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## Bioethical Considerations of Preimplantation Genetic Diagnosis for Sex Selection

M. Shelby Deeney

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# BIOETHICAL CONSIDERATIONS OF PREIMPLANTATION GENETIC DIAGNOSIS FOR SEX SELECTION

M. SHELBY DEENEY\*

## ABSTRACT

*Since ancient times, people have tried to control the sex of their offspring. Today, technology allows individuals to choose the sex of a child with near-perfect accuracy. The combined technologies of in vitro fertilization (IVF) and preimplantation embryo genetic testing enable prospective parents to choose the sex of the embryos that will be implanted for gestation and develop into children. Currently, no United States law governs the use of preimplantation genetic diagnosis (PGD) for the use of sex selection. This Note explores the consequences of this unregulated technology and why natural law calls for regulation of PGD for sex selection.*

*This Note considers the ethical and moral considerations of this practice and whether natural law would require legislation regulating or limiting the use of PGD for sex selection. This Note examines not only the technology involved but also the ethical considerations of this practice.*

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\* Executive Articles Editor, *Washington University Jurisprudence Review*; J.D. (2013), Washington University School of Law

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I. INTRODUCTION

Since ancient times, people have tried to control the sex of their offspring.<sup>1</sup> Today, technology allows individuals to choose the sex of a

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1. Jodi Danis, Note, *Sexism and “The Superfluous Female”: Arguments for Regulating Preimplantation Sex Selection*, 18 HARV. WOMEN’S L.J. 219, 220 (1995).

child with near-perfect accuracy.<sup>2</sup> The combined technologies of in vitro fertilization (IVF) and preimplantation embryo genetic testing enable prospective parents to choose the sex of the embryos that will be implanted for gestation and develop into children. Currently, no United States law governs the use of preimplantation genetic diagnosis (PGD) for the use of sex selection. This Note explores the consequences of this unregulated technology and why natural law calls for regulation of PGD for sex selection.

This Note considers the ethical and moral considerations of this practice and whether natural law would require legislation regulating or limiting the use of PGD for sex selection. In Part I, I describe the technology involved in PGD for sex selection. In Part II, I examine the existing law and policy relevant to the use of PGD for sex selection in the United States and internationally. In Part III, I discuss the controversy surrounding the use of PGD for sex selection, including both the arguments for and against this technology. In Part IV, I discuss natural law theory and its development and implementation in American law. In Part V, I offer my recommendation that natural law calls for regulation of this technology.

## II. PREIMPLANTATION GENETIC DIAGNOSIS AND SEX SELECTION: THE TECHNOLOGY

Preimplantation genetic diagnosis occurs in conjunction with IVF.<sup>3</sup> As one report described it, “PGD is a multi-step process that includes egg extraction, in vitro fertilization, cell biopsy, genetic analysis, and embryo transfer.”<sup>4</sup> After fertilization, when the embryos are at the eight-cell stage of development, one or two cells from the embryos are removed for genetic testing.<sup>5</sup> This technology has been very successful in screening out embryos with genetic diseases like Tay-Sachs and cystic fibrosis.<sup>6</sup> Once the embryos have been tested, only embryos without the undesired trait (or alternatively with the desired trait) will be implanted.<sup>7</sup>

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2. *Id.*

3. Susannah Baruch et al., *Preimplantation Genetic Diagnosis: A Discussion of Challenges, Concerns, and Preliminary Policy Options Related to the Genetic Testing of Human Embryos*, PGD REPORT (Genetics and Pub. Policy Ctr.), Jan. 2004, at 4, available at <http://www.dnapolicy.org/images/reportpdfs/PGDDiscussionChallengesConcerns.pdf>.

4. *Id.*

5. *Id.*

6. *Id.* at 3.

7. *Id.* at 4.

Genetic tests at the embryonic stage can also determine the sex of the embryos,<sup>8</sup> which allows parents to choose to implant only embryos of a certain sex.<sup>9</sup> Today, PGD is most commonly used for its original purpose of screening out embryos with a genetic disease, but it is also used for sex selection.<sup>10</sup> Parents, who desire a particular sex, can and do use this technology to pick the sex of their offspring.<sup>11</sup>

There is a significant difference between sex selection for medical and non-medical reasons. There are over two hundred sex-linked diseases, most of which only affect males.<sup>12</sup> Males only have one copy of the X chromosome. Where there is a mutation on the X chromosome, the sex-linked disease will often result for male offspring but not female offspring, who have two X chromosomes.<sup>13</sup> Because most of these diseases do not have a cure, sex selection is a method to avoid these diseases in future offspring.<sup>14</sup> However, this is inherently different than sex selection for the sole reason that a parent desires a child of a particular sex. This method is to avoid disease, not to prefer one sex to the other.

#### A. Egg Extraction

People who want a child of a specific gender begin this selection process with egg extraction.<sup>15</sup> To prepare for this step, women must inject themselves with hormones to stimulate the production of eggs in the ovary.<sup>16</sup> Hormone injections have multiple side effects, which include illness and mood swings.<sup>17</sup> Another risk is ovarian hyperstimulation,

8. Rebecca Knox, *Preimplantation Genetic Diagnosis: Disease Control or Child Objectification?*, 22 ST. LOUIS U. PUB. L. REV. 435, 449 (2003).

9. Danis, *supra* note 1, at 228.

10. Baruch et al., *supra* note 3, at 5.

11. Benjamin B. Williams, Note, *Screening for Children in the "Wild West" of Reproductive Medicine*, 79 GEO. WASH. L. REV. 1305, 1311 (2011). Although PGD is not the only form of sex selection, it is the most effective. Sperm sorting is another mechanism used to determine sex. Sperm sorting divides the sperm into X-chromosome sperm and Y-chromosome sperm. The preferred gender sperm is then used to fertilize the egg. Sperm sorting has a success rate of 90% for conceiving female children and 72% for conceiving male children. PRESIDENT'S COUNCIL ON BIOETHICS, REPRODUCTION, AND RESPONSIBILITY: THE REGULATION OF NEW BIOTECHNOLOGIES 93 (2004) [hereinafter PRESIDENT'S COUNCIL ON BIOETHICS].

12. HUMAN FERTILISATION & EMBRYOLOGY AUTHORITY, SEX SELECTION: CHOICE AND RESPONSIBILITY IN HUMAN REPRODUCTION, 7 (2002) [hereinafter "HFEA SEX SELECTION"], available at [http://www.hfea.gov.uk/docs/Sex\\_Selection\\_choice\\_and\\_responsibility.pdf](http://www.hfea.gov.uk/docs/Sex_Selection_choice_and_responsibility.pdf).

13. Jaime King, *Predicting Probability: Regulating the Future of Preimplantation Genetic Screening*, 8 YALE J. HEALTH POL'Y, L. & ETHICS 283, 294 (2008).

14. HFEA SEX SELECTION, *supra* note 12, at 7.

15. Baruch et al., *supra* note 3, at 4.

16. *Id.*

17. Danis, *supra* note 1, at 228.

“which can lead to nausea, vomiting, shortness of breath[,] distended abdomen, and hospitalization.”<sup>18</sup> Additionally, ovarian hyperstimulation can lead to serious bleeding, blood clots, and kidney failure.<sup>19</sup> Yet, these are only the short-term risks. The long-term risks of fertility drug use “remain largely unexamined and unknown.”<sup>20</sup>

To remove the eggs, the woman must undergo surgery.<sup>21</sup> She is either sedated or under general anesthesia while a doctor uses a probe with a vacuum to extract the eggs.<sup>22</sup> As with most surgeries, there are potential risks to the patient.<sup>23</sup> Egg extraction can result in pain, bleeding, nausea, vomiting, infection, and in rare complications, injury to blood vessels or internal organs (such as bowels or bladder) during the procedure.<sup>24</sup>

### B. *In Vitro Fertilization*

*In vitro* fertilization occurs outside the womb with the extracted eggs and the sperm of the father.<sup>25</sup> Thousands of sperm are mixed with each egg in a Petri dish.<sup>26</sup> Fertilization requires about eighteen hours to occur, and about twelve hours after fertilization, the fertilized egg begins to divide into more cells.<sup>27</sup> IVF usually results in multiple embryos created from the eggs and sperm of the parents, but in some rare instances no fertilization occurs.<sup>28</sup>

### C. *Cell Biopsy*

When the embryos are at an eight-cell stage of development, every cell has exactly the same genetic material. This occurs about two to four days after fertilization.<sup>29</sup> At this point, the doctor then extracts one or two cells

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18. Williams, *supra* note 11, at 1319.

19. *Id.*

20. King, *supra* note 13, at 297.

21. *Id.*

22. Dr. Samuel Marcus, *Egg Collection*, <http://www.ivf-infertility.com/ivf/standard/procedure/egg.php> (last visited Oct. 23, 2011).

23. Dr. Samuel Marcus, *Risks and Complications of IVF Treatment*, [http://www.ivf-infertility.com/ivf/standard/complications/egg\\_collection.php](http://www.ivf-infertility.com/ivf/standard/complications/egg_collection.php) (last visited Oct. 23, 2011).

24. *Id.*

25. Rachel E. Remaley, Note, “*The Original Sexist Sin*”: *Regulating Preconception Sex Selection Technology*, 10 HEALTH MATRIX 249, 252 (2000).

26. *Id.*

27. *Id.*

28. Dr. Samuel Marcus, *IVF Procedure*, <http://www.ivf-infertility.com/ivf/standard/procedure/fertilization.php> (last visited Oct. 23, 2011).

29. Baruch et al., *supra* note 3, at 4.

from the embryos for genetic testing.<sup>30</sup> Each cell at this stage in development is pluripotent, which means that “it has not been differentiated . . . [and] still has the potential to become any of the various types of cells found in a human being.”<sup>31</sup> Although there are no known direct risks of the cell biopsy procedure, implantation and live birth rates for embryos that undergo cell biopsy is lower than IVF with no cell biopsy.<sup>32</sup> Some scientists attribute the lower implantation rates to the “imprecise or unskilled embryo biopsy[, which] can substantially harm the embryo.”<sup>33</sup> Additionally, it is feared that developmental and other health problems may occur later in life because the risks of cell biopsy are still largely unknown.<sup>34</sup>

Some doctors are now recommending that cell biopsy be done at the blastocyst stage of the embryo, which occurs about five days after fertilization.<sup>35</sup> Their research has found that when cell biopsy occurs at the cleavage stage of the embryo (the eight-cell stage), implantation is 22% less likely than when cell biopsy occurs at the blastocyst stage of the embryo.<sup>36</sup>

#### D. Genetic Analysis

Once the cell is extracted, doctors can analyze its genetic make-up, allowing them to identify specific traits, including gender, and search for chromosomal abnormalities. There are two common ways for a doctor to analyze the genetic material: chromosomal analysis or direct DNA analysis.<sup>37</sup>

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30. *Id.*

31. Remaley, *supra* note 25, at 252 n.16.

32. Sebastiaan Mastenbroek et al., *In Vitro Fertilization with Preimplantation Genetic Screening*, 357 NEW ENGL. J. MED. 9 (2007), available at <http://www.nejm.org/doi/full/10.1056/NEJMoa067744#t=articleTop>.

33. King, *supra* note 13, at 306.

34. PRESIDENT’S COUNCIL ON BIOETHICS, *supra* note 11, at 94.

35. See N.R. Treff et al., *Cleavage Stage Embryo Biopsy Significantly Impairs Embryonic Reproductive Potential While Blastocyst Biopsy Does Not: A Novel Paired Analysis of Cotransferred Biopsied and Non-Biopsied Sibling Embryos*, 96 No. 3 FERTILITY & STERILITY (SUPPLEMENT) S2 (Sept. 2011).

36. *Id.*

37. Challenges, *supra* note 3, at 4.

### 1. Chromosomal Analysis

Chromosomal analysis uses a process called fluorescence *in situ* hybridization (FISH).<sup>38</sup> This is the most common form of genetic analysis in the United States.<sup>39</sup> For this type of analysis, “fluorescently labeled, chromosome-specific probes are used to visualize spots representing each copy of that chromosome present in the cell.”<sup>40</sup> Chromosomal analysis is particularly helpful in identifying chromosomal abnormalities, easily detecting when there are too few or too many chromosomes.<sup>41</sup> Chromosomal analysis is also the preferred method for sex selection.<sup>42</sup> Because sex is determined by X and Y-chromosomes, using FISH analysis easily shows which chromosomes are present in an embryo.

### 2. Direct DNA Analysis

Direct DNA analysis uses polymerase chain reaction (PCR) to analyze and copy the genetic material of the embryo.<sup>43</sup> Direct DNA analysis is used “to examine a specific gene on a chromosome.”<sup>44</sup> Direct DNA analysis can screen for severe genetic disorders, such as cystic fibrosis and Tay-Sachs, or for a “specific genetic condition, such as deafness.”<sup>45</sup>

### E. Embryo Transfer

Once the DNA analysis is complete, the doctor transfers only embryos with the desired genetic characteristics to the woman’s uterus. When PGD is used to screen for genetic disease, only the unaffected embryos are transferred. Similarly, when PGD is used for sex selection, only embryos of the desired sex are transferred to the woman’s uterus. If the genetic analysis is incorrect, there is a risk of transferring embryos of an undesired sex. However, PGD is a near-perfect system of selecting the sex of one’s offspring, and errors rarely occur.

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38. King, *supra* note 13, at 291.

39. *Id.* at 295.

40. Baruch et al., *supra* note 3, at 4.

41. *Id.*

42. King, *supra* note 13, at 294.

43. Baruch et al., *supra* note 3, at 4.

44. King, *supra* note 13, at 291.

45. *Id.* at 295–96.

### III. EXISTING LAW AND POLICY IN THE UNITED STATES AND OTHER COUNTRIES

Neither federal nor state authorities regulate PGD for sex selection in the United States. In fact, there is no federal law regulating PGD in any way. While New York regulates the genetic tests that are used in PGD,<sup>46</sup> no state regulates PGD itself. Laws that regulate either assisted reproduction or genetic testing may at times affect the use of PGD for sex selection. In this section, I explore the relevant laws, practices, and professional guidelines affecting the use of PGD for sex selection in the United States. In doing so, I also describe and compare international laws and regulations governing PGD for sex selection.

#### A. *United States*

PGD is “at the intersection of two technologies with a confusing regulatory status: assisted reproduction and genetic testing.”<sup>47</sup> Although there are no federal or state limitations on the use of PGD for sex selection, laws that affect assisted reproduction and genetic testing ultimately affect the use of PGD. However, the United States takes a hands-off attitude to most aspects of assisted reproduction; thus, it is often referred to as the “wild west” of biotechnology.<sup>48</sup>

##### 1. *Laws and Regulations*

In 1992, Congress passed the Fertility Clinic Success Rate and Certification Act (FCSRCA).<sup>49</sup> This law calls for regulation of fertility clinics in the United States. Under this Act, fertility clinics must report their pregnancy success rates to the Centers for Disease Control and Prevention (CDC).<sup>50</sup> Yet, the penalty for clinics that fail to do so is merely to be listed as a noncompliant clinic.<sup>51</sup> Additionally, this law does not require fertility clinics to report the genetic tests used in PGD.<sup>52</sup> But, because PGD is performed almost exclusively at fertility clinics, future

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46. Susannah Baruch et al., *Genetic Testing of Embryos: Practices and Perspectives of U.S. In Vitro Fertilization Clinics*, 89 No.5 FERTILITY & STERILITY 1053, 1056–57 (May 2008).

47. Challenges, *supra* note 3, at 7.

48. See Williams, *supra* note 11.

49. 42 U.S.C. § 263a-1 *et seq.*

50. *Id.*

51. Baruch, *supra* note 46, at 1056.

52. *Id.*

regulation of PGD for sex selection could occur through the expansion of this law.

## 2. *Professional Guidelines*

Given the lack of formal law governing PGD use, professional self-regulation guides the medical practice. Although professional guidelines discourage the use of PGD for sex selection, these guidelines are issued by professional organizations that are voluntary and have no mechanism to enforce their recommendations.<sup>53</sup> Additionally, the American Society for Reproductive Medicine (ASRM) has wavered in their suggestions. Initially, ASRM discouraged PGD for sex selection, but later published a recommendation allowing PGD for sex selection for purposes of family balance.<sup>54</sup> Subsequently, ASRM took a stance that PGD for sex selection, whether for family balance or not, should not occur.<sup>55</sup> The ASRM Ethics Committee concluded “PGD done solely for sex selection is physically . . . burdensome, and necessarily involves the destruction or discarding of embryos.”<sup>56</sup> It explained that, although ASRM does not view preimplanted embryos as “humans or moral subjects,” these embryos should still be afforded “special respect” because of “their potential to implant and bring forth a new person.”<sup>57</sup> Accordingly, ASRM decided to discourage PGD for sex selection because “the interest in choosing the gender of offspring had not yet been shown to be strong enough to justify the creation and destruction of embryos solely for gender variety in a family.”<sup>58</sup>

## 3. *Current Use of PGD for Sex Selection*

Because ASRM policy is not binding, individual fertility clinics adopt their own policies on PGD for sex selection. Clinics are divided on whether sex selection is an appropriate part of PGD practice. While some fertility clinics widely advertise their services for sex selection, other clinics allow sex selection only for medical reasons in order to avoid X-linked chromosomal genetic diseases. Still other clinics refuse to select embryos on the basis of sex. Instead, they transfer what appear to be the

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53. King, *supra* note 13, at 324.

54. Knox, *supra* note 8, at 450–51.

55. John Robertson, *Sex Selection: Final Word from the ASRM Ethics Committee on the Use of PGD*, 32 HASTINGS CTR. REP. 6 (2002).

56. *Id.*

57. *Id.*

58. *Id.*

healthiest embryos regardless of sex.<sup>59</sup> In 2008, a survey found that forty-two percent of clinics offering PGD reported that they have offered PGD for nonmedical sex selection.<sup>60</sup> Of the clinics that offer PGD for nonmedical sex selection, forty-seven percent “are willing to defer to parental preferences and provide PGD for nonmedical sex selection under all circumstances.”<sup>61</sup> However, “[f]orty-one percent will only provide the service for a second or subsequent child[, and] [s]even percent will only provide PGD for sex selection if there is another medical reason to undergo PGD.”<sup>62</sup>

A few fertility clinics have made the decision to advertise the availability of PGD for sex selection to parents who desire a particular sex, claiming high success rates. Some clinics have reported an increase in patients after advertising PGD for sex selection. For example, when Dr. Jeffrey Steinberg’s Fertility Institute began advertising PGD for sex selection, the number of procedures increased from an average of one to two per week to ten per week.<sup>63</sup> Those doctors disregard the ASRM recommendations of discouraging sex selection for nonmedical reasons and are driven by consumer demand. Potential parents from the United States and abroad seek out those doctors for the sole reason of choosing the gender of their next baby.<sup>64</sup>

At fertility clinics that refuse to offer PGD for sex selection, many doctors view the use of the procedure as morally reprehensible. The PGD procedure was developed to allow people to avoid having children with serious, genetic diseases. Dr. Mark Hughes, one of the first doctors to develop and use PGD, explained, “I went into medicine and to science to diagnose and treat and hopefully cure disease. Your gender is not a disease, last time I checked. There’s no pathology. There’s no suffering. There’s no illness. And I don’t think doctors have any business being there.”<sup>65</sup>

Because many other countries have banned the use of PGD for sex selection, the United States has seen an increase in medical tourists

59. See Baruch, *supra* note 46.

60. *Id.*

61. *Id.*

62. *Id.*

63. Rebecca Leung, *Choose the Sex of Your Baby*, CBS NEWS (Feb. 11, 2009), <http://www.cbsnews.com/stories/2004/04/13/60II/main611618.shtml>.

64. See Amanda Mitcheson, *Sex Selection: Getting the Baby You Want*, THE GUARDIAN (Apr. 2, 2010), <http://www.guardian.co.uk/lifeandstyle/2010/apr/03/sex-selection-babies>.

65. Leung, *supra* note 63.

seeking this procedure.<sup>66</sup> People who strongly desire a child of a certain sex find ways to make their desire a reality; they travel across the globe and pay extremely high costs to have the child of their desired sex.<sup>67</sup> Indeed, at Dr. Steinberg's clinic, a majority of the patients are foreign, with seventy percent of his patients coming from countries where PGD for sex selection is banned.<sup>68</sup>

### *B. Laws Abroad*

Many other countries have adopted restrictive approaches to PGD and sex selection, demonstrating differences in how this controversial practice is regarded. Thirty-six countries have explicit laws on sex selection, the majority of which ban sex selection for nonmedical reasons, while five of them go further to ban PGD for all uses.<sup>69</sup> Germany was originally among the countries that banned the use of PGD for all uses.<sup>70</sup> However, in July 2011, Germany passed a law that allows PGD only in instances where the parents are carriers of a genetic disease or one parent already has a genetic disease. In conjunction with PGD, parents must undergo mandatory genetic counseling to prevent abuse of PGD technology.<sup>71</sup>

The United Kingdom and Canada have banned PGD use for nonmedical sex selection.<sup>72</sup> In the United Kingdom, the enforcement of this law is through a regulatory agency which licenses and regulates every fertility clinic located in the United Kingdom.<sup>73</sup> Japan also discourages PGD for sex selection, but regulation is through professional organizations that have mandatory membership and the power to enforce the regulations.<sup>74</sup>

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66. See Mitcheson, *supra* note 64.

67. *See id.*

68. *Would You Choose Your Child's Gender?*, CNN.com (Dec. 8, 2009), [http://articles.cnn.com/2009-12-08/health/video.wall.gender.baby\\_1\\_gender-selection-pgd-gender-imbalance?\\_s=PM:HEALTH](http://articles.cnn.com/2009-12-08/health/video.wall.gender.baby_1_gender-selection-pgd-gender-imbalance?_s=PM:HEALTH).

69. See Marcy Darnovsky, *Countries with Laws or Policies on Sex Selection*, CENTER FOR GENETICS AND SOCIETY (Apr. 2009), [http://www.geneticsandsociety.org/downloads/200904\\_sex\\_selection\\_memo.pdf](http://www.geneticsandsociety.org/downloads/200904_sex_selection_memo.pdf).

70. TANIA M. SIMONCELLI, INTERNATIONAL CENTER FOR TECHNOLOGY ASSESSMENT, *PRE-IMPLANTATION GENETIC DIAGNOSIS: ETHICAL GUIDELINES FOR RESPONSIBLE REGULATION 2* (2003).

71. Nishat Hyder, *Germany Allows PGD for Life-Threatening Genetic Defects*, BIONEWS 615 (July 11, 2011), [http://www.bionews.org.uk/page\\_101402.asp](http://www.bionews.org.uk/page_101402.asp).

72. Ashley Bumgarner, Note, *A Right to Choose? Sex Selection in the International Context*, 14 DUKE J. GENDER L. & POL'Y 1289, 1304 (2007).

73. ROSARIO M. ISASI ET AL., GENETICS AND PUBLIC POLICY CENTER, NATIONAL REGULATORY FRAMEWORKS REGARDING HUMAN REPRODUCTIVE GENETIC TESTING 18 (2006).

74. *Id.* at 11.

In Israel, the Ministry of Health promulgates regulations for PGD, IVF, and sex selection. Sex selection is allowed for medical reasons, but it is generally prohibited for nonmedical reasons. However, the Ministry of Health may approve PGD for sex selection in exceptional circumstances on a case-by-case basis. Couples must petition the Ministry of Health seeking approval for PGD for sex selection. If the couple shows a strong interest in family balance and already has multiple children of one gender, the Ministry of Health can approve an exception for the couple.<sup>75</sup>

#### IV. CONTROVERSIAL ISSUES

Underlying the debate over PGD for sex selection are multiple policy arguments for and against the practice. Now that there is a near-perfect method to select the sex of one's offspring, society must grapple with the ethical questions raised by sex selection. In this part, I discuss the ethical arguments for and against PGD for sex selection.

##### *A. Arguments in Favor of PGD for Sex Selection*

Proponents of PGD for sex selection vary among themselves in their degree of support of this technology. Although some proponents view PGD for sex selection within the purview of parental autonomy, others see limits to the use and advocate for its use for a specific purpose, such as family balance.

##### *1. Parental Autonomy*

Proponents of PGD embryo sex selection view this technology as a reasonable and useful means of choosing the desired sex of one's offspring. Specifically, they believe that PGD selection should be a "fundamental right."<sup>76</sup> They believe that because humans have evolved by their "manipulation of the natural world," sex selection is merely another way to develop into a more civilized society.<sup>77</sup> Parents have a strong influence over the upbringing of their children and can decide their children's religion, the schools they attend, and have the ultimate say in everyday decisions for their children. Accordingly, they believe choosing

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75. Ruth Zafran, *Non-Medical Sex Selection by Preimplantation Genetic Diagnosis: Reflections on Israeli Law and Practice*, 9 N.C. J. L. & TECH. 187, 208 (2008).

76. See Owen D. Jones, *Sex Selection: Regulating Technology Enabling the Predetermination of a Child's Gender*, 6 HARV. J.L. & TECH. 1, 19 (1992).

77. *Id.*

the sex of their child is just another decision that parents have the ability to make in the upbringing of their children. When adopting, prospective parents are able to consider factors like race and gender of their adopted child. Similarly, proponents of sex selection believe that when procreating, the ability of parents to choose gender is a valid because it is their right as a future parent. Because “individual embryo selections do not violate others’ reproductive rights or personal autonomy,”<sup>78</sup> proponents believe that their own autonomy and reproductive rights should be protected without regulations on this practice.

### 2. *Reproductive Privacy and Choice*

The United States values and protects reproductive rights, and “although procreative liberty is [not] absolute or unlimited, ordinarily [it] accord[s] couples and individuals a wide choice in reproductive matters.”<sup>79</sup> Proponents of this procedure believe that the choice of whether to use or not to use PGD for sex selection belongs to the people, and even if “it should not be positively encouraged . . . disagreement with a choice is not sufficient basis to prohibit it.”<sup>80</sup> Reproductive rights have been championed because of the right to privacy, and proponents believe that sex selection is a reproductive right where state restrictions should not exist.<sup>81</sup>

### 3. *Family Balance*

Proponents advocate PGD for sex selection to create a gender balance within the family. Parents often have strong desires to have a family that is composed of both male and female children. Some proponents believe that PGD for sex selection should only be used after the parents already have a child of one gender and seek a child of the opposite gender. This limitation recognizes that PGD for sex selection should be used cautiously, to avoid gender imbalance and sex discrimination.

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78. King, *supra* note 13, at 316–17.

79. Ethics Committee of American Society for Reproductive Medicine, *Preconception Gender Selection for Nonmedical Reasons*, 75 FERTILITY & STERILITY 861, 862 (2001) [hereinafter American Society for Reproductive Medicine].

80. *Id.*

81. Jones, *supra* note 76, at 20.

#### 4. *Companionship With Child of One's Own Gender*

Parents seek the companionship of their children. Proponents of PGD use for sex selection argue that “gender similarity and complementarity are morally acceptable reasons for wanting a child of a certain sex.”<sup>82</sup> They point out that there are “physical and psychological differences” between the genders that affect the way people parent.<sup>83</sup> Thus, they advocate for the use of PGD for sex selection to provide for meaningful relationships between the parent and child of the same sex.<sup>84</sup>

#### 5. *Alternative to Sex Selection Abortion*

It is unknown how many abortions are obtained for sex selection in the United States, but the figures are estimated to be low.<sup>85</sup> However, in countries such as China and India, abortion used for sex selection has been widely practiced and has created huge gender disparities. In China, reports “indicate that sex selection abortions have led to approximately 1.7 million fewer infant girls each year.”<sup>86</sup> Proponents believe there is a difference between pre-conception sex selection versus post-conception sex selection, and that choosing sex at the pre-conception stage is the preferred method of sex selection.

#### 6. *Population Control*

Parents who strongly desire a child of a particular gender will often try multiple times to have a child of that gender. Once parents have a child of the preferred sex, they will stop procreating. Thus, PGD for sex selection has been argued as a way to control the population. Elizabeth Whelan suggests that “as sex selection technology becomes widely available and accurate, couples might have additional incentives to plan pregnancies in order to guarantee a child of the right sex.”<sup>87</sup> If parents are able to plan for a child of a desired sex they will stop reproducing once they have a child of the desired sex and resulting in fewer children overall.

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82. American Society for Reproductive Medicine, *supra* note 79, at 863.

83. *Id.*

84. *Id.* at 862.

85. Danis, *supra* note 1, at 222 n.11.

86. *Id.* at 232 n.76.

87. *Id.* at 238.

### *B. Arguments Against PGD for Sex Selection*

Critics of PGD for nonmedical sex selection raise a variety of concerns when analyzing this issue. The main criticisms are related to inherent gender discrimination, the reinforcement of gender stereotypes and biases, and the resulting sex-ratio imbalance. In addition, psychological harm can arise, either to the children that were sex-selected or to their siblings who were not. Other criticisms are focused on the technology, its cost, its limited use, and the burdens on the mother. With the increasing use of PGD for sex selection, the criticisms are mounting.

#### *1. Unnecessary Medical Burdens*

Children born through the process of IVF have “much worse prenatal indicators than naturally conceived children, which was partially explained by multiple gestations.”<sup>88</sup> To increase the chance of implantation, doctors will transfer more than one embryo, often resulting in multiple pregnancies. Although the ASRM guidelines only suggest implanting two embryos because of the risk, there are still doctors who push the limits and implant more, such as in the infamous case of Nadya Sulemon.<sup>89</sup> Multiple pregnancies create a health risk not only for the expectant mother but also for the future children. When sex selection is used solely for nonmedical reasons, expectant mothers are placing unnecessary health risks on themselves and their children with this elective procedure. IVF infants are “more likely to be born through Cesarean section, to be born preterm, to have low birth weight, to require treatment in the newborn intensive care unit, to require hospitalization for seven days or more, and to die perinatally compared to naturally conceived controls.”<sup>90</sup> Expectant mothers also face health risks at every step of the process, from egg extraction to birth. Ordinarily, there are health risks involved with every pregnancy, but the added health risks of PGD and IVF to the mother and to the child sharply outweigh the future parents’ desire for a particular sex.

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88. King, *supra* note 13, at 304.

89. Nadya Suleman gave birth to eight babies in January 2009, and the Media dubbed her “Octomom.” However, her doctor, Michael Kamrava, implanted twelve embryos, apparently at her insistence. Eventually, he lost his medical license for gross negligence. “Octomom Doctor Won’t Get License Back, Judge Rules” L.A. TIMES (Dec. 15, 2011), available at <http://latimesblogs.latimes.com/lanow/2011/12/octomom-doctor-wont-get-license-back-judge-rules.html>.

90. *Id.* (percentages omitted).

## 2. *Inherent Gender Discrimination*

Critics of preimplantation embryo sex selection argue that the use of this technology is inherently discriminatory. Regardless of whether the parents choose to use PGD for family balance or not, critics view this practice as gender discrimination because the desire to select embryos of a particular sex are motivated by gender stereotypes. Additionally, the very act of sex selection increases “the already invidious sex discrimination, both because women are treated as machines to generate the perfect child, and because boys are preferred over girls.”<sup>91</sup> In the United States, there is a “distinct preference for male children and specifically male firstborn children.”<sup>92</sup> In one study, “women indicated that, were their preferences actualized in a one-child-only context, they would birth 161 boys to every 100 girls. Similarly, their preferences would result in a ratio of 171 to 100 firstborn males to females in a multi-child context.”<sup>93</sup>

Because PGD sex selection is unregulated in the United States, “[b]y permitting individuals to select against some traits, but refusing to let people select against other traits . . . the government makes a determination that some lives are valued and some lives are not, which will surely exacerbate discrimination and stigmatization of future children . . . .”<sup>94</sup> When sex selection is used, it “makes the very existence of human life contingent on a valuation of female life versus male life.”<sup>95</sup> The human value of a person should not rest on sex alone, but when this technology is used, that is exactly what potential parents are doing.

## 3. *Reinforcement of Gender Bias*

Parents seeking to have a child of a specific gender are often motivated by gender stereotypes. As such, the child they have will be treated with traditional gender biases and will continue the cycle of gender stereotypes. Danis argues that “parents who believe gender is important enough to warrant sex selection may have heightened expectations of traditional gender role identity.”<sup>96</sup> Consequently, these parents perpetuate gender

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91. Jones, *supra* note 76, at 23.

92. Remaley, *supra* note 25, at 276.

93. Jones, *supra* note 76, at 13.

94. King, *supra* note 13, at 317–18 (quotation omitted).

95. Danis, *supra* note 1, at 241.

96. *Id.* at 236.

biases and stereotypes in their children because of their heightened expectations of what gender means and how it should be displayed. Feminists acknowledge that there is a difference between female and male bodies, but they do not want to become “biological determinists, limiting women to the tasks which male bodies are incapable.”<sup>97</sup> Just because men and women are born with different bodies, which does in some ways define female identity, feminists believe that “bodily sex may be inherently *insufficient* to define womanhood, but that does not mean that bodily sex is not a *necessary* element of it.”<sup>98</sup> However, if parents choose children based on sex, they do so not only for the genital difference of male and female children, but for their concept of what identity a male or female child should have. This choice would perpetuate gender stereotypes and gender biases that already exist in our society.

#### 4. *Sex Ratio Imbalance*

Gender imbalance is a very real and significant problem in countries, such as China and India, where parents have often used amniocentesis and sex-selection abortion to select male children. Although sex-selection abortion is not prevalent in the United States, when American couples were asked their gender preference, male offspring were significantly preferred.<sup>99</sup> Danis suggests that if sex selection goes unregulated in the United States “at least 54.75 children in 100 would be male, resulting in a 9.5% surplus of males over females.”<sup>100</sup> Some critics predict “that a population in which males significantly predominate, known as a ‘high sex ratio society,’ would have devastating results for women.”<sup>101</sup> There is a fear that this imbalance would further exacerbate sex discrimination, because with such a large percentage of men versus women it would “be likely to force women to return to traditional roles centered around the home and family.”<sup>102</sup> Women would also have little recourse, “because women would not have the political power or economic resources to change the status quo.”<sup>103</sup> Further, with fewer women available for positions of power, “[o]ppression and violence against women might

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97. Traina, *supra* note 144, at 34.

98. *Id.*

99. See Jones, *supra* note 76.

100. Danis, *supra* note 1, at 235.

101. *Id.*

102. *Id.*

103. *Id.* at 235–36.

increase in male-dominated societies, especially if men felt the need to possess a limited resource [women].”<sup>104</sup>

With fewer women, more men will be available to fill professional roles, and males may dominate the medical profession.<sup>105</sup> Today, “women’s bodies are the loci of current sex selection technologies, all of which require some bodily invasion and many of which create additional health risks for women.”<sup>106</sup> With fewer women in the field of medicine, some feminists fear “a male-dominated medical profession that [would] usurp . . . women’s reproductive capacities in order to serve other men who want sons.”<sup>107</sup> Many women believe that one of the biggest advances for women’s rights have been the advances in women’s ability to control their reproductive capacities. Yet, in a more male-dominated medical field, women might have less control over their reproductive rights and “may lose control of their natural reproductive capacities as male practitioners essentially reproduce for them.”<sup>108</sup>

#### *5. Inappropriate Control Over Nonessential Characteristics of Children*

Critics see sex selection as the first step in a “slippery slope” towards using PGD to create “designer babies.”<sup>109</sup> If parents choose their baby’s sex through PGD, the more socially acceptable it will be to choose other nonessential characteristics. One critic characterizes PGD as “the technological manifestation of the early twentieth-century eugenicists’ goal to improve the human condition through genetic selection.”<sup>110</sup>

#### *6. Increased Costs for Parents*

This technology is very costly for parents, with IVF costing upwards of \$12,000 and PGD an additional \$2,500 to \$7,000.<sup>111</sup> Medical insurance companies rarely cover the costs of PGD analysis, even for genetic disease. Thus, only a limited number of parents would be able to pursue

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104. *Id.* at 236.

105. *Id.* at 237.

106. *Id.*

107. *Id.*

108. *Id.* at 238.

109. *Id.* at 241.

110. King, *supra* note 13, at 316 (quotation omitted).

111. *Id.* at 297.

PGD for sex selection, making the choice of gender, a choice of the privileged few.

This choice of the privileged few will also result in the “future masculinization of wealth.”<sup>112</sup> It is evident that the gender preference is generally for male children, and when only the upper and middle classes have access to this technology, “higher proportions of boys will be born to the wealthy.”<sup>113</sup>

#### *7. Societal Pressures to Use PGD for Sex Selection*

Another area of concern is the validity of the expectant mother’s choice to go through this elective procedure in order to have a child of the desired sex. Pressure from a partner to have a child of a particular sex, may cause women to choose to face this very risky procedure in order to fulfill the desires of their partner. Because this technology only has an effect on women’s bodies, Danis believes that “women alone should not shoulder the burden of moral scrutiny and responsibility for sex selection.”<sup>114</sup> As PGD use for sex selection has remained unregulated in the United States, clinics have seen an increase in parents who inquire about this procedure. If PGD for sex selection continues to go unregulated, society will come to accept the practice, and future mothers may face societal pressures as well. Today, as prenatal genetic testing has become the norm, it is questionable whether mothers make a true choice for this procedure. Critics believe that society should be the one to “carry the moral, ethical, and legal burdens that sex selection technology presents,”<sup>115</sup> instead of the women whose choice to undergo this procedure may not be entirely their own.

#### *8. Inappropriate Use of Limited Medical Resources*

Because of the costs, PGD is available to an elite minority. Because only a wealthy few have access to this elective procedure, future discrimination will occur to the groups who cannot afford and do not have access to sex selection. Very few doctors are able to screen for genetic diseases. The use of PGD for sex selection is being driven by the market and consumers who are willing to pay in order to choose the sex of their offspring. Because of this market demand, there are fewer doctors

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112. Danis, *supra* note 1, at 237.

113. *Id.*

114. Danis, *supra* note 1, at 223.

115. *Id.* at 223.

available to screen for genetic disease, and critics argue that PGD should be limited to therapeutic uses.<sup>116</sup> Critics argue “[g]ender is not a disease. Prenatal diagnosis for a nonmedical reason makes a mockery of medical ethics.”<sup>117</sup> However, with no regulations, some doctors are willing to use this technology to benefit those who can pay and seek to have a child of a particular sex, instead of those who cannot pay as much but who face a risk of genetic disease in their children.

### 9. *Psychological Harm*

The availability of PGD for sex selection also has a psychological effect on children. If children know that they were selected because of their gender but do not live up to gender norms, they could face psychological harms of failure and depression. The President’s Council on Bioethics expressed concern that even “[t]he present, more modest, applications of PGD—screening for severe medical conditions, screening for genetic predispositions for a given disease, elective sex selection, and selection with an eye to creating a matching tissue donor” make the child a “means to the parents’ ends.”<sup>118</sup> Even when PGD is used to prevent genetic disease, the technology “may change parents’ attitudes toward their children, increasing both the desire to control and the tacit expectation of certain qualities—an attitude that might intensify as PGD becomes more sophisticated.”<sup>119</sup> Children born from PGD for sex selection “may experience a loss of ‘selfhood’ as they realize that they are genetically fabricated products of another’s design.”<sup>120</sup> Professor Paul Freund of Harvard Law School argues that “allowing genes to be randomly selected preserves the sanctity of the human individual.”<sup>121</sup> When children are born through PGD for sex selection, they lose part of their identity as a human individual and face the psychological harm of an identity based on their genetic makeup.

When parents choose the sex of their child they are making a choice of normative, gender expectations. The parents will expect (and may even demand) that their child, who was chosen for a particular sex, will live up to the societal norms of that gender. These children face enormous pressure to live up to their parents’ expectations; ones that carry feelings

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116. See Remaley, *supra* note 25, at 279.

117. *Id.* at 280 (quotation and citation omitted).

118. PRESIDENT’S COUNCIL ON BIOETHICS, *supra* note 11, at 95.

119. *Id.* at 96.

120. Danis, *supra* note 1, at 242.

121. Remaley, *supra* note 25, at 273 (quotation and citation omitted).

of failure and depression on the part of both parents and children if they are not satisfied. One couple who already had several daughters but was using sex selection to try to conceive a boy, said in a newspaper interview, "If it's a girl . . . she will be told in time that we once wanted a boy but 'it doesn't matter now' . . . but if it's a boy . . . we'll be completely, 100% fulfilled."<sup>122</sup> This "overt expression of their parents' preferences" must have some psychological effect on their daughters who they have conceived naturally.<sup>123</sup> PGD for sex selection psychologically affects all the parties involved in a family unit, including the parents, the child born through this procedure, and any existent siblings of the opposite sex. Because of the psychological harm to all parties, critics argue that this is a morally reprehensible procedure.

#### V. NATURAL LAW

Natural law theory believes that law is developed from morality. Thomas Aquinas, one of the most preeminent natural law theorists, posited, "the first precept of the law [of nature] is that good is to be done and pursued, and evil is to be avoided."<sup>124</sup> Natural law theorists believe that law is a codification of ethics and morals, and conversely, "an unjust law is no law at all . . . [and] is not rooted in eternal and natural law."<sup>125</sup>

Thomas Aquinas recognized natural law in human behavior and as patterns in human inclination.<sup>126</sup> First, human beings have "inclinations to the preservation of their own being, according to their natures."<sup>127</sup> Accordingly, the first precept of natural law would create a natural duty to preserve human life and avoid situations that may threaten human life.<sup>128</sup> Secondly, because human beings exist as a species, there is a natural inclination to preserve the species with acts like "sexual intercourse, education of offspring and so forth."<sup>129</sup> Thirdly, Aquinas believes that humans are unique among species, and "there is in man a natural inclination to the good of the rational nature which is his alone. Thus, man has a natural inclination to know the truth about God and to live in

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122. Danis, *supra* note 1, at 236 (quotation and citation omitted).

123. *Id.*

124. Michael P. Zuckert, *Do Natural Rights Derive from Natural Law?*, 20 HARV. J.L. & PUB. POL'Y 695, 707 (1997) (quoting THOMAS AQUINAS, *SUMMA THEOLOGICA* I-II, q. 94, art. 2).

125. *Id.* at 696 (quoting MARTIN LUTHER KING, JR., LETTER FROM THE BIRMINGHAM JAIL 10, 11 (1994)).

126. *Id.* at 710.

127. *Id.* (quotation omitted).

128. *Id.*

129. *Id.* (quotation omitted).

society.”<sup>130</sup> An example of this inclination is to “avoid ignorance.”<sup>131</sup> Aquinas made clear that natural law is to be “comprehensive, even sweeping . . . .”<sup>132</sup>

Natural law is ever-present and binding in all cases of morality.<sup>133</sup> However, “human law”—man-made law—often imitates natural law, and “ultimately the task of the human law is to specify more concretely the demands of the natural law in actual circumstances and to bring to bear the authority and the coercive sanctions of the state in service to the natural law.”<sup>134</sup> Therefore, human law is often reflective of natural law and morality.

The Founders of the United States based their concepts of law and society in natural law.<sup>135</sup> Before the Constitutional Convention, Pastor Elizur Goodrich made an appeal to natural law in the selected portion of his sermon below:

The principles of society are the laws, which Almighty God has established in the moral world, and made necessary to be observed by mankind; in order to promote their true happiness, in their transactions and intercourse. These laws may be considered as principles, in respect of their fixedness and operation; and as maxims, since by the knowledge of them, we discover those rules of conduct, which direct mankind to the highest perfection, and supreme happiness of their nature. *They are as fixed and unchangeable as the laws which operate in the natural world.*

Human art *in order to produce certain effects*, must conform to the principles and laws, which the Almighty Creator has established in the natural world. He who neglects the cultivation of his field, and the proper time of sowing, may not expect a harvest. He, who would assist mankind in raising weights, and overcoming obstacles, depends on certain rules, derived from the knowledge of mechanical principles applied to the construction of machines, in order to give the most useful effect to the smallest force: And every builder

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130. *Id.* (quotation omitted).

131. *Id.* (quotation omitted).

132. *Id.*

133. *Id.* at 711.

134. *Id.*

135. The Declaration of Independence appeals to natural law by saying, “We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.” THE DECLARATION OF INDEPENDENCE para. 2 (U.S. 1776).

should well understand the best position of firmness and strength, when he is about to erect an edifice. For *he, who attempts these things, on other principles, than those of nature, attempts to make a new world; and his aim will prove absurd and his labour lost.* No more can mankind be conducted to happiness; or civil societies united, and enjoy peace and prosperity, without observing the moral principles and connections, which the same Almighty Creator has established for the government of the moral world.<sup>136</sup>

Whether natural laws exist because of God or because of the laws of nature, “they must be respected if we are to achieve the end of happiness, peace, and prosperity.”<sup>137</sup> The Declaration of Independence called for a government that embodies the “natural law idea that the government exists to further natural law and to protect natural rights. . . .”<sup>138</sup> The Framers of the Constitution relied on the principles of natural law while drafting, and even though the Constitution “does not explicitly reference natural law, it does use terms which cannot be understood apart from the natural law tradition from which they were plucked.”<sup>139</sup>

Natural law continued to shape American law in the Reconstruction Amendments.<sup>140</sup> When Abraham Lincoln debated Stephen Douglas, he “articulated a natural law argument against slavery.”<sup>141</sup> Lincoln viewed the Declaration of Independence as creating “an abstract truth, applicable to all men and all times, that all men are created equal.”<sup>142</sup> Thus, the Fourteenth Amendment embodied the natural law right of equality.<sup>143</sup>

Natural law and feminist ethics at first glance seem to be “unlikely allies.”<sup>144</sup> Indeed, Thomas Aquinas’ *Summa Theologiae* is full of misogynistic claims, and Aquinas insists that “God chose not to make woman from man’s feet precisely so that he would not despise her.”<sup>145</sup> However, Cristina Traina argues that “[t]he intersection of natural law and feminist ethics is not merely systematically curious or even mutually

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136. Randy E. Barnett, *A Law Professor’s Guide to Natural Law and Natural Rights*, 20 HARV. J.L. & PUB. POL’Y 655, 658–59 (1997) (quoting ELIZUR GOODRICH, *THE PRINCIPLES OF CIVIL UNION AND HAPPINESS CONSIDERED AND RECOMMENDED: A SERMON* (1787)) (emphasis in original).

137. *Id.* at 659.

138. Diarmuid F. O’Scannlain, *The Natural Law in the American Tradition*, 79 FORDHAM L. REV. 1513, 1517 (2011).

139. *Id.*

140. *Id.* at 1518.

141. *Id.*

142. *Id.* (quotation omitted).

143. *Id.*

144. CRISTINA L. H. TRAINA, *FEMINIST ETHICS AND NATURAL LAW* 10 (1999).

145. *Id.* at 11.

illuminating; rather, it holds the greatest promise for culturally sensitive, flexible, yet tough and prophetic contemporary moral reflection.”<sup>146</sup> Traina believes that a “feminist reconstruction of natural law remains natural law.”<sup>147</sup> Traina believes that natural law and feminist ethics converge in the following areas: legitimate self-interest, embodiment, virtue, reason, common good, and ethical reflection as a common endeavor.<sup>148</sup> Like natural law, feminism is “committed to the betterment of society at large.”<sup>149</sup> Feminist ethics are not in opposition to natural law, rather these theories can complement one another.

## VI. A CALL FOR REGULATION BY NATURAL LAW

The moral and ethical arguments against the use of PGD for sex selection demonstrate that natural law calls for regulation in the United States. The consequences of letting this technology go unregulated can have many social and ethical implications for American society. This technology is not natural. Indeed, it runs contrary to natural biology. Natural law would not and should not allow parents to choose the gender of their offspring and indeed, has an inclination to preserve the human species.<sup>150</sup> Allowing people to choose the sex of their offspring would not preserve the human species, but instead could create a significant sex-ratio imbalance that could have future ramifications for society.

In this section, I argue that a complete ban on PGD for nonmedical sex selection would be the ideal form of regulation in the United States. This regulation mirrors the United Kingdom’s comprehensive system of regulation, which includes a regulatory agency to authorize and regulate fertility clinics.

### A. Complete Ban on PGD for Nonmedical Sex Selection

The ethical implications and social consequences of PGD for sex selection ideally call for a complete ban of nonmedical sex selection.<sup>151</sup> The ability to choose the sex of future offspring is contrary to natural law. The practice of PGD for sex selection bypasses the natural, and instead

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146. *Id.* at 12.

147. *Id.*

148. *See id.* at 150–58.

149. *Id.* at 157.

150. *See supra* Part V.

151. In cases of sex-linked genetic disease, sex selection will be a by-product of screening for genetic disease, and this type of sex selection should not be banned.

allows potential parents to choose the sex of their future children. The social implications and consequences are too high for this technology to continue unregulated. Without regulation, further gender discrimination and sex ratio imbalances can occur. Additionally, diverting limited medical resources to an elective procedure creates a commercial market for this technology as well as a scarcity of doctors who can perform PGD for genetic disease.<sup>152</sup>

### 1. Federal Legislation

Initially, there needs to be federal legislation banning PGD for sex selection for nonmedical reasons. It is apparent that the guidelines put forward by the American Society of Reproductive Medicine are ineffective in controlling this practice. Because the guidelines are voluntary, the ASRM has no mechanism to enforce the guidelines, and “the Genetics and Public Policy Center Survey found that 39% of clinics were willing to provide non-medical sex selection in the absence of another reason to undergo PG[D]. . . .”<sup>153</sup> With so many clinics willing to disregard ASRM’s guidelines, federal legislation is necessary. Although health and welfare are usually regulated by states, there is a strong argument that Congress can enact this legislation exercising its authority under the Commerce Clause of the Constitution.<sup>154</sup> Because “Congress previously found that reproductive clinics engage in interstate commerce when it passed the Freedom to Access Clinic Entrances Act of 1994,”<sup>155</sup> that authority would most likely be found again in legislation that would license, monitor, and regulate the practice of PGD.

An ideal model for this legislation would be the United Kingdom’s Human Fertilisation and Embryology Act of 1990. Included in this legislation should be regulations for all uses of PGD, whether medical or nonmedical. The legislation should delineate standards for fertility clinics, requiring clinics to meet the standards or face criminal and civil penalties. Provisions requiring fertility clinics to report all uses of IVF and PGD should be included for research purposes as well as research guidelines and limitations.

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152. This is a narrow recommendation, only calling for a ban of PGD for sex selection. In no way is this recommendation meant to limit the use of PGD for medical reasons or limit the access of reproductive technologies in general.

153. King, *supra* note 13, at 324.

154. *Id.* at 331.

155. *Id.*

Possibly, this legislation could be enacted by expanding the Fertility Clinic Success Rate and Certification Act (FCSRA). However, as it exists, the FCSRA gives the CDC “very limited power over ART [assisted reproductive technology] clinics.”<sup>156</sup> The CDC has no power to sanction clinics that do not report information, and “SART [Society for Assisted Reproductive Technologies], which performs inspections on behalf of the CDC, has conducted on-site inspections on less than 10% of clinics to ensure the accuracy of reporting.”<sup>157</sup> Additionally, regulating PGD is beyond the CDC’s mandate.<sup>158</sup> The President’s Council on Bioethics stated that “the choice between delegating such power to a new federal agency or to an existing agency or agencies should come down to the question of whether this arena of technology and activity raises (or is likely to raise) fundamentally new and different sorts of questions and challenges from those that have been dealt with by existing federal agencies in the past.”<sup>159</sup> This is an arena of technology that raises these very questions and so legislation should delegate authority to a new agency, similar to HFEA in the United Kingdom, to better deal with the complex issues that arise with assisted reproduction and PGD. This comprehensive legislation would be the building block for a robust and successful administrative system of regulation.

## 2. *Agency Regulations*

The best way to enforce this new legislation would be through a new regulatory agency. Fertility clinics would not operate without prior approval from the agency and would be subject to periodic recertification from the agency. The agency would require each clinic to report every instance of PGD and the success and failure rates of the procedure. In addition, clinics would be required to meet genetic counseling standards as well as continuing education on new technologies in genetic analysis. In order to enforce compliance with these standards, the agency must have the authority to rescind or suspend clinical licenses to operate. If there is an instance of a clinic offering PGD for nonmedical sex selection, the agency must be able to revoke the license to operate as well as initiate a criminal proceeding against the fertility clinic.

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156. *Id.* at 334.

157. *Id.*

158. *Id.* at 337.

159. PRESIDENT’S COUNCIL ON BIOETHICS, *supra* note 11, at 189.

Agency regulation is the preferred method of incorporating the federal legislation instead of through professional organizations. Doctors and clinics belong to professional organizations on a voluntary basis. Because of their voluntary nature, doctors can choose to belong to an organization that shares their ethical concerns and professional practice. American professional organizations also do not carry the force of authority. Consequently, if a doctor or clinic disobeys a professional guideline there are little to no consequences. For these reasons, regulation must be through a federal agency.

Creating a new federal agency will create many costs and will take time to establish, but a new agency that deals solely with ART and PGD can devote much needed time and resources to regulating the clinics and establishing best practices and regulations. The current use of PGD is partially under the regulation of the FDA or the CDC, but expanding an already existing federal agency is not the solution. The federal agencies that are already in existence have their own specific niche in federal regulation. Adding confusing and complex regulations to agencies that do not specialize in the specific practice is inefficient and ineffective. The FDA already has a multitude of obligations; adding new and comprehensive regulations to fertility clinics is not within the power of the FDA (nor within the CDC). For these reasons, a new federal agency is essential in order to effectively regulate and enforce the federal legislation.

## VII. CONCLUSION

Preimplantation genetic diagnosis for sex selection has been called the “original sexist sin.”<sup>160</sup> Although the United States lacks any formal regulation of this technology, other countries’ laws have provided insight in regards to comprehensive, effective regulation. The ethical implications and social consequences of PGD for sex selection far outweigh any parental autonomy interests. As such, the use of PGD for sex selection is inherently inconsistent with natural law. The use of this technology is not natural and allows society to play with what is reserved for biology. The current use of PGD for nonmedical sex selection is not without consequence, which is why federal legislation is necessary to completely ban its practice. The long-desired technology to choose the sex of one’s offspring now exists. But its mere existence does not necessitate that it should be used. While there are advantages that come out of

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160. See Remaley, *supra* note 25, at 249.

preimplantation genetic diagnosis in terms of preventing genetic disorders, regulations are imperative in order to avert the social harms and consequences associated with its use merely for sex selection.