸⁵ See Cucci, *supra* note 36, at 434 (focusing on the belief that embryos are human beings entitled to rights).

⁸⁶ *Davis v. Davis*, 842 S.W.2d 588, 596 (Tenn. 1992) (discussing the custody of preembryos and using the term "pre-embryo" to indicate a fertilized egg prior to implantation).

⁸⁷ See *Davis*, 842 S.W.2d at 596.

because they have not yet become individuals, may never experience human potential, and are not yet persons.⁸⁸

In order to evaluate the status of embryos, it is important to look at how case law has treated fetuses in abortion cases. Inferences of what status embryos will receive at law can be made from these cases, which generally adopt the intermediate view of the value of unborn reproductive matter following conception. Although these cases provide a good comparison of how non-viable life is treated at law, the status that they assign to fetuses cannot be taken out of context. In other words, sometimes, the value that the courts assign to the fetus is considered less than the value of the mother's right in not having children. Therefore, the right to terminate a fetus' potential life is recognized in light of other competing rights and does not exist alone as a reflection on the legal recognition of the value of the fetus. This can be further demonstrated by the fact that criminal statutes may constitutionally provide for murder of unborn, non-viable children.⁸⁹ These statutes provide evidence that the state does have a valuable interest in the potential life of unborn children, which can be limited only by very strong competing rights.

In *Roe v. Wade*, the Court evaluated the legal status of a fetus to determine whether a potential mother has the right to terminate her pregnancy. In doing so, the Court found that "the word 'person,' as used in the Fourteenth Amendment, does not include the unborn."⁹⁰ In fact, in evaluating the competing arguments of when life begins, the Court mentioned the time of conception, the time over viability, and the time of birth.⁹¹ Although the Court made mention of the fact that the definition of conception is altered by medical technology, includ-

⁸⁸ See *id.* (adopting the intermediate view regarding the value of pre-implantation of embryonic life). See generally June Coleman, *Playing God or Playing Scientist: A Constitutional Analysis of State Laws Banning Embryological Procedures*, 27 PAC. L.J. 1331, 1374 (1996) (comparing the higher legal status of an embryo in relation to an organ and discussing the impact of conducting embryological research under the Constitution) (citations omitted); Fiandaca, *supra* note 83, at 340-41 (citing *Kass v. Kass*, 213 N.Y.L.J.34 (Sup. Ct. Nassau Co. Jan. 23, 1995), *rev'd* 663 N.Y.S. 2d S81 (2d Dep't 1997), *Where the court held that embryos enjoy a status somewhere between property and personhood*).

⁸⁹ See *State v. Merrill*, 450 N.W.2d 318, 321-22 (Minn. 1990) (stating that unborn child homicide statutes do not violate the Equal Protection Clause of the Fourteenth Amendment by failing to distinguish between a viable and a nonviable fetus).

⁹⁰ *Roe*, 410 U.S. at 158 (establishing the meaning of the word "person" as used in the Fourteenth Amendment and its relationship to the practice of abortion).

⁹¹ See *id.* at 160-62 (discussing competing definitions as to when life begins, particularly the occurrences of "viability," "conception," and "live birth" [internal citations omitted]).

ing the implantation of embryos, it did not consider the status of embryos prior to implantation. With regard to the rights of women balanced against the rights of the fetus, the Court noted that the State does have an interest in potential life and that at some point this interest, or others, may "become significantly involved" such that "[t]he woman's privacy is no longer sole and any right of privacy she possesses must be measured accordingly."⁹² Having so stated, the Court went on to find that the woman's privacy right to make decisions on whether or not to bear children outweighs the right of the fetus prior to viability.⁹³ The Court adopted a trimester framework for its holding. During the first trimester, the state's interest was considered so minimal that almost no regulation would be allowed.⁹⁴ During the second trimester, the Court would allow states to regulate abortion so long as the regulations were not intended to restrict women's privacy rights, but to protect the health of the pregnant woman.⁹⁵ Lastly, during the third trimester, when the fetus is viable, the Court would allow states to prohibit abortion when the mother's life is not at stake, because of the value of the potential life of the fetus at that point.⁹⁶

In *Planned Parenthood of Southeastern Pennsylvania v. Casey*, the Court evaluated state regulations which restricted abortion services by requiring a twenty-four hour waiting period, consent of parents on behalf of minors (with a judicial bypass procedure), certification by married women that their husbands had been notified (with a medical emergency exception), and reporting by the provider of services.⁹⁷ The Court discussed and affirmed the holdings of *Roe v. Wade*, but rejected the trimester framework developed by *Roe* for what kind of regulation would be allowed. Therefore, *Planned Parenthood* adopted the view that the state can take steps to ensure that the woman's choice to have an abortion is "thoughtful and informed"

⁹² *Id.* at 159 (discussing states' interests and balancing maternal and fetal rights in the context of the abortion debate).

⁹³ *See id.* at 163-66.

⁹⁴ *See Planned Parenthood of Southeastern Pennsylvania v. Casey*, 505 U.S. 833, 872 (1992) (discussing the trimester framework established by *Roe*, 410 U.S. at 163-66).

⁹⁵ *See id.*

⁹⁶ *See Roe*, 410 U.S. at 163-64 (explaining that once the fetus has achieved viability, the state's interest in preserving potential life may outweigh maternal interests, and may bar a woman from obtaining an abortion unless an abortion was necessary to preserve her life or health).

⁹⁷ *See id.* at 844 (discussing the particular requirements of 18 Pa. Cons. Stat. § 3203-20 (1990)).

even during the first trimester, so long as such regulations do not impose an undue burden on women seeking abortion services.⁹⁸

In both of these cases, the rights of the woman, which are being balanced against the right of the fetus to potential life, are the anxiety and psychological distress of having an unwanted child, the pain and physical burdens of pregnancy, the stigma of unwed procreation, and the burdens of raising an unwanted child.⁹⁹ The privacy right given to the mother is the right to decide privately, between herself and her physician, whether she wishes to assume the burdens of continuing the pregnancy or reject them and abort. The interests of the woman in the case of preconception sex selection are not the same and, therefore, weigh differently against the rights of the embryo to potential life.¹⁰⁰

Just as the mother's interests in preconception sex selection differ from the mother's interests in abortion, so do the embryo's interests in preconception sex selection differ from the interests of the fetus in the case of abortion. Presumably, the non-implanted embryo's value as a potential life is less than that of a fetus developing in-utero.¹⁰¹ Therefore, we must weigh the lessened value of an embryo against the lessened interests of the mother. This balancing requires us to make a judgment about whether a pre-implantation embryo's value outweighs the mother's interest in foregoing the burdens of raising a daughter instead of a son, or vice versa. If we were to conclude that the value of the potential life of a pre-implantation embryo outweighs the mother's interest in not being burdened with the peculiarities of raising a child of the undesired sex, then the state would

⁹⁸ See *id.* at 872-74 (stating that regulations that have the incidental effect of increasing the cost or decreasing the availability of medical care will not invalidate a law that serves a valid purpose).

⁹⁹ See *id.* at 852 (discussing the consequences of abortion and the difficulties of carrying a child to full term), 505 U.S. at 852; see also *Roe*, 410 U.S. at 153 (outlining specific and direct harms that would detrimentally affect pregnant women if the state were to altogether deny women the option of obtaining an abortion).

¹⁰⁰ See generally Daar, *supra* note 84, at 635. The author discusses "[u]sing *Roe* and *Casey* to make the case that embryos are not deserving of respect as human beings may be somewhat misguided, as both precedents focus on the rights of women confronting a pregnancy. Embryos housed outside the human body do not constitute a pregnancy situation and thus present different questions Despite this physiologic difference, I believe that what has been said about the legal status of early fetal life would apply equally to embryonic life." [citations omitted]

¹⁰¹ See BONNICKSEN, *supra* note 52, at 98 (noting that in-vitro fertilization is defined by state legislatures and the U.S. Congress as an issue involving embryos, which "are less developed than fetuses, [and] also are without the constitutional rights of persons").

have an interest in embryonic life, *in this context*, which it could use, in combination with other interests, to justify regulation of pre-implantation sex selection.

3. Interests of the Children Born of Pregnancies that Utilized Preconception Sex Selection

a. 'Designer' Children

Allowing parents to select the sex of their children may sacrifice qualities inherent in the parent-child relationship. It can be argued that parents' focus on having a child of a certain sex, rather than a focus merely on having a child, is demonstrative of inappropriate notions of parenthood. This argument is based on notions that prospective parents who are overly concerned with characteristics of their potential children are not prepared for the unconditional love and acceptance that being a good parent entails. These characteristics of the parent-child relationship can be harmed by an attitude that children can be selected and designed based on the parents' notions of the ideal child or family.¹⁰² Additionally, there is some concern that if parents begin to have a designer attitude toward their children, and select for traits such as gender, they may feel guilt and remorse if the child for which they selected certain characteristics is born with other genetic abnormalities or fails to live up to their notions of stereotypical gender roles.¹⁰³ This can affect their relationship with the child, as the child is a constant reminder of his/her parent's dashed hopes. The designer attitude is also seen as a potential stepping stone for eugenics, which raises yet another public interest in regulating preconception sex selec-

¹⁰² See Norton, *supra* note 6, at 1604-06 (noting concern that parents will use reproductive technology to produce children who will satisfy the parents' financial and emotional desires, not the child's best interests).

¹⁰³ See generally Eric T. Jeungst, *Prenatal Diagnosis and the Ethics of Uncertainty*, in HEALTH CARE ETHICS, CRITICAL ISSUES FOR THE 21ST CENTURY 15, 23 (Monagle & Thomasma, eds., 1998)(quoting the President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research as stating, "taken to an extreme, this attitude treats a child as an artifact and the reproductive process as a chance to design and produce human beings according to parental standards of excellence"); See also Gail Vines, *The Hidden Cost of Sex Selection*, NEW SCIENTIST, May 1, 1993, at 13 (asserting that sex selection may give parents a feeling of control over reproduction, but leaves them less able to cope when things go wrong).

tion.¹⁰⁴ For these reasons, regulation is necessary to protect future born children whose parents would, without regulation, otherwise use PGD in the children's creation.

b. Physical Safety

Another interest favoring regulation is the physical safety of children who will be born of pregnancies utilizing the PGD or sperm-sorting procedures. "Too few infants have been born so far to know definitely whether this procedure will have any long-term

¹⁰⁴ Eugenics, as used in this context, refers to the movement to create a more desirable human species, rather than to the general, scientific act of selecting more desirable traits. The difference? The movement appears to involve the public, through government or otherwise, exercising control over parents' decisions of traits to select. The general term, eugenics, refers only to the ability, usually of the parents, to make the choice to select or deselect specific traits. The slippery slope from sex selection to eugenics appears to follow these steps. First, the government allows parents to select the sex of their children, for whatever reason, perhaps for respect of procreative liberty. Second, when technology becomes available that will allow parents to select hair, skin, and eye color, intelligence, predisposition to delinquency, and other nontherapeutic conditions, the government will be pressed to allow it because it has already approved of sex selection, which is really just another form of nontherapeutic characteristic selection. Third, Americans will slip into the mindset that parents to select desirable children who will contribute to and decrease the overall burdens of society should rather than may, use this technology. Fourth, like previous bouts with eugenics, the government will take action based on the public policy that this amazing new technology should be used for the public good. The action will take the form of government mandates on offspring traits that must be selected. This is called eugenics. For an interesting discussion of a portion of these steps, see Norton, *supra* note 6, at 1586-88 (describing the eugenics movement and noting the persistence of discrimination based on a person's genetic makeup). See also Mark J. Evans et al., *Attitudes on Ethics of Abortion, Sex Selection, and Selective Pregnancy Termination Among Health Care Professionals, Ethicists, and Clergy Likely to Encounter Such Situations*, 164 AM. J. OBSTETRICS & GYNECOLOGY 1092, 1098 (1991) (opining that all current precedents for eugenics should be prevented) noted in Jones, *supra* note 3, at 27; Obser, *supra* note 66 (discussing the development of a list of prenatal tests which should be routinely offered to parents, such as those for "always-fatal birth defects" and which should not be offered to parents, such as those for "later-life diseases like cancer" in order to prevent "the slippery slope toward testing for everything in the universe" (citations omitted); J.A. Nisker & M. Jones, *The Ethics of Sex Selection*, in ETHICAL DILEMMAS IN ASSISTED PREPRODUCTION at 41 (F. Shenfield & C. Surean eds., 1997) (discussing arguments against sex selection including the idea that abortion of a fetus for sex selection is a precedent for eugenics). Innovation: *SIDEBAR: The High Technology Way to Select a Baby's Sex* (visited Jan. 21, 1999) <<http://www.wnet.org/archive/innovation/show1/html/1sb-sexselect.html>> (quoting John Fletcher, a University of Virginia bioethicist as saying, "[s]ex selection is a precedent for Eugenics with a big E, not the little E . . . [i]f you want to go down this road of getting the human genetics movements off track, this is the first stop").

side-effects.”¹⁰⁵ Proponents of regulation argue that there has not been adequate testing of the procedures to put them on the market, but because of the amount of money involved, the procedures have been rushed into the clinics and put to use.¹⁰⁶ Concerns with the safety of PGD include the effects on the embryo of the extraction of the single cell at the eight-cell stage, although there is no certainty as to what these effects are.¹⁰⁷ Also, there have been some concerns with the cognitive development of children born of IVF technology in general.¹⁰⁸ Although these risks, which are not scientifically proven at this point, may be justified for an infertile couple using IVF to conceive, there is less justification when a couple uses PGD with IVF merely for sex selection. In total, the concerns raised do not amount to conclusive evidence that PGD will have any adverse effects on children. However, they raise awareness that this is an issue, which must be kept in mind.

The physical threats from sperm-sorting are also unclear. Edward Fugger, one of the Genetics & IVF Institute’s reproductive biologists who worked on developing the procedure admitted that although “[a]ll of the babies born have been healthy...[t]hat doesn’t mean that all of the risk has been excluded.”¹⁰⁹ One author evaluating the flow cytometry cell sorting technique developed by Fugger explained that the safety of the technique remains questionable because it uses two mutagenic substances, ultraviolet light and a DNA binding agent.¹¹⁰ However, Fugger claims that the dye used at the Virginia Institute for use on human sperm is non-toxic and has been shown not to cause DNA mutations.¹¹¹ Additionally,

¹⁰⁵ Nagy, *supra* note 19, at 4.

¹⁰⁶ See Mark Moran, *Sex Selection Seems Successful*, AMERICAN MEDICAL NEWS, Oct. 5, 1998, at 1, 42 (mentioning that despite the possibility of “subtle long-term effects,” researchers are experimenting on human subjects without extensive animal testing).

¹⁰⁷ See Gladys B. White & Michael E. McClure, *Introduction: Introducing Innovation into Practice: Technical and Ethical Analyses of PGD and ICSI Technologies*, 26 J. L. MED. & ETHICS 5, 5 (1998) (explaining that concerns about PGD center on possible harm to the embryo and the availability of experts to conduct the procedure and to interpret the results).

¹⁰⁸ See Ramesh, *supra* note 23, at 14-15 (describing risks of new sex-selection techniques).

¹⁰⁹ Fackelmann, *supra* note 60, at 351 (quoting Fugger and discussing a study that he conducted with parents who wanted boys).

¹¹⁰ See Reubinoff & Schenker, *supra* note 58, at 345 (reporting that embryo survival decreased in animals after sorting spermatozoa by flow cytometry).

¹¹¹ See Vicky Ward, *Jessica Collins is the Smiling Face of a Brave New World in Which Parents Pay Doctors to Determine the Sex of Their Children. Is This Really a*

the animals born of this procedure have shown no adverse side effects.¹¹² Therefore, the threat to physical safety lies in the unknown¹¹³ and based on current evidence of short-term results, the procedure seems relatively safe.

c. Preserving Dignity and Individuality

One last argument in favor of the interests of children who will be born as a result of the use of sex selection techniques is that children have a right to a random set of genes.¹¹⁴ Paul Freund, a Harvard University law professor, argues that allowing genes to be randomly selected preserves "the sanctity of the human individual".¹¹⁵ Furthermore, "[t]he consideration of genetic makeup when making reproductive decisions suggests that the value of an individual is not based on their intrinsic worth, but instead is dependent on their genetic makeup. Human dignity is compromised when individuals know that they are the product of genetic manipulation."¹¹⁶ Certainly, the state has some interest in protecting future children from these harms, despite the fact that the harm is quite abstract.

4. PUBLIC INTERESTS

a. Discrimination Against Women

One of the primary arguments against sex selection is that it supports discrimination against and devaluation of women.¹¹⁷ As one passionate author stated, "[r]egardless of the personal or cul-

Medical Advance to be Proud Of?, DAILY MAIL, Sept. 15, 1998 available IN WESTLAW, 1998 WL 1850 4490.

¹¹² See *id.*

¹¹³ See Moran, *supra* note 108, at 42 (noting a statement by Richard Schultz, a professor of biology at the University of Pennsylvania, about any unknown "subtle long-term effects on cognition and behavior," and quoting Prof. Schultz as saying that "[i]t is premature to be making a blanket statement that these are totally benign treatments").

¹¹⁴ See Renee C. Esfandiary, *The Changing World of Genetics and Abortion: Why the Women's Movement Should Advocate For Limitations on the Right to Choose in the Area of Genetic Technology*, 4 WM. & MARY J. WOMEN & L. 499, 500 (1998) (arguing in favor of the interests of children in preserving individuality).

¹¹⁵ *Id.*

¹¹⁶ *Id.* at 509.

¹¹⁷ See Jeungst, *supra* note 105, at 23 (stating that requests for sex selective abortion are likely based on sexist thinking and "can be fairly confidently condemned as immoral").

tural motivation, the message that sex selection for non-medical reasons sends to broader society is the suboptimal worth of women and thus of all human life."¹¹⁸ Sex selection itself is really a manifestation of a societal belief that women are a greater burden and of less inherent value than men.¹¹⁹ As one supporter of regulation asserts, "sex selection may help to disadvantage people in ways they cannot see, and are powerless to control. In the future ... whatever the consequences of sex selection, we won't make the connection; we will conceal it from ourselves."¹²⁰

As is apparent, the argument that unregulated sex selection technology will lead to discrimination against women relies on the premise that Western parents would, given the opportunity, select sons over daughters. Whether this is true requires a degree of speculation because the opportunity to accurately select sex has not existed in the past. However, the information about parental preference that is available tends to point toward a male preference. Roberta Steinbacher and Faith Gilroy conducted and published a 1989 survey of undergraduate students, which determined that of fifty-one students who indicated a willingness to use technology, seventy-three percent desired sons.¹²¹ Another study indicating male preference found that parents preferred the following family formations, from most to least desirable: one boy/one girl, two boys/one girl, two boys/two girls, one boy/two girls, three boys/one girl, no boys/ three girls, four boys/ no girls, no boys/ four girls, no children, five boys/ no girls, and no boys/ five girls.¹²² Although parents did give mixed gender composition of their children first preference, they otherwise always preferred to have more boys than girls when forced to choose their preference

¹¹⁸ Nisker, *supra* note 22, at 49.

¹¹⁹ See Committee on Ethics, *supra* note 9, at 199 (discussing the medical indications for and ethical considerations surrounding sex selection); see also Sidney Callahan, *X versus Y: Should Parents Choose?*, HEALTH PROGRESS, June 1989, at 20, 21 (discussing the inherent bias in society for males because of a greater chance for economic and social success); Nisker, *supra* note 22. "Male sex selection is obviously not a matter of a vast number of women preferring male children, or even being coerced into aborting by family members; rather it is part of a woman's socialization that babies of her own sex are not wanted." *Id.* at 42.

¹²⁰ Vines, *supra* note 105, at 13 (quoting Marilyn Strathorn, professor of social anthropology at the University of Manchester).

¹²¹ See Steinbacher, *supra* note 81, at 283.

¹²² See Christine Cregan Sensibaugh & Paul E. Yarab, *Newlyweds' Family-Formation Preferences*, 131 J. PSYCH. 530, 536-37 (1997) (finding that among families with an uneven gender ratio preference, a majority of boys was preferred over a majority of girls).

for an uneven number of children, boys to be firstborn.¹²³ Many other studies have indicated a preference for male children.¹²⁴

Discrimination against women, through use of preconception sex selection, can appear in many forms. First, there is concern that women will have even less control over the nation's assets because upper-class persons who can afford sex selection technology¹²⁵ will choose more sons, while lower-class individuals who cannot afford the technology will take nature's choice and will therefore be bearing a disproportionate number of daughters.¹²⁶ Despite the fact that for the time being the near future promises technological advances leading to widespread access to relatively inexpensive sex selection, the reality is that there are some monetary strains associated with the use of such technologies. Because of this, wealthier parents who have greater access to these technologies will presumably be selecting more sons than would naturally occur within the upper-class population, thereby diverting more of the nation's wealth to sons and accordingly, further economically disadvantaging women.¹²⁷

Another way in which sex selection will discriminate against women is by allowing parents to consistently choose sons as first-born children, thereby denying daughters the benefits associated with firstborn status.¹²⁸ A 1990 study indicated that seventy-eight

¹²³ See *id.* at 531 (discussing early research that showed an overwhelming preference for male children).

¹²⁴ See *id.* at 530.

¹²⁵ See Esfandiary, *supra* note 116, at 510 (describing the correlation between socio-economic status and access to genetic technology); Norton, *supra* note 6, at 1612 (noting that the high cost of pre-implantation genetic screening may restrict use to only the wealthy, resulting in a potential for abuse).

¹²⁶ See Jones, *supra* note 3, at 25 (arguing that societal conflicts would result if sex selection are only to be available to upper-class families).

¹²⁷ See Danis, *supra* note 1, at 237; David Longtin & Duane Kraemer, *Wonders of Genetics Also Carry Some Risks*, USA TODAY, May 6, 1998, at 13A (referring to a book written by Princeton University geneticist Lee Silver); see also Norton, *supra* note 6, at 1612.

¹²⁸ See Callahan, *supra* note 121, at 21 (explaining that the societal preference for males as firstborns inherently denies women a greater chance of achieving success); see also Warren, *supra* note 2, at 138-42 (giving a detailed account of the advantages and disadvantages of birth order). See generally Jones, *supra* note 3, at 20-30. Jones explains that sex preference can be expressed in two "goals": sequential and compositional. In sequential goals, children of one sex are preferred before or after children of another sex. This manner of preference is expressed when parents choose males [or females] as firstborn children. In compositional goals, the ratio of sex of children within the family is preferred to lean toward one sex. This manner of preference is expressed when parents choose to have more male children within the family than female children, or vice versa. See *id.*

percent of surveyed students who indicated a willingness to use sex selection technology would choose a son for their firstborn child.¹²⁹ Even studies that conclude that parents desire mixed-sex families find that they prefer firstborn male children.¹³⁰ The advantages of being a firstborn are probably less in Western nations than other areas of the world.¹³¹ However, in general, “[f]irstborns tend to receive more economic advantages than laterborns. A society in which firstborns tended to be sons would tend to give more power to males.”¹³² In conclusion, selecting males as firstborns is a discriminatory practice that further disadvantages women in Western society.

Critics of regulating preconception sex selection argue that parents will predominantly wish to use sex selection techniques as a family balancing technique,¹³³ and therefore, there will not be discrimination against one particular sex. As the above evidence shows, however, there is a distinct preference for male children and specifically male firstborn children. Additionally, even if parents chose children to balance out the family, the choice would be based on notions of gender inequality that promote sexism.¹³⁴ For instance, a family desiring a son to balance out three daughters makes a statement that the son can provide the family with some quality that another daughter, or the three daughters already born, cannot. Sometimes, proponents of sex selection assert that a parent has “a natural desire for the companionship of a child of [the same] sex.”¹³⁵ “This is not a strong argument in favor of sex selection. Any activity that a parent can enjoy with a child of one sex,

¹²⁹ See Faith D. Gilroy & Roberta Steinbacher, *Sex Selection Technology Utilization: Further Implications for Sex Ratio Imbalance*, 38 SOC. BIOLOGY 285, 286 (1991) (noting the results of a study on sex preference of first and second-born children).

¹³⁰ See Sensibaugh *supra* note 124, at 530-31.

¹³¹ *But see* Cheryl Russell, *Birth Order and the Baby Boom*, AMERICAN DEMOGRAPHICS, Mar. 1997, page 10 (quoting an MIT scientist, Frank J. Sulloway, as saying, “[t]he effects of birth order transcend gender, social class, race, nationality, and – for the last five centuries – time”).

¹³² Wertz, *supra* note 8, at 2215.

¹³³ See Jim Erickson, *Tucsonans Can Pick Baby's Sex*, ARIZ. DAILY STAR, Sep. 13, 1998, at 1A (discussing family balancing as a valid purpose of preconception sex selection); *but see* Danis, *supra* note 1, at 233-34 (noting that since sex selection has received heightened media attention and has become more available the number of people who may want to use it is growing) (citations omitted).

¹³⁴ See generally Danis, *supra* note 1, at 220 (noting “the invidious sex stereotyping and sex discrimination inherent in virtually every decision to select the sex of a child”).

¹³⁵ Wertz, *supra* note 8, at 2215.

such as sports, vacations, or hobbies, can be enjoyed with a child of the other sex."¹³⁶

b. Gender Imbalance in the General Population

A second argument in favor of regulating or restricting pre-conception sex selection is the interest of the state in avoiding a gender-imbalanced population.¹³⁷ Although the preference for males in Western societies is far weaker than in India and Asia, the situation that has arisen in those cultures serves as a warning to America.¹³⁸ Those cultures have experienced drastic declines in the number of female children being born or surviving past birth, with the result being male dominance in the secondary sex ratio.¹³⁹ In nature, there are approximately 105-06 males born for every 100 females, making the secondary sex ratio 105:100.¹⁴⁰ Because males die at a somewhat greater rate than females, over time the ratio balances out so that males and females are equally represented in the population.¹⁴¹ Reports indicate that the adult gender ratio in some parts of China, India, and Pakistan are as great as 5:1, favor-

¹³⁶ *Id.* See also Kohm, *supra* note 65, at 126-27. "Stereotyping is no longer necessary in a post-modern society. Women as well as men can carry on the family name, they can inherit estates, they can do most jobs, and do them quite well. Men can do tasks that usually fall on women, like caregiving in particular,, unless women refuse to allow men to do them. Furthermore, parents' natural desires to spend time with a child of the same sex of themselves, whether it is to participate together in anything from sports to shopping, can be done with either sex to an equal degree. Women who use such excuses to choose one sex over another, especially boys over girls, are defrauding any integrity that the women's movement might have ever had." *Id.* (citations omitted).

¹³⁷ See Danis, *supra* note 1, at 224 (stating that "[m]any sociologists and obstetric practitioners acknowledge that widespread use of the technology may create a demographic sex imbalance favoring males") (citations omitted).

¹³⁸ Cf. Dharma Kumar, *Should One Be Free to Choose the Sex of One's Child*, in ETHICS, REPRODUCTION AND GENETIC CONTROL 172, 175-78 (Ruth F. Chadwick ed., 1987) (explaining that there is a much stronger preference for male children in non-Western societies, with significant negative effects on women).

¹³⁹ Primary sex ratio is the number of eggs fertilized by a Y chromosome-bearing sperm versus the number of eggs fertilized by an X-bearing sperm. The primary sex ratio for humans has not been determined. "The secondary sex ratio represents the situation at all points postfertilization and is about 1.06:1 at birth." See Reed Edwin Peyeritz, *Sex: What We Make of It*, 279 JAMA 269 (1998).

¹⁴⁰ See Anna Maria Gillis, *Sex Selection and Demographics*, 45 BIOSCIENCE 384, 384 (1995).

¹⁴¹ See Jochen Kumm et al., *Gene-Culture Coevolution and Sex Ratios: The Effects of Infanticide, Sex-Selective Abortion, Sex Selection, and Sex-Biased Parental Investment on the Evolution of Sex Ratios*, 46 THEORETICAL POPULATION BIOLOGY 249, 250 (1994).

ing males.¹⁴² This has resulted in a phenomenon that commentators refer to as “millions of ‘missing’ females.”¹⁴³

We cannot be certain whether or not Western societies will adopt sex selection technologies with such vigor and will experience the same imbalance in the population. However, as previously discussed, Western preference for male children and willingness to use technology exists and is likely to have some effect. Because the availability of the technology is at our doorstep, society will need to “adopt an ethical approach before this debate is settled.”¹⁴⁴

Critics of the previous argument say that even if the numbers of women in the population decreased, there would come a “market” demand for them, and thus a preference for daughters would re-balance the population.¹⁴⁵ This theory has been questioned.¹⁴⁶ One author, Gail Vines, expresses concerns that society does not always follow market rules and thus the solution to population imbalance may not be so clear cut.¹⁴⁷ She explains a situation in China, where there is an imbalance as a result of sex selection (including infanticide). Therefore, there are not enough women for the men to marry. In China, ninety-six percent of the population marries, so this is a problem. It has been suggested that the public, rather than recognizing the lack of women, has blamed the men for not being wealthy or secure enough to obtain a wife. So, in order to balance this out, there has been a national call to increase men’s salaries and social status. Therefore, the result of sex selection against women has been to increase men’s salaries without a resulting increase in women’s salaries

¹⁴² See *id.*; Judson, *supra* note 6, at 503 (citing Susan C.M. Scrimshaw, *Infanticide in Human Populations: Societal and Individual Concerns*, in *INFANTICIDE* 439, 452 (Glenn Hausfater & Sarah Hardy eds., 1984)); see also Norton, *supra* note 6, at 1600 (explaining that skewed gender ratios in China and India are due in part to sex-selective abortion).

¹⁴³ Gillis, *supra* note 142, at 384.

¹⁴⁴ Reubinoff & Schenker, *supra* note 58, at 347 (adding that the impact on sex preselection for social reasons will remain unsettled until more data accumulates).

¹⁴⁵ See *id.* (providing that the sex ratio should be monitored because it would allow for action when an imbalance occurs); see also SINGER & WELLS, *supra* note 2, at 152-53 (stating that once the imbalance of males and females is detected in those countries that place higher value on sons, the value of daughters will again rise).

¹⁴⁶ See Vines, *supra* note 105, at 13 (stating that society does not always obey market rules); see also Warren, *supra* note 2, at 17 (challenging the contention that sex-ratio imbalances caused by sex selection would be slight and temporary).

¹⁴⁷ See Vines, *supra* note 105, at 13 (discussing the situation in China where the killing of girls at birth is widespread, and 113.8 boys were born for every 100 girls).

– thereby detracting from equality in the workforce.¹⁴⁸ This is a far cry from the market backlash predicted by critics of regulation. Once again, critics use the family balancing argument to assert that no imbalance will occur. Evidence, however, indicates that if American women could choose the sex of their only child, they would have 161 boys for every 100 girls.¹⁴⁹ Based on current information, predicting that imbalance, due to a preference for males, would not occur is not realistic.

The problems likely to arise from a preponderance of males go beyond the sadness experienced by the men unable to find mates or spouses. These harms include decreased political power of females as well as the return of the notion that women should resume their traditional family roles and should retain their virginity for marriage.¹⁵⁰ In total, the effects of a population imbalance are likely to be extremely negative for women and affect all of society.

c. Preserving Valuable Health Care Resources for Therapeutic Purposes

Another public interest that favors restricting preconception sex selection is the interest in rationing health care resources for ultimate therapeutic benefit to the population. Current trends in healthcare are to limit the amount of health care services being performed and billed, while retaining a high level of care. These trends have led to an attitude that healthcare should encompass necessary care for maintaining health but should not deplete the country's economy by wasting resources. It is hard to reconcile the concepts behind healthcare reform with the fact that the American system continues to function on a market-based system. Therefore, while proposals for nationwide medical care are still on the drawing board, the notion seems to be "you pay for it, you got it."¹⁵¹ Thus, despite the fact that generally any healthcare services can be bought on the market, critics argue that use of valuable health care

¹⁴⁸ See *id.* (stating that men's failure to marry is equated to a personal failure that creates pressure to promote economic opportunities for men).

¹⁴⁹ See Danis, *supra* note 1, at 235 citations omitted).

¹⁵⁰ See Danis, *supra* note 1, at 235-36. Because women would decrease in number, one could reasonably predict that they would have less political power to fight the existing social stereotypes for women. When this is compounded with the fact that men would be more hard-pressed to ensure the fidelity of their mates, due to the increased male population, the stereotypical roles for women may become expected and/or enforced again. *Id.*

¹⁵¹ See generally Erickson, *supra* note 135, at 10A (explaining that commercializing technology may increase the likelihood of unethical abuses).

resources for frivolous ventures, such as selecting the sex of your child, "contravene[s] the principle of distributive justice."¹⁵² It is not hard to imagine such injustice when you consider that, as a nation, we are unable to provide basic medical care to all.¹⁵³ Wertz and Fletcher said it best: "Gender is not a disease. Prenatal diagnosis for a nonmedical reason makes a mockery of medical ethics."¹⁵⁴ But, so long as we have conflicting treatments of certain healthcare resources, for instance allowing cosmetic surgery despite its "hogging" of medical resources, but restricting availability to transplantable organs to ensure equal access, there can be no solution to this dilemma. It is an issue that cannot continue to be ignored, however, as we get closer and closer to nationalized medicine.

d. Population Control

It is argued that increased use of sex selection will decrease the overall birth rate because parents who are satisfied with the composition of their family will stop having children once the children of the desired sex are born.¹⁵⁵ This is especially important because worldwide population is exponentially increasing, giving way to massive problems due to overpopulation.¹⁵⁶ This argument, therefore, works against restrictions on sex selection. But how likely is this benefit to occur? Studies of Asian countries found that couples who had two girls were more likely to try for a third child than couples who had two boys, and they tried for a third child within a shorter period of time.¹⁵⁷ This argument does not go

¹⁵² Wertz, *supra* note 64, at 23; *see also* Norton, *supra* note 6, at 1610 (describing how pre-implantation screening could lead to ineffective allocation of resources for medical services).

¹⁵³ *See* Patricia Baird, *Individual Interests, Societal Interests, and Reproductive Technologies*, PERSPECTIVES IN BIO. & MED., Spring 1997, 440, 442. "Solving the legitimate problems of an individual may require so great an investment of societal time, energy, and resources as to affect the ability to meet other societal needs." *Id.*

¹⁵⁴ Wertz, *supra* note 64, at 24.

¹⁵⁵ *See* Reubinoff & Schenker, *supra* note 58, at 347 (adding that preselection could also reduce the incidence of infanticide and terminated pregnancies); *cf.* Kumar, *supra* note 140, at 176 (noting that in some cultures that value male children more than females, because sons are considered essential and daughters are not, parents who cannot predict the sex of their children will continue to reproduce until at least one son is born).

¹⁵⁶ *See* SINGER & WELLS, *supra* note 2, at 153 (suggesting that any means to contain population growth should be considered).

¹⁵⁷ *See* Maureen J. Graham et al., *Son Preference in Anhui Province, China*, 24(2) INT'L FAM. PLAN. PERSP. 72, 75 (1998) (reporting that families with two girls were 1.65 times as likely to have a third child as those with two boys in 1980, 4.89

uncountered, however. There is no definitive evidence that allowing parents to select the sex of their children would cause them to procreate less. Instead, there is the argument that since the dominant-sexed children are valuable, families would use sex selection technology to produce the same amount or more children than they would have without access to the technology.¹⁵⁸

When all of these outcomes of sex selection technology are considered, it becomes apparent that the state has a legitimate interest in regulating sex selection in order to prevent adverse affects. More importantly, even if sex selection were found to be constitutionally protected as a reproductive right, these outcomes could, and I would argue that they do, comprise a compelling state interest, which would warrant regulation of that fundamental right.¹⁵⁹

The Supreme Court has found compelling interests that warrant governmental interference in substantive due process cases. In *Roe v. Wade*, previously discussed, the Court found that at the point of viability the state's interest in protecting fetal life was compelling enough to warrant state regulation of women's access to abortions when the woman's life or health were not in danger.¹⁶⁰ In *H.L. v. Matheson*, the court upheld the state's interest in requiring parental consent or judicial bypass for minors wishing to obtain an abortion, although they classified the interest as *important*.¹⁶¹ Many other cases have similarly upheld the right of states to restrict minors' access to abortion without parental or judicial consent.¹⁶² The Court has also found that state laws which require clear and convincing evidence of an unconscious and terminally ill patient's intent to end her life in the event of entering such a vegetative state, protect a compelling interest in assuring that the pa-

times as likely in 1980-86, and 6.29 times as likely in 1987-93, indicating an increasing preference for having at least one son in the family).

¹⁵⁸ See *Danis*, *supra* note 1, at 239 (refuting the argument that since parents would be able to choose exactly what sex they want with sex-selection technology, they will have fewer children); *Wertz*, *supra* note 8, at 2214-15.

¹⁵⁹ *Cf. Danis*, *supra* note 1, at 239; *Wertz*, *supra* note 8, at 2214-15.

¹⁶⁰ See *NORMAL REDLICH ET AL.*, UNDERSTANDING CONSTITUTIONAL LAW § 6.04, at 192 (1997) (discussing personal liability issues surrounding procreation).

¹⁶¹ See *id.* at 194 (emphasis added).

¹⁶² See *id.* at 193-95 (discussing *Planned Parenthood of Southeastern Pennsylvania v. Casey*, 505 U.S. 833 (1992), *Bellotti v. Baird*, 443 U.S. 622 (1979), *Hodgson v. Minnesota*, 497 U.S. 417 (1990), and *Ohio v. Akron Center for Reproductive Health*, 497 U.S. 502 (1990)).

tient would have made such a choice.¹⁶³ These cases make it clear that when the state has real harms, which it seeks to prevent in a narrowly tailored manner, regulation will be allowed even under the strict scrutiny standard. The state can certainly prove the harms to the public, the embryos, and the children that would constitute a compelling interest for regulating the rights of parents to use pre-conception sex selection.

Having found that the states, and therefore the federal government, may regulate in the area of pre-conception sex selection, we can now consider how broad or narrow such regulations may be, and how practical it is to implement and enforce such regulations.

IV. REGULATION

A. Introduction

Assisted reproductive technologies are virtually unregulated in America.¹⁶⁴ Some legislatures have addressed problems arising in this area, but not in a manner that is entirely applicable to the use of PGD for nontherapeutic genetic selection.¹⁶⁵ Therefore, there is no federal or state law directly regulating nontherapeutic PGD.¹⁶⁶ As one author stated, "a society can safely leave important and potentially dangerous interventions without legal regulations only if there is a sufficient degree of moral consensus so that individuals can be expected to act morally without regulation...[L]egal regulation may be necessary in areas of human conduct where lib-

¹⁶³ See generally *Cruzan v. Dir. Mo. Dep't of Health*, 497 U.S. 261 (1990) (holding that states can use the clear and convincing evidence standard in proceedings to terminate hydration and nutrition of persons in a persistent vegetative state).

¹⁶⁴ See Jean Macchiaroli Eggen, *The "Orwellian Nightmare" Reconsidered: A Proposed Regulatory Framework for the Advanced Reproductive Technologies*, 25 GA. L. REV. 625, 667, 709 (1991) (recommending that a regulatory framework by lawmakers protect privacy interests while encouraging the advancement of medical technology); Daar, *supra* note 84, at 639 (discussing the relative lack of regulation in the area of reproductive technologies).

¹⁶⁵ See Norton, *supra* note 6, at 1584-86, 1613-19 (providing an interesting and easy-to-read discussion of federal and state laws which regulate the use of genetic information and reproductive technologies in the following contexts: the misuse of information by employers and insurers, the application of the Americans with Disabilities Act to persons with certain genetic makeups, the reporting of success rates by IVF clinics, and the experimentation on embryos and fetuses).

¹⁶⁶ See Norton, *supra* note 6, at 1584 (noting that legislation has not yet been proposed in Congress to regulate the use of pre-implantation genetic screening for nontherapeutic purposes).

erty is often abused and important moral values are in jeopardy."¹⁶⁷ On the other hand, some argue that cultural values are so diverse in America that it is best to sway in favor of private reproductive decision-making whenever possible.¹⁶⁸

1. Constitutional Boundaries

These competing interests are identified and recognized in the constitutional doctrine that requires restrictions on fundamental rights to be narrowly tailored. In other words, they may infringe on those rights only so much as is necessary to serve the compelling state interests.¹⁶⁹ If preconception sex selection were found to be a fundamental right of parents, any restrictions would have to meet that standard. The strict scrutiny standard requires that the activities sought to be regulated present a "'proximate (clear and present) and inherently dangerous (degree)' of harm."¹⁷⁰ John Robertson argues that the harms of preconception genetic determinations are merely symbolic and do not warrant regulation.¹⁷¹ I disagree with this and conclude that the consequences on society of widespread use of sex-selection technology are very real. The objections to preconception sex selection are not based on mere notions that choosing the sex of one's child or "playing with genetics" is wrong. Admittedly, however, the "ripeness" requirement may not be met until the technology becomes commonly used, and due to this restriction, if preconception sex selection is found to be entitled to protection as a fundamental right, legislators may have to "wait it out" a bit, until adverse effects are readily apparent. Finally, even when rights are not fundamental, the rational scrutiny

¹⁶⁷ Meena Lal, *The Role of the Federal Government in Assisted Reproductive Technologies*, 13 SANTA CLARA COMPUTER AND HIGH TECH. L.J., 517, 519 (1997) (quoting Carl Wellman, *Moral Consensus and the Law*, in *THE CONCEPT OF MORAL CONSENSUS* 109, 110 (Kurt Bayertz ed., 1994)).

¹⁶⁸ See Marjorie Maguire Shultz, *LEGISLATIVE REGULATION OF SURROGACY AND REPRODUCTIVE TECHNOLOGY*, 28 U.S.F.L. REV. 613, 616 (1994) (explaining that diversity of American values dictates that private decisionmaking should prevail where reproduction and intimacy are concerned).

¹⁶⁹ See *Roe*, 410 U.S. at 155. "Where certain 'fundamental rights' are involved, the Court has held that...legislative enactments must be narrowly drawn to express only the legitimate state interests at stake." *Id.* (internal citations omitted).

¹⁷⁰ *Fiandaca*, *supra* note 83, at 379 (quoting Andrea L. BONNICKSEN *IN-VITRO FERTILIZATION: BUILDING POLICY FROM LABORATORIES TO LEGISLATURES* 85, 93 (1989)).

¹⁷¹ See Robertson, *supra* note 7, at 428, 463, 475 (arguing that social policy options such as subsidies, establishment of professional standards, and provision of education, could fill this regulatory gap).

test requires that regulations be at least rationally related to a legitimate state interest. Thus, if preconception sex selection is not found to be a fundamental right, it will still receive this minimal protection.

2. Eggen's Three-Step Analysis

The competing interests of regulating technology to protect society while maintaining respect for individual diversity and liberty are also recognized by a proposed framework for reproductive regulation made by Jean Macchiaroli Eggen.¹⁷² She suggests that when the state interests are very high, but the privacy and liberty interests low, regulation is warranted and hesitation is generally not needed. This, I believe, is the situation with preconception sex selection, if one subscribes to my conclusions that it is not a fundamental right and may be regulated under the rational scrutiny test. Eggen also speaks of the situation where the state interests are very low, but the privacy interests incredibly high. In that situation, she suggests regulation is almost never appropriate.

Most importantly, Eggen proposes a three step analysis for lawmakers to work through when deciding whether or not they should regulate in a situation involving high state interests and high privacy interests. If preconception sex selection were found to be a fundamental right, it would probably fall into this category. I believe the proposed framework offers a guiding light as we approach the issue of devising regulations for preconception sex selection.

The first step of Eggen's analysis is the "problem experience rating step." This requires the lawmakers to analyze the frequency and urgency of the problems arising from the activity sought to be regulated. If problems have occurred from such activities in the past, and can reasonably be predicted to occur again, there is a strong pull in favor of regulation. One could argue that the precedent set by the frequency of use of sex selection, and its incumbent problems in the international arena provides the experience rating necessary to pull towards regulation. On the other hand, opponents of regulation could argue that the frequency of use of sex selective abortion in the United States provides precedent that weighs against regulation. These competing arguments could go on, but what it boils down to is that preconception sex selection is too new

¹⁷² The framework discussed in this section is described in detail in Eggen, *supra* note 166, at 693-95.

for us to have any “on point” experience rating which shows the exact effects likely to occur from its use. We can only predict at this point. That leads us to step two.

The second step of Eggen’s analysis, the “equilibrium” step, asks lawmakers to look at the activity, which they are seeking to regulate and determine whether it is currently in a state of flux. This means that the activity will soon be replaced by newer technology, will be abandoned because it does not provide the desired results, or will soon enter the market for full use following the experimental phase. Preconception sex selection is in a state of flux. It is just leaving the purely experimental phase for use on the market. Eggen argues that once the activity reaches stabilization, the “genuine and persistent problem areas will emerge, thus facilitating precise and appropriate regulation.” Working through this step of the analysis is supposed to avoid enactment of overbroad or under inclusive regulations that are soon outmoded and useless and may proscribe conduct which is not harmful.¹⁷³

If preconception sex selection were found to be a fundamental right, step two of Eggen’s analysis would present our biggest concern. The harmful effects of preconception sex selective technology are generally speculative at this point, and because the procedures are not in full-fledged use Eggen would caution against any immediate regulation. I question this approach. If we were to wait until preconception sex selection were well-used and presented genuine and persistent problems, it could be too late to intervene. A decreased number of women in the population may have lead to a decrease in women’s political power and a re-feminizing of women’s roles in society. Furthermore, there may have been a masculinization of wealth leaving women with less economic freedom. Additionally, and very importantly, significant portions of healthcare dollars would have been spent developing and refining preconceptions sex selection technologies and purchasing the necessary equipment for such procedures. In summary, I question the prudence of waiting for tragedy to strike to take action when, with

¹⁷³ See *id.*; Compare Antoinette Sedillo Lopez, *Privacy and the Regulation of the Technologies: A Decisionmaking Approach*, 22 FAM. L.Q. 173, 175-76 (1988). Lopez states that [p]olicymakers and lawmakers presently have two alternatives. One is to wait and decide whether to regulate each potential use of the new reproductive technology as it becomes available and as problems arise with its use. The other option is to anticipate potential developments and to formulate policies and laws that will guide researchers and medical professionals in their pursuits. For example, the government might prohibit procreative techniques that threaten the future gender and genetic composition of society.” *Id.*

attentiveness to the state of the art and the trends of a nation, one could reasonably predict upcoming events. Nonetheless, I agree with Eggen's general principle that we should be cautious with regulating in foggy areas.

Eggen's third step calls for an analysis of existing laws or self-regulation by professionals, which could guide lawmakers in learning what efforts have and have not worked and which problem areas have been left unaddressed. These considerations are generally useful in refining the conclusions made after making it through the first two steps of analysis, rather than providing a useful impetus on which to base a decision to regulate.

3. Daar's Practical Guidelines

The constitution's limitations on regulation of reproductive rights and Eggen's framework for regulating reproductive technologies focus, generally, on the analysis of whether we can or should regulate at all, and if so, how broadly we may regulate before running into constitutional snags. Neither proposes any practical guidelines for how we should regulate in these areas. Judith Daar has proposed some methods for approaching regulation in the reproductive technology area.¹⁷⁴ She considers the medical field and concludes that regulation can occur on three levels. First, regulations can focus on the providers of services: physicians, clinics, hospitals, and other health care providers and facilities. This type of regulation is likely to be very important in regulating preconception sex selection. It is through this avenue that the government can create reporting requirements for clinics and other health care facilities, licensing and certification of the facilities and their employee's and limitations on the types and amount of services that can be provided.

Second, regulations can focus on the relationship between the consumer and the provider, such as through informed consent requirements. This is not likely to be a great avenue for regulation of preconception sex selection, as the interests of the provider and consumer will, generally, be aligned. Perhaps the physician-patient relationship can play a role in lessening the use of preconception sex selection technologies when medical boards or associations recommend or require physicians to attempt to dissuade women from utilizing such services. Another example of a regulation fo-

¹⁷⁴ See Daar, *supra* note 84, at 637-38 (proposing a three-tiered regulatory scheme for assistive reproductive technologies).

ocusing on the provider-consumer relationship would be an excise tax placed on individuals who have children of the less selected sex, or a tax on the use of preconception sex selection technology. The tax presumably would be administered through the provider and paid for by the consumer. Such financial incentives, placed directly on consumers, offer deterrents to usage while, at the same time, providing funds that enable the government to address and remedy the harms created by the consumer's usage.

Third, regulations can focus solely on the consumer. Criminal penalties imposed on parents who use preconception sex selection techniques in violation of statutory law would be an example of regulations focusing solely on the consumer.

In examining and developing regulations, I have considered the potential constitutional restrictions on legislating in the area of reproductive behavior, as well as the practical considerations suggested by Eggen and Daar. Relying on these frameworks for guidance, below I examine ways to regulate preconception sex selection.

B. Avenues for Regulation and Enforcement

There are many avenues for putting a policy into force, both official and un-official. For instance, policy can be enforced through federal, state, and local governments. This includes approaches such as criminal and civil legislation, as well as control of medical practice through state medical boards and facility certification. Alternatively, policy can be "put into action" through moral dissuasion, social exhortation, and other private regulation, including the efforts of accrediting organizations, such as the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and recommendations of medical associations which provide guidelines to their members.

As a preliminary matter to specific regulation, there are some differences between regulants at the state and federal level. The benefit of a federal law would be uniform protection of women and society from the harms of preconception sex selection and prevention of the state-to-state shopping likely to occur if states regulate in this area and neighboring states have differing laws.¹⁷⁵ But federal regulation also comes with downfalls, such as delay and difficulty reaching a

¹⁷⁵ See Eggen, *supra* note 166, at 678 (raising questions as to the advisability and extent of state regulation of the IVF procedure).

national consensus.¹⁷⁶ As one author noted, although the federal government forms committees to evaluate and make recommendations for regulations based on the state of affairs in the world of reproductive technology, those recommendations are not adequately and quickly turned into federal legislation.¹⁷⁷ Additionally, the costs of enforcement on the federal level are very high.¹⁷⁸ Creating a separate agency to administer federal regulations in this area could possibly become unmanageable, and for this reason, enforcement at the federal level would be dependent on support and cooperation from accrediting organizations such as the JCAHO.¹⁷⁹ Because of these blockades to quick and effective federal legislation, state regulations do offer some benefit. State regulation is generally more complex and offers diversity based on the differing moral consensuses of the different state populations.¹⁸⁰ In some contexts, the variety offered by state regulation is considered a benefit to the system, allowing day-to-day activities to be regulated on the basis of the majority view within locales. As has been commonly noted, the states serve as laboratories for developing legislation when a clear consensus on the national level has not yet been formed. Through this process, other states and federal legislators can evaluate the impact of such legislation.¹⁸¹ It seems that individual state legislation may be a good initial solution to addressing these problems.

¹⁷⁶ See generally Daar, *supra* note 84, at 655 (discussing public opposition to creation of human embryos for research purposes).

¹⁷⁷ See *id.* at 654-56 (discussing the difficulty of enacting recommendations of the Human Embryo Research Panel of the NIH on embryo research).

¹⁷⁸ See generally *id.* at 656 (explaining that “[a]ny regulatory scheme that, for example, placed the burden of investigation and compliance enforcement with a single federal agency, would probably fail for lack of manpower, resources, and a coordinated vision”).

¹⁷⁹ See generally *id.* at 627-28. The JCAHO has long been used to assure the quality of health care organizations. “The JCAHO evaluates and accredits more than 14,000 health care organizations in the United States. While JCAHO accreditation is not mandated by law, hospitals and other health care organizations, as well as the public, have come to rely on this credential as a sign of institutional quality” *Id.* at 627 (citations omitted). Whether using the JCAHO to effectuate federal regulations prohibiting preconception sex selection is a good idea is uncertain. While the JCAHO obviously, as a private organization, could not enforce federal regulations, health care providers and facilities, thereby enabling federal enforcement, could use its auditing procedures to reveal infractions. Additionally, the JCAHO could report facilities’ compliance with such laws as part of its evaluation of the quality and safety of the facility.

¹⁸⁰ See *id.* at 646 (discussing how state regulations are influenced by parochial concerns).

¹⁸¹ See BONNICKSEN, *supra* note 52, at 95-96 (providing a detailed explanation of the merits and downfalls of state legislation).

Some critics of governmental interference in the reproductive technologies have argued that regulation should be left in the private sphere through, for example, the use of medical boards and boycotting efforts of the general public.¹⁸² There seems to be disagreement within the feminist community about whether legislating in the area of sex selection will set a precedent for further restrictions on reproductive freedoms.¹⁸³ That has led to discussion of ways that individuals and public groups, as well as the medical field can encourage “responsible” decisions on behalf of both providers and consumers. Some of these efforts, such as boycotting and using moral persuasion are discussed below.

C. Proposed Regulations for Preconception Sex Selection

1. Prohibitions of Preconception Sex Selection for Nontherapeutic Purposes

The first logical response to the harms presented by preconception sex selection is to propose a complete ban on the service. There are several concerns raised by a complete prohibition. First, some argue that not all requests to select sex will be due to sexist attitudes and that is uncertain how sex selection will affect how our culture raises children and views reproduction.¹⁸⁴ In light of these uncertainties, it is agreed, a blanket ban is unjustified.¹⁸⁵ Some critics of complete prohibition argue that legislators should slow down and monitor the effects of preconception sex selection before they act rashly.¹⁸⁶

¹⁸² Eggen, *supra* note 166, at 687-91.

¹⁸³ See Cherry, *supra* note 47, at 164-66 (discussing abortion as a feminist issue of choice for women’s bodily integrity and how the area of sex-selection could challenge these traditional notions of freedom).

¹⁸⁴ See Jeungst, *supra* note 105, at 23 (condemning the attitude of parents who use prenatal diagnosis for sex selection, although admitting that it may be rational in some circumstances).

¹⁸⁵ See *id.* (rebutting this argument by noting the President’s Commission’s argument which does away with the uncertainty by finding that reproductive technology which reveals genetic information is only to aid parents in making the subset of decisions concerning the fetus that deal with the well-being of the fetus, and sex selection does not fall into that category when it is not used for a therapeutic purpose); .

¹⁸⁶ See Jones, *supra* note 3, at 49-52. Jones argues that rather than creating a prohibition on sex selection, legislators should set a threshold level of gender imbalance under which they will not regulate, monitor the effects of the use of sex selection through efforts such as the National Institute of Health’s national natality statistics reporting requirement, and then make blanket prohibitions only when problems are apparent. However, he later mentions that regulations should be implemented before the situation is such that the “clean-up” efforts are more straining than it

But in light of the harms discussed before, and the technical problems with other solutions, discussed below, a ban may be the most practical and protective solution.

The prohibition could be addressed as forbidding the doctors to run the PGD sex test or sort the sperm. Alternatively, the prohibition could allow the PGD test to be run and allow communication of the result to the parents, but forbid providers from acting upon that knowledge to implant discriminatorily. These forms of prohibition come with different difficulties in practice.

First, the ban would presumably exempt sex selection technology that is used for therapeutic purposes. Thus, providers would have the equipment necessary to perform preconception sex selection on-hand, and it would be difficult to assure that they would not use the technology improperly. Prohibitions on sperm-sorting would probably be relatively easy to enforce, as the technology needed to perform such procedures would not necessarily be readily on-hand in clinics, since sperm-sorting lacks precision and therefore is not generally used for therapeutic purposes. However, prohibitions on having PGD sex-selection technology readily available within the office where general IVF procedures are taking place are not realistic and, even if they were, could potentially unduly burden providers and patients who are legitimately seeking therapeutic sex selection. Since PGD is really just another form of genetic diagnosis, and one merely requiring dye and laser light, it would be incredibly difficult to keep it out of the clinics. We could not be ensured that a doctor who was running a PGD test for Down's Syndrome would not run an additional sex determination test "on the sly." Some doctors may unwittingly run into the sex of the fetus when running other genetic tests. As the ACOG committee on sex selection mentioned in its opinion, "inevitably, identification of sex occurs whenever karyotyping is performed. When medical indications for genetic karyotyping do not require information about sex chromosomes, the prospective parent(s) may elect not to be told the sex of the [embryo]."¹⁸⁷ Thus, prohibiting the

would have been to just prevent the harms in the first place. He goes on to suggest implementation of regulations other than complete prohibitions. *See id.*

¹⁸⁷ *See* Committee on Ethics, *supra* note 9, at 199 (adding that the primary medical reason for using sex selection is the avoidance of sex-linked genetic disorders). A karyotype is a display of the chromosomes of a cell, and karyotyping is "the analysis of chromosomes" which results in the karyotype. Somatic chromosomes are those that are not related to the germ cells (i.e., the egg and sperm). THE RANDOM HOUSE DICTIONARY OF THE ENGLISH LANGUAGE 1046, 1818 (2d ed. 1987).

performance of sex selection tests in health care facilities presents a moderate-to-difficult enforcement issue.

In addition to this enforcement problem, not allowing such tests raises issues about a mother's "First Amendment right to information about her own body."¹⁸⁸ If such a prohibition were seen to infringe on this First Amendment right, we'd have to deal with another "compelling state interest" test that could blow the prohibition out of the water. It could be argued, however, that until the preembryo is implanted into the mother, thus becoming an embryo, she is not entitled to information about it, as it is not "about her body." This would seem to stretch the purpose behind the doctrine, however. Therefore, we must question whether this form of prohibition is constitutionally permissible and search for other, less provocative, solutions.

The other alternative for prohibitions is to allow the "sex-check" test to be run, and allow the results to be communicated to the parent(s), but disallow the provider to act discriminatorily in implanting the embryos. This raises even greater enforcement issues. There is no direct way in which the government could oversee providers to ensure that they were not violating this prohibition in individual circumstances. The only practical way to enforce this prohibition would seem to be to require reporting of births resulting from procedures performed in a facility, and monitoring the facility to make sure that its proportion of male and female births complies with statistical averages, with some room for slight deviations. Although this method would allow individual cases to slip through the cracks, it would maintain an overall neutral sex-at-birth rate, thereby preventing most of the harms associated with preconception sex selection. A watch for physicians who attempted schemes to circumvent such prohibitions is vital. One that jumps to mind is a physician who performs general IVF procedures and on occasion takes money "on the side" for a sex selection procedure. In order to balance out his facility's statistics, he may perform sex selection on patients who have not requested the procedure and only implant embryos of the less desired sex into those patients. While such a scheme may seem far-fetched, the fiasco at the University of California at Irvine Center for Reproductive Health has shown that such strange events are not unheard of.¹⁸⁹

¹⁸⁸ Danis, *supra* note 1, at 252.

¹⁸⁹ See Daar, *supra* note 84, at 610-14 (discussing a 1995 lawsuit by the University of California against the former directors of its Reproductive Health Center, in which the University alleged that the directors had taken patient eggs and embryos without their permission and implanted them into other women, resulting in the birth of several dozen children).

2. Regulations Focused On Maintenance of Gender Balance in the Population

Rather than enacting a complete ban on preconception sex selection, we could allow use of the technology with governmental limitations that would ensure that the population remained balanced.¹⁹⁰ There are several ways to implement such a program. First, a local, state, or national waiting list could be created. Parents who want to select a child of the sex which is being chosen most frequently would be put on the list and would have to wait to gain access to sex selective technology.¹⁹¹ The length of the wait would depend on how quickly other parents were choosing to bear children of the opposite sex. Another solution may be to require couples using preconception sex selection to donate their left-over sperm or remaining embryos, which would otherwise be discarded, for infertile couples.¹⁹² Although this seems a just result on one hand, by requiring the parents who will receive the benefit of sex selection to contribute to the remediation of the harms caused by their action, it also raises issues of forced parenthood that are not likely to win public favor and are too complex to discuss in detail here. One last proposal is for the government to issue permits for sex selection to each individual.¹⁹³ Thus, parents who were willing to chance bearing daughters could sell their permits, providing them with money to help combat the negative discriminatory affects that sex selection would have on their daughters. This would, supposedly, limit the harms and help ensure that the population remained balanced.

The problem with regulations that only seek to keep the population balanced is that they fail to address the other harms created by

¹⁹⁰ See SINGER & WELLS, *supra* note 2, at 153-54. "One way of obtaining the gains offered by sex selection without suffering the disadvantages would be for the use of the method to be monitored and steps taken to prevent any significant imbalance. If the method of sex selection were available only through registered medical practitioners, control could be kept by setting up waiting lists for those who wanted a child of the sex that was being chosen too frequently." *Id.*

¹⁹¹ See *id.* at 154. "Couples who were more interested in having a child soon than having a child soon than in having one of the right sex would drop off the waiting list, and an even sex ratio would be restored without frustrating the desires of those prepared to wait." *Id.*

¹⁹² See Reubinoff & Schenker, *supra* note 58, at 347 (adding that society should not subsidize preconception sex selection for social reasons due to limited economic resources).

¹⁹³ See Jones, *supra* note 3, at 51 (suggesting that by issuing a limited number of permits for sex selection, the government could control both the number of sex selections and gender ratio).

sex selection, such as discrimination against women, potential long-term physical and emotional affects on children born from these technologies, and the compromise of the parent-child relationship, among others. Therefore, they are incomplete solutions that ignore many of the problems raised by preconception sex selection. Due to these shortcomings, bans focused on maintaining balance in the population would only be useful in combination with other efforts.

3. Bans on Nontherapeutic Sex Selection, with Exceptions for Family Balancing

The state or federal government, in lieu of banning preconception sex selection or focusing solely on an overall population balance, could implement a requirement that any person seeking preconception sex selection must prove that they already have at least one child of the opposite sex and that they have no children of the sex which they are requesting to select. It may be wise to have an additional requirement that the parent certify that he or she needs to use this technology because he or she wishes to have a mixed-sex family without having several additional children. However, enforcing such a certification would be a great infringement upon the fundamental right to reproduce and would not likely pass constitutional muster.

There are many problems with this proposal, despite the fact that it seems to have some element of justice to it. First, this plan may prejudice people who only wish to have one child by allowing two-or-more-child families to determine the sex composition of their offspring, while denying that same opportunity to one-child families. Second, it is unclear how stepchildren would count towards determining entitlement to select the sex of a child. If they did count, when a man with no children married a woman who already had a daughter, they would be entitled to select the sex of their first child, and would thus have the opportunity to select a firstborn son for that man. However, a man with no children who married a woman with a son from a previous relationship or with no children at all would not have the same opportunity. And, the man with no children who married a woman with a son from a previous relationship would be unable to ever select a son. On the other hand, if stepchildren do not count, then a woman with a daughter who married a man with a son would entitle that man to select a son for his second child, despite the fact that the man already had a son, because she would be entitled to select a son as her second child. A man who already had a son and married a woman with a son or with no children would not have that opportunity. A third problem is whether or not to count adopted children to-

ward the formula. The list can go on: What if a parent already had a child of the desired sex who has grown up to be homosexual? Could we allow parent's personal notions of appropriate sexuality and gender roles to entitle them to another selection? What if the parent's previous child of the desired sex were found to be infertile? What if the child were mentally challenged in such a way that the child would be unable to perform the gender specific roles which the parent had planned on in calculating the sex or number composition of the family? What if the parent previously had a child of the desired sex, but that child had since died? These scenarios represent the inequities that can arise from this proposal and the many clarifications that would be needed for such a plan to be workable.

4. Governmental Disincentives for Using Preconception Sex Selection

Without banning preconception sex selection or focusing on maintaining a balance within the population, the government could provide disincentives to using such technologies. The main avenue for accomplishing this would be through use of economic incentives. An excise tax, proposed by Owen Jones, is one such effort.¹⁹⁴ Under this proposal, parents wishing to select sex would be charged a tax. This would drive the costs of sex selecting up, thereby decreasing demand. Additionally, it would create revenue for the government that would be marked for use in monitoring the effects of sex selection on society, combating the negative effects that result, and decreasing the public demand for sex selection, through efforts such as funding of educational programs.¹⁹⁵

Another economic approach to discourage public use of sex selection technology would be to deny funding for both research and clinical aspects of the technology. As the Supreme Court established in *Maher v. Roe*,¹⁹⁶ there is no constitutional right to have technologies paid for in order to enable people to exercise their fundamental reproductive rights on demand. There is only a right to be free from undue governmental interference when seeking to exercise those fun-

¹⁹⁴ See *id.* at 52-61 (discussing the "Countercycle Earmarked Excise Tax" as a disincentive to sex selection).

¹⁹⁵ See *id.* (explaining that incorporating a tax to a behavior choice, in this case sex selection, can actually affect demand for that choice); see also Fiandaca, *supra* note 83, at 379-80 (stating that the public organized education about new reproductive technologies).

¹⁹⁶ 432 U.S. 464 (1977) (holding that states are free to determine whether public funds may be used for nontherapeutic abortions).

damental rights in the private sphere.¹⁹⁷ Therefore, the government can refuse funding as one step of demonstrating its “value judgment” in discouraging the use of preconception sex selection, and thereby preventing its resulting harms on the people of the state. This approach by the government is unlikely to have an immense effect, however, because most of the research in this area is already being performed in the private sector due to the government’s ban on federal funding of research involving pre-implantation embryos.¹⁹⁸ Additionally, it is unlikely to affect consumers, who generally already pay for all fertility services out-of-pocket anyway.¹⁹⁹

The downfall associated with economic efforts is that while they decrease use, the disincentive is only felt by the poorest of the population. This may increase the disparate distribution of reproductive technologies, further masculinizing wealth and feminizing poverty.

5. Self-Regulation of the Medical Field

The medical field can regulate itself either through medical boards or voluntary associations. Voluntary associations that have membership relevant to preconception sex selection include the American Society for Reproductive Medicine (ASRM), American College of Obstetricians and Gynecologists (ACOG), and the Society for Assisted Reproductive Technology (SART).²⁰⁰ These organizations can work with the government and other private organizations to come up with guidelines which can be published in national medical journals and require their members to follow.²⁰¹

One non-interventionist approach to preconception sex selection is to allow the medical field to regulate itself through the “doctors dissuade” approach.²⁰² Basically, this approach asks the

¹⁹⁷ See *id.* at 473-74 (discussing why a state may refuse to fund technology even when the citizens of that state have a fundamental right to be free from governmental interference in accessing that service).

¹⁹⁸ See Tasca & McClure, *supra* note 13, at 8 (discussing the prohibition of federal funding of research involving pre-implantation embryos).

¹⁹⁹ See generally Botkin, *supra* note 72, at 25 (stating that the cost of pre-implantation genetic diagnosis will make it unavailable to most couples); John A. Robertson, *Liberalism and the Limits of Procreative Liberty: A Response to My Critics*, 52 WASH. & LEE L. REV. 233, 263 (1995) (discussing that the use of reproductive technology would likely increase, and the resultant harmful effects would be greater, if private and public insurance began funding such procedures).

²⁰⁰ See Eggen, *supra* note 166, at 671-73.

²⁰¹ See Daar, *supra* note 84, at 658 (discussing the self-regulatory nature of ASRM of professionals in the field of reproduction).

²⁰² The discussion of the “doctors dissuade” approach is derived from Jones, *supra* note 3, at 27-28.

medical boards or associations to adopt policies requiring doctors to attempt to dissuade patients from using sex selection technology.²⁰³ Such a policy compromises the fiduciary duties that doctors owe to their patients and will sacrifice the trust that patients have in doctors.²⁰⁴ It is therefore an unacceptable way to approach issues with preconception sex selection.

Another approach is for the boards and associations simply to forbid their members to perform preconception sex selection and to penalize such activities with loss of membership in the association or revocation of licensure.²⁰⁵ While self-regulation is a wonderful aspect of the medical profession, it is an inadequate method of dealing with a potentially harmful and politically charged issue such as preconception sex selection. It falters because compliance with the guidelines established by boards or associations have no long-lasting or harsh penalties, and compliance is often voluntary. Therefore, other regulations would be necessary in addition to self-regulation.

6. Social Exhortation

Social exhortation is another non-interventionist approach. It focuses on the public and consumers attacking the practice of preconception sex selection in order to create a boycott of the service and to send a public message that it is an unacceptable choice for parents to make and providers to participate in. As one critic, Tabitha Powledge said:

We may want to turn to such time-honored measures as boycotts, and putting pressure on funders not to underwrite such research. We may also want to give some attention to a mechanism that appears weak, but may be undervalued: moral exhortation. We must say over and over again to friends and neighbors, in the pages of magazines and newspa-

²⁰³ See Committee on Ethics, *supra* note 9, at 200 (citing medical and governmental committees' statements on the use of sex selection).

²⁰⁴ See Jones, *supra* note 3, at 47.

²⁰⁵ See *id.* at 28 (discussing how hospital and laboratory policies can be used to dissuade professionals from performing sex selection); see also Eggen, *supra* note 166, at 667-68 (explaining that state licensure is "the primary means of regulating the conduct of physicians" and that while the board does not actually develop the standards of clinical practice, it does in some instances provide recommendations as to the standards of clinical conduct).

pers, on television and radio, that this technology, even if available should simply not be used.²⁰⁶

The obvious problem with this proposal, similar to the primary problem with the medical field regulating itself, is that there is no actual regulation. This approach merely provides incentives to providers not to practice sex selection services. Yet, if the market presses down more strongly on the backs of those providers than do the squeaky wheels of social exhortationists, the technology will be used, and the harms will be experienced by society. Therefore, while this approach is good when used in combination with other truly regulatory efforts, it is inadequate on its own.

D. Problems with Enforcement

In addition to worrying about whether a specific form of ban or regulation will be enforceable among the population, we also must be concerned that if preconception sex selection is regulated, prospective parents will use underground ("black market") or international and interstate resources to circumvent the prohibitions.²⁰⁷ This has been a concern in other countries that have outlawed prenatal sex diagnosis.²⁰⁸ Although this is a very real concern, the expense and inconvenience are probably so burdensome that they would discourage this practice amongst many.

V. CONCLUSION

In conclusion, it appears that an overall ban of preconception sex selection will be the most useful and provide the broadest protection for women and society. However, enacting a complete ban, especially at the federal level, may be slightly premature. It would be more appropriate to take moderate steps now to prevent serious harms from arising and to set a precedent that preconception sex selection is a serious harm that must be dealt with as it develops. Additionally, measures should be put into place for detecting and evaluating the use and effects of preconception sex selection so as to avoid delay if it becomes apparent that a prohibition is immediately necessary. Creat-

²⁰⁶ Tabitha M. Powledge, *Unnatural Selection: On Choosing Children's Sex*, in THE CUSTOM-MADE CHILD 193, 201 (Helen Holmes et al. eds., 1981), quoted in Jones, *supra* note 3, at 29.

²⁰⁷ See generally, BONNICKSEN, *supra* note 52, at 92.

²⁰⁸ See Nisker, *supra* note 22, at 42 (further arguing that without significant cultural change, a society outlawing sex selection will experience underground circumvention of the prohibition).

ing a waiting list for families seeking sex selection technology may be a proposal ripe for implementation. However, strict protectionists of “fundamental” reproductive rights would argue that even this is too stringent an effort considering that there are no marked problems with population imbalance at this time. Whether this type of ban could currently make it into legislation is questionable. Regardless of whether either of those proposals is “ready for use,” it is fairly apparent that without significant clarification and development, proposals, which would ban preconception sex selection with exceptions only for family balancing, would not be workable.

While the government is busy pondering its options and creating legislation, we as a society should make efforts to “nip the bud at the root,” by making efforts to improve the equal treatment of women so that the driving force for sex selection, i.e. sexism, is lessened by the time the technology becomes commonplace. We should use other private efforts to discourage funders and consumers from participating in the development, testing, or use of preconception sex selection techniques. And, lastly, we should push for funding for community education projects, which would help to educate women about reproductive options and the harmful effects of sex selection.

Hopefully these efforts would respect reproductive autonomy while enabling prevention of the harms that are likely to result from widespread use of preconception sex selection technology. But, as Judith Daar has stated:

[S]imple solutions, even used in combination, will not necessarily rid [assisted reproductive technologies] of the disaster potential. . . . Because the practice of [assisted reproductive technology] invokes multiple components, any reform of reproductive medicine must be sensitive to the technical, ethical, and political components that make up this complex and growing industry.²⁰⁹

Dealing with this issue should become what you could call a “running commentary” for society and should be treated as an issue that is ready for consideration. In this way, we could be prepared when the storm comes thereby preventing serious harms to society and pummeling setbacks for the woman’s movement.

²⁰⁹ Daar, *supra* note 84, at 618.