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## A Few Thoughts on Assisted Reproductive Technology

Michele Goodwin†

This Symposium comes at a pivotal time in reproductive technology history. Only months ago Nadya Suleman delivered octuplets,<sup>1</sup> setting off a whirlwind of speculation and ethical inquiry as to what the appropriate protocols should be when families seek to procreate using assisted reproductive technology (ART).<sup>2</sup> Arguably, the strident criticism leveled against Suleman distinguishes her pregnancy from other parents of high-order multiples. The McCaugheys,<sup>3</sup> Morrisons,<sup>4</sup> and Masches<sup>5</sup> received a different type of public reception.<sup>6</sup> In part, they were married and middle class.<sup>7</sup> Suleman, on the other hand, is poor, single,

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1. Randal C. Archibold, *Octuplets, 6 Siblings, and Many Questions*, N.Y. TIMES, Feb. 4, 2009, at A14.

2. See, e.g., Associated Press, *Octuplets' Grandma: My Daughter's Actions Unconscionable*, THE NEW ZEALAND HERALD, Feb. 11, 2009 (on file with author) (describing the reaction of Nadya Suleman's mother to her daughter's situation); Stephanie Saul, *Birth of Octuplets Puts Focus On Fertility Industry and Risks*, N.Y. TIMES, Feb. 12, 2009, at A1 (noting that fertility clinics have become controversial in the wake of Nadya Suleman's publicity); Mia Freedman, *Sunday Column: Leave Nadya Suleman and Her Babies Alone*, MAMAMIA, <http://mamamia.com.au/weblog/2009/03/sunday-column-leave-nadya-suleman-alone.html> (Mar. 22, 2009, 11:36) (discussing and defending Nadya Suleman).

3. Pam Belluck, *Iowan Makes U.S. History, Giving Birth to 7 Live Babies*, N.Y. TIMES, Nov. 20, 1997, at A1.

4. Josephine Marcotty, *Sextuplet Dies; Five in Critical Condition*, STAR TRIB., June 15, 2007, at B1; Associated Press, *Fifth Minn. Sextuplet Dies*, MSNBC, July 23, 2007, <http://www.msnbc.msn.com/id/19919224>.

5. *Phoenix Woman Gives Birth to Sextuplets*, TULSA WORLD, June 12, 2007, at A6.

6. See Associated Press, *Companies Not Rushing to Give Freebies to Octuplets' Mom*, FOXNEWS, Feb. 3, 2009, <http://www.foxnews.com/story/0,2933,487588,00.html>.

7. See, e.g., *Special Delivery: Morrison Sextuplets Born Early*, WCCO, June 12, 2007, <http://www.wcco.com/topstories/Brianna.Morrison.Sextuplets.2.368106.html> [hereinafter *Special Delivery*] (discussing the Morrisons); John Springer, *Cheaper by the Half-Dozen? Expecting Sextuplets*, MSNBC, Apr. 27, 2007, <http://today.msnbc.msn.com/id/18353371> (discussing the Masches); *Weary Mother of Septuplets Returns Home*, N.Y. TIMES, Nov. 24, 1997, at A18 (discussing the McCaugheys).

and was the mother of six other children before she gave birth to octuplets.<sup>8</sup>

Suleman's pregnancy remains controversial. Participants in this Symposium unpack some of the more contentious aspects of ART and cases like Suleman's. They speak to the best interest of children, surrogate tourism, preferences based on sex, race, and sexuality, eugenics, and even the tax law treatment of ART. In essence, they break the mold in ART discourse, pushing beyond the boundaries of prior symposia by offering new critiques. The relevance of their Articles published herein and Symposium presentations cannot be overlooked.

Nor can we overlook a multi-tiered birthing system in the United States that ignores the harms to children in some reproductive instances, and punishes women in other contexts. As more States adopt laws to punish drug-addicted women who risk harming their fetuses by becoming pregnant,<sup>9</sup> we should be concerned about what message it sends when, through aggressive ART services, similar birth challenges result, including premature birth, low birth weight pregnancies, and various disabilities.<sup>10</sup>

Suleman's case provides an ideal, if not controversial, backdrop to reflect upon ART and related issues. This Introduction offers a few reflections on contemporary ART

8. Associated Press, *Octomom: Inheritance Used for in Vitro*, WCCO, Apr. 7, 2009, <http://wcco.com/entertainment/octomom.nadya.suleman.2.979167.html>.

9. See Lynn M. Paltrow, *Governmental Responses to Pregnant Women Who Use Alcohol or Other Drugs*, 8 DEPAUL J. HEALTH CARE L. 461, 464–67 (2005); see, e.g., Adam Nossiter, *Rural Alabama County Cracks Down on Pregnant Drug Users*, N.Y. TIMES, Mar. 15, 2008, at A10 (discussing a law in Alabama punishing pregnant mothers who use drugs).

10. See, e.g., P.O.D. Pharoah & T. Cooke, *Cerebral Palsy and Multiple Births*, 75 ARCHIVES OF DISEASE IN CHILDHOOD F174, F174–77 (1996) (finding that multiple birth babies are at an increased risk of cerebral palsy); *Questions and Answers About Infertility and Its Treatment*, N.Y. TASK FORCE ON LIFE & THE LAW, 52–53 (1998), available at

<http://www.health.state.ny.us/nysdoh/infertility/1128.htm#risks>

(noting that certain ART techniques “greatly increase the chances of multiple births” and that “children from multiple births have a much higher chance of prematurity and low birthweight”); Jennita Reefhuis et al., *Fertility Treatments and Craniosynostosis: California, Georgia, and Iowa, 1993-1997*, 111 PEDIATRICS (Supp.) 1163, 1164–65 (2003) (finding a correlation between fertility treatments and craniosynostosis); Meredith A. Reynolds et al., *Trends in Multiple Births Conceived Using Assisted Reproductive Technology, United States, 1997-2000*, 111 PEDIATRICS (Supp.) 1159, 1159 (2003) (finding that, for the period studied, the proportion of multiple births in the United States attributable to ART increased, while the proportion attributable to natural conception decreased); Robert M.L. Winston & Kate Hardy, *Are We Ignoring Potential Dangers of in Vitro Fertilization and Related Treatments?*, 4 NATURE CELL BIOLOGY & NATURE MED (Supp.) S14 (2002) (evaluating the risks of certain types of ART).

challenges, including fiduciary responsibility, inconsistent state response to harms posed to children (much of which is connected to the status of the mothers), and the social and financial costs associated with reproductive challenges.

### I. When The Mother Matters

In May, 2008, the South Carolina Supreme Court reversed a twenty year prison term imposed on an indigent farm worker, Regina McKnight.<sup>11</sup> McKnight was indicted for “homicide by child abuse” in 2003,<sup>12</sup> and became the first woman to be prosecuted and convicted in the United States for birthing a stillborn child.<sup>13</sup> McKnight had no prior convictions,<sup>14</sup> but she violated a socially sacred order—avoiding harm to a future offspring. Her case stands in contrast to the case of Nadya Suleman, a woman who risked the health of eight babies.

On appeal, McKnight argued that prosecutors never proved that her drug use caused the miscarriage that she suffered.<sup>15</sup> In fact, she was arrested after seeking prenatal help at a local hospital.<sup>16</sup> Under a surreptitious new policy, physicians and nurses disclosed her medical status to police and prosecutors after discovering drug traces in her urine and blood.<sup>17</sup> Prosecutors used this information against McKnight.<sup>18</sup>

The State justified its interference with McKnight’s pregnancy and her subsequent prosecution by declaring its role in promoting the health and safety of fetuses.<sup>19</sup> Ironically, in South Carolina, this type of concern seemed to extend only to drug addicted women, and ignored other classes of procreation that exposes fetuses to harm.<sup>20</sup>

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11. *McKnight v. State of South Carolina*, 661 S.E.2d 354, 356 (S.C. 2008) (holding that the defendant’s ineffective assistance of counsel merited relief).

12. *State v. McKnight*, 576 S.E.2d 168, 171 (S.C. 2003), *cert. denied*, 540 U.S. 819 (2003).

13. See Shalini Bhargava, *Challenging Punishment and Privatization: A Response to the Conviction of Regina McKnight*, 39 HARV. C.R.-C.L. L. REV. 513, 513 (2004).

14. *Id.* at 516.

15. Brief of Petitioner at 2, *McKnight v. State of South Carolina*, 661 S.E.2d 354 (S.C. 2008) (No. 26484).

16. Dana Page, *The Homicide by Child Abuse Conviction of Regina McKnight*, 46 HOW. L.J. 363, 365–69 (2003).

17. Bhargava, *supra* note 13, at 532–33.

18. *State v. McKnight*, 576 S.E.2d 168, 178–79 (S.C. 2003), *cert. denied*, 540 U.S. 819 (2003).

19. Bhargava, *supra* note 13, at 532–33.

20. See *id.*

Most States that pursue these types of prosecutions disregard the fact that miscarriages and stillbirths are caused by any number of factors, ranging from ART and alcohol abuse, to obesity and second hand smoke.<sup>21</sup> Recent studies demonstrate that even a father's age influences whether a baby might be born healthy or not.<sup>22</sup>

By comparison, recent high-tech, high-publicity births, including that of Nadya Suleman, and that of Brianna Morrison, a Minnesota woman who birthed six children in 2007 after using reproductive drugs, offer interesting points of contrast.<sup>23</sup> Some scholars might suggest that the contrasting public and legal responses to recent high profile pregnancies reveals how race and class still matter in the United States, particularly in the birthing context.

When doctors suggested that the Morrisons selectively reduce, they refused.<sup>24</sup> The Minnesota sextuplets were in critical condition after birth, subjected to a battery of medical tests and treatments, and live with the aid of respirators and feeding tubes.<sup>25</sup> Weeks after their births, all but one of the Morrison sextuplets had died.<sup>26</sup>

Despite the sometimes tragic results, multiple births

21. See, e.g., Zosia Kmietowicz, *Smoking is Causing Impotence, Miscarriages, and Infertility*, 328 BRIT. MED. J. 364 (2004) (noting the effect of smoking on sexual health); Press Release, Ctrs. for Disease Control and Prevention (CDC), *New Study Shows Decline in Stillbirths; Racial Disparities Persist* (Feb. 21, 2007), <http://www.cdc.gov/media/pressrel/2007/r070221.htm> (discussing numerous risk factors that can cause stillbirths).

22. See Richard M. Goodman, *Problems in Medical Genetic Services as Viewed from Israel*, 99 PUB. HEALTH REP. 460 (1984); Karine Kleinhaus et al., *Paternal Age and Spontaneous Abortion*, 108 OBSTET. GYNECOL. 369 (2006); *Older Dads Six Times More Likely to Have Autistic Children*, THIS IS LONDON, Apr. 9, 2006, available at

<http://www.thisislondon.co.uk/news/article-23365716->

[details/Older+dads+six+times+more+likely+to+have+autistic+children/article.do](http://www.thisislondon.co.uk/news/article-23365716-details/Older+dads+six+times+more+likely+to+have+autistic+children/article.do);

Abraham Reichenberg et al., *Advancing Paternal Age and Autism*, 63 ARCHIVES OF GEN. PSYCHIATRY 1026, 1031-32 (2006) (finding an association between paternal age and the risk of autism in offspring); Andrew J. Wyrobek et al., *Advancing Age Has Differential Effects on DNA Damage, Chromatin Integrity, Gene Mutations, and Aneuploidies in Sperm*, 103 PROC. OF NAT'L ACAD. SCI. U.S. AM. 9601 (2006), available at <http://www.pnas.org/content/103/25/9601.full.pdf>.

23. See Archibold, *supra* note 1 (discussing Suleman); Marcotty, *supra* note 4 (discussing Morrison).

24. *Special Delivery*, *supra* note 7.

25. Chris Kahn, *Sextuplets in Arizona and Minnesota*, ASSOCIATED PRESS, June 11, 2007,

[http://www.washingtonpost.com/wp-dyn/content/article/2007/06/11/AR2007061102019\\_pf.html](http://www.washingtonpost.com/wp-dyn/content/article/2007/06/11/AR2007061102019_pf.html).

26. Associated Press, *supra* note 4.

achieved through scientific intervention are often marked by public celebration, biblical references, and press conferences.<sup>27</sup> Pundits echo family members, referring to the pregnancies and births as “miracles.”<sup>28</sup> In some cases the parents become celebrities, such as the McCaugheys or Jon and Kate Gosselin, who have a very popular reality television show and comfortable lifestyle, including a home and cars, supplied by a television network.<sup>29</sup>

But too often overlooked in ART pregnancies are serious birth-weight issues and health problems ranging from mild to severe, including hearing impairment, visual problems, cognitive delays, chronic lung disease, mental retardation, and high incidences of cerebral palsy—if the children survive.<sup>30</sup> According to the Centers for Disease Control and Prevention (CDC), ART increases the risk of conceiving a baby with certain serious health conditions up to fourfold.<sup>31</sup>

## II. Regulation, Social Costs, and Financial Pitfalls

Ironically, given the risks involved with ART, there is virtually no regulation or federal oversight in this area of reproductive medicine.<sup>32</sup> Thus, reflections on contemporary ART cases may inspire atypical responses. After a recent lecture to a Minnesota women’s law association, attendees shared with me

27. See, e.g., Sonya Charles & Tricha Shivas, *Mothers in the Media: Blamed and Celebrated—An Examination of Drug Abuse and Multiple Births*, 28 PEDIATRIC NURSING 142 (2002) (discussing media exaggeration of the harms posed by pregnant women using illegal drugs while downplaying the harm from multiple births); Brian M. Christopher, “Seven from Heaven”; *Septuplets’ Father Tells Tales of Trial and Triumph*, INTELLIGENCER J. (Lancaster, Pa), Feb. 25, 2000, at A1 (discussing the positive media and public attention that the McCaugheys received after Mrs. McCaughey gave birth to seven children).

28. See, e.g., James Fussell, *Birthday for 7 Little Miracles*, DAILY TELEGRAPH (Sydney, Austl.), Nov. 21, 1998, at 23 (discussing the McCaugheys).

29. Lynette Rice, *Jon & Kate Plus 8’ Season Finale Scores Series-Best Ratings*, ENT. WKLY., Mar. 25, 2009, <http://hollywoodinsider.ew.com/2009/03/jon-and-kate-pl.html?iid=top25-%27Jon+%26+Kate+Plus+8%27+season+finale+scores+series-best+ratings>.

30. See Pharoah & Cooke, *supra* note 10; *Questions and Answers About Infertility and Its Treatment*, *supra* note 10; Reefhuis et al., *supra* note 10; Reynolds et al., *supra* note 10; Melinda A. Roberts, *Supernumerary Pregnancy, Collective Harm, and Two Forms of the Nonidentity Problem*, 34 J.L. MED. & ETHICS 776 (2006); Winston & Hardy, *supra* note 10.

31. Press Release, CDC, *National Birth Defects Prevention Study Shows Assisted Reproductive Technology is Associated with an Increased Risk of Certain Birth Defects* (Nov. 17, 2008), <http://www.cdc.gov/media/pressrel/2008/r081117.htm>.

32. Catherine A. Clements, *What About the Children? A Call for Regulation of Assisted Reproductive Technology*, 84 IND. L.J. 331, 347–48 (2009).

what might be considered atypical responses to matters of autonomy and reproductive choice. Those who self-identified as liberal and supportive of government aid to the plight of the vulnerable expressed fear of state involvement in intimate family planning matters, such as the use of ART. Others, who identified themselves as libertarian, expressed a desire for more government involvement in these spheres given the significant externalities and a desire to protect vulnerable third parties. What is the right response? Doctors willing to implant as many embryos as a patient desires, despite risks to the mother and babies (if they survive), receive no reprimand of consequence.<sup>33</sup> And although the American Society for Reproductive Medicine (ASRM), the premier organization in this field, recommends that no more than three embryos be implanted at one time, they are an advisory group with no legal authority.<sup>34</sup>

The financial costs associated with multiple order births are also worth considering.<sup>35</sup> Families using ART may be unprepared for the significant financial costs associated with the deliveries and subsequent, prolonged neonatal care. More than forty doctors were called upon to help deliver Ms. Suleman's babies.<sup>36</sup> Who pays those costs? Ultimately, we all subsidize high-order births either indirectly through tax subsidization or increased insurance premiums. Our society might be willing to assume some social costs associated with parenting, particularly if some other social good is achieved, such as transitioning children from foster care into permanent homes, feeding and clothing children from abusive homes, or supporting the children of fallen firefighters and police officers. But Suleman's case raises red flags because it does not fit a socially sympathetic model.

Suleman's case fails to invoke much sympathy or render a social good that for most people would justify her actions or those of her physicians. It is incontrovertible that if Suleman were

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33. See, e.g., Associated Press, *Medical Society Probes Octuplets' Conception*, MSNBC, Feb. 10, 2009, <http://msnbc.msn.com/id/29123731> (discussing claims that Dr. Kamrava violated ethical guidelines in his fertility practice, and noting that various malpractice lawsuits have been brought against him).

34. Am. Soc'y for Reprod. Med., *History and Purpose*, <http://www.asrm.org/history.html> (last visited Aug. 5, 2009); THE PRACTICE CMTE. OF THE SOCIETY FOR ASSISTED REPROD. TECH. AND THE PRACTICE CMTE. OF THE AM. SOC'Y FOR REPROD. MED., GUIDELINES ON NUMBER OF EMBRYOS TRANSFERRED (2008), [http://www.asrm.org/Media/Practice/Guidelines\\_on\\_number\\_of\\_embryos.pdf](http://www.asrm.org/Media/Practice/Guidelines_on_number_of_embryos.pdf).

35. See Clements, *supra* note 32, at 343–40.

36. *Dateline NBC: Her Side of the Story* (NBC television broadcast Feb. 10, 2009), available at <http://www.msnbc.msn.com/id/29129311>.

wealthy these issues would take a different tone. Given the facts of her case, however, the public backlash is not unsurprising. As families struggle to support as few as two children, they realize that the social and economic costs of raising fourteen kids (Suleman is the parent of six other children) is more than what many would deem socially justifiable.

The difference between McKnight's traumatic story and that of other moms like Ms. Morrison and Ms. Suleman who used ART might seem obvious at first glance: one woman was arrested and incarcerated because she was a drug addict who broke the law, while the other women were simply desperate to become mothers—and what's so bad about that?

Ideally, the maternity ward should be off-limits to the State. Lessons from America's fascination and engagement with eugenics demonstrate that point in the saddest details.<sup>37</sup> Compulsory sterilizations during the first half of the last century are a chilling reminder about too much State interference.<sup>38</sup> Nevertheless, there is a persistent question that arises from the juxtaposition of these stories, a question that relates to power, privilege, race, and class. If what States care about is ensuring the health of fetuses and promoting their development, then why focus only on women like McKnight? In South Carolina, McKnight's home state, ART babies are eight times more likely to be born low birth-weight.<sup>39</sup> Low birth-weight babies are forty times more likely to die during their first few months of life.<sup>40</sup>

Nor can ART be treated as an isolated reproductive phenomenon. It is a popular industry, with a reach that is transnational.<sup>41</sup> Americans travel abroad to locate surrogates in countries as far as India, and women from nations with more

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37. See Mark A. Rothstein et al., *The Ghost In Our Genes: Legal and Ethical Implications of Epigenetics*, 19 HEALTH MATRIX 1, 58–61 (2009); Mary Ziegler, *Eugenic Feminism: Mental Hygiene, The Women's Movement, and the Campaign for Eugenic Legal Reform, 1900-1935*, 31 HARV. J.L. & GENDER 211 (2008) (discussing the evolution of eugenic thought in the United States between 1880 and 1935 and the decline of eugenic feminism).

38. Rothstein et al., *supra* note 37, at 58–59 (discussing the role that involuntary sterilization played in the eugenics movement); Ziegler, *supra* note 37, at 216–19 (discussing the use and endorsement of sterilization by eugenicists).

39. *Maternity Education Program: Statistics*, MEDCOST, <http://www.medcost.com/prenatal/statistics.htm> (last visited May 18, 2009).

40. *Id.*

41. Debora Spar & Anna M. Harrington, *Building a Better Baby Business*, 10 MINN. J. L. SCI. & TECH. 41 (2009); see also Lisa C. Ikemoto, *Reproductive Tourism: Equality Concerns in the Global Market for Fertility Services*, 27 LAW & INEQ. (forthcoming Aug. 2009) (discussing the international market for ART).

restrictive ART practices travel to the United States for services.<sup>42</sup> Assisted reproduction is a huge industry that satisfies the dreams of many individuals and couples, but that also leaves many questions to be answered.

With few exceptions, there should be a strong presumption against using the State to veto personal choice during pregnancy. But there are limits. Criminal law is not the right answer, but neither are selective ignorance and worse—glorifying pregnancies that pose serious risks to developing fetuses and making celebrities of ART parents.

### III. Who Is Affected?

According to the CDC, nearly fifteen percent of American women of reproductive age, about nine million, have either had an infertility-related medical appointment or service at some point in their lives.<sup>43</sup> The CDC describes infertility services to include “medical tests to diagnose infertility, medical advice and treatments to help a woman become pregnant, and services other than routine prenatal care to prevent miscarriage.”<sup>44</sup> This figure, however, does not accurately illustrate infertility in the United States, as seven percent of married couples, in which the woman is of reproductive age (or more than two million couples), “reported that they had not used contraception” for nearly a year and “the woman had not become pregnant.”<sup>45</sup>

42. Usha Rengachary Smerdon, *Crossing Bodies, Crossing Borders: International Surrogacy Between the United States and India*, 39 CUMB. L. REV. 15, 15 (2009).

43. See U.S. DEP'T OF HEALTH AND HUM. SERVS., 2002 ASSISTED REPRODUCTIVE TECHNOLOGY SUCCESS RATES, NATIONAL SUMMARY AND FERTILITY CLINIC REPORTS 3 (2004) [hereinafter 2002 ASSISTED REPRODUCTIVE TECHNOLOGY SUCCESS RATES], available at <http://www.cdc.gov/ART/ART02/PDF/ART2002.pdf>; see also STEPHEN CORSON, CONQUERING INFERTILITY 1 (rev. ed. 1990) (“In the United States, approximately 14 to 16 percent of all couples attempting to get pregnant have difficulty conceiving, and are defined by fertility therapists as being infertile.”); Val Davajan & Robert Israel, *Diagnosis and Medical Treatment of Infertility, in INFERTILITY: PERSPECTIVES FROM STRESS AND COPING RESEARCH* 17 (Annette L. Stanton & Christine Dunkel-Schetter eds., 1991) (“[I]t has been estimated that between 10% and 15% of married couples in the United States are infertile.”). Unfortunately, the data relied upon by the CDC is somewhat aged; it was gathered as part of a study conducted over ten years ago from the 1995 National Survey of Family Growth. 2002 ASSISTED REPRODUCTIVE TECHNOLOGY SUCCESS RATES, *supra*.

44. 2002 ASSISTED REPRODUCTIVE TECHNOLOGY SUCCESS RATES, *supra* note 43, at 3.

45. *Id.* These figures may not account for infertility in gay couples or families that lack access to medical treatment and insurance. It is quite possible that women who lack health insurance are undercounted as “infertile,” as they would have limited access to the medical appointments which would diagnose infertility.

A growing number of women diagnosed as “infertile” are turning to ART in order to conceive. ART scholars recognize that reproductive technology outpaces legislative and judicial response, forcing “our society to confront scenarios that were unimaginable a mere quarter century ago.”<sup>46</sup> Technology now affords infertile families, as well as those who have diminished capacity to conceive due to delay in childbearing, an opportunity to conceive. Recent studies reveal how infertility affects men as well as women.<sup>47</sup> For example, researchers found that “sperm counts have dropped by almost a third in a decade.”<sup>48</sup> In a study of over 7,000 men who visited the Aberdeen Fertility Centre between 1989 and 2002, researchers discovered that “average sperm concentrations fell by nearly 30 percent.”<sup>49</sup>

Since 1981, ART has been used in the United States to assist infertile women to become pregnant.<sup>50</sup> The technique most commonly used transfers fertilized human eggs into a woman’s uterus.<sup>51</sup> The procedures are time-consuming and expensive, making the technology cost-prohibitive for economically disenfranchised families.<sup>52</sup> These issues deserve greater attention, but so far, few states mandate coverage for reproductive technologies.

Nevertheless, ART’s popularity and use has grown significantly over the past ten years.<sup>53</sup> Consider that in 2001, 384 fertility clinics were reported to exist.<sup>54</sup> Those clinics reported performing 107,587 ART cycles, resulting in 29,344 live births and 40,687 babies.<sup>55</sup> One year later, more ART clinics were in

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Indeed there may be women completely unaware that they are infertile.

46. Judith Daar, *Assisted Reproductive Technologies and the Pregnancy Process: Developing an Equality Model to Protect Reproductive Liberties*, 25 AM. J. L. & MED. 455, 455 (1999).

47. See, e.g., Sam Lister, *Careful, Lads, That Laptop Might Burn Your Genes*, TIMES (London), Dec. 9, 2004, at 2 (discussing increases in male infertility).

48. *Id.*

49. *Id.* Commentators identify a number of factors that contribute to male infertility, including obesity, drug use, alcohol, and smoking. *Id.* Other factors include exposure to laptops, “pesticides, chemicals and radioactive material.” *Id.*

50. See 2002 ASSISTED REPRODUCTIVE TECHNOLOGY SUCCESS RATES, *supra* note 43, at 1.

51. *Id.*

52. See *id.* (noting the cost and time required to participate in ART).

53. *Id.*

54. U.S. DEP’T OF HEALTH AND HUM. SERVS., 2001 ASSISTED REPRODUCTIVE TECHNOLOGY SUCCESS RATES: NATIONAL SUMMARY AND FERTILITY CLINIC REPORTS 6 (2003), available at

<http://www.cdc.gov/ART/ART01/PDF/ART2001.pdf>.

55. *Id.*

business, and the number of cycles performed had increased.<sup>56</sup> In 2002, 391 fertility clinics were reported to be in operation.<sup>57</sup> Those clinics reported performing 115,392 ART cycles, resulting in 33,141 live births and 45,751 babies.<sup>58</sup> By 2005, there were nearly 135,000 ART cycles.<sup>59</sup>

For women, reproductive technologies are as varied as the causes of infertility, of which older maternal age,<sup>60</sup> environment,<sup>61</sup> a history of sexually transmitted diseases,<sup>62</sup> and poor health are documented as contributing factors.<sup>63</sup> Empirical data indicate

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56. See 2002 ASSISTED REPRODUCTIVE TECHNOLOGY SUCCESS RATES, *supra* note 43, at 11.

57. *Id.*

58. *Id.*

59. See U.S. DEP'T OF HEALTH AND HUM. SERVS., 2005 ASSISTED REPRODUCTIVE TECHNOLOGY SUCCESS RATES: NATIONAL SUMMARY AND FERTILITY CLINIC REPORTS 11 (2007), available at <http://www.cdc.gov/ART/ART2005/508PDF/2005ART508.pdf>.

60. See Dawn P. Misra & Cande V. Ananth, *Infant Mortality Among Singletons and Twins in the United States During 2 Decades: Effects of Maternal Age*, 110 PEDIATRICS 1163 (2002); Reefhuis et al., *supra* note 10; Reynolds et al., *supra* note 10, at 1159 (suggesting that "as more women delay childbearing into their late 30s and 40s" greater complications arise and infertility increases, and noting that among the problems arising with increased maternal age is the "risk for multiple birth among naturally conceived pregnancies"); Suzanne C. Tough et al., *Delayed Childbearing and Its Impact on Population Rate Changes in Lower Birth Weight, Multiple Birth, and Preterm Delivery*, 109 PEDIATRICS 399 (2002).

61. Harmful environmental agents have been linked to sterility, infertility, cancer, and many other chronic illnesses. See Robert Brent, *Environmental Causes of Human Congenital Malformations: The Pediatrician's Role in Dealing with These Complex Clinical Problems Caused by a Multiplicity of Environmental and Genetic Factors*, 113 PEDIATRICS (Supp.) 957 (2004) [hereinafter Brent, *Environmental Causes*]; Robert Brent et al., *A Pediatric Perspective on the Unique Vulnerability and Resilience of the Embryo and the Child to Environmental Toxicants: The Importance of Rigorous Research Concerning Age and Agent*, 113 PEDIATRICS (Supp.) 935 (2004); Robert W. Miller, *How Environmental Hazards in Childhood Have Been Discovered: Carcinogens, Teratogens, Neurotoxicants, and Others*, 113 PEDIATRICS (Supp.) 945 (2004).

62. Sexually transmitted diseases result in infertility, increased risk of hysterectomy, subfertility, ectopic pregnancies, and chronic pelvic pain. See Robert Brent & Michael Weitzman, *The Pediatrician's Role and Responsibility in Educating Parents About Environmental Risks*, 113 PEDIATRICS (Supp.) 1167, 1171 (2004) ("Sexually transmitted disease can be life-threatening, cause infertility or sterility, and increase the risk of cervical cancer."); Johannes L. H. Evers, *Female Subfertility*, 359 LANCET 151 (2002) (noting that women are delaying childbirth, which in turn increases the probability of sexually transmitted diseases, sperm decline in their partners, and a reduction in the quality and quantity of viable eggs); Nadereh Pourat et al., *Medicaid Managed Care and STDs: Missed Opportunities to Control the Epidemic*, 21 HEALTH AFFAIRS 228, 229 (2002) (finding that "the burden of illness from STDs is exacerbated by infertility, pregnancy complications, cancer, and a greater susceptibility to HIV infection"); Brian M. Willis & Barry S. Levy, *Child Prostitution: Global Health Burden, Research Needs, and Interventions*, 359 LANCET 1417 (2002).

63. See Howard Tennen et al., *Causal Explanations for Infertility*, in

that individually, these factors can cause sterility, infertility, higher incidences for still birth, miscarriage, congenital delays in fetuses, congenital malformations, and multiple births.<sup>64</sup> The by-products of these factors lead to secondary problems, which include increased rates of cesarean-section surgical deliveries and increased usage of reproductive services to address infertility.<sup>65</sup> The seductive appeal of ART and the promise of conception for couples longing for children often obscure the dangers involved with aggressive fertility hormone treatments.<sup>66</sup>

#### IV. Fiduciary Responsibility and Concluding Thoughts

This Symposium initiates a dialogue about the role of law and that more nuanced side of biotechnology and reproduction. To be sure, the social message connected with ART, that divine intervention has provided a means for conception through medical technology,<sup>67</sup> overlooks the role of science and biotechnological advances in achieving pregnancies in clinics. Perhaps more immediately important for women is that physician responsibility in *advising, recommending, monitoring, and providing* treatment for medical procedures is understated or ignored.<sup>68</sup> As a result, physician-patient communication is virtually unchecked.<sup>69</sup>

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INFERTILITY: PERSPECTIVES FROM STRESS AND COPING RESEARCH, *supra* note 43, at 109, 119–22 (discussing the link between biomedical problems and infertility).

64. See, e.g., Brent, *Environmental Causes*, *supra* note 61, at Tbl. 2 (discussing the reproductive risks that women face).

65. See Evers, *supra* note 62.

66. See Nancy S. Green, *Risks of Birth Defects and Other Adverse Outcomes Associated with Assisted Reproductive Technology*, 114 PEDIATRICS 256 (2004). Green's important commentary supports the data collected by other scholars, which suggests a very strong correlation between ART and birth defects in children. Most of the problems inherent in ART are related to the "increased rates of multiple gestations." *Id.* at 256.

67. See Emily Messner, *Couple's Joy Multiplied by Four: Quadruplets Require Time, Tons of Diapers*, WASH. POST, Jan. 6, 2005, at AA03 (quoting a couple who used IVF twice to conceive and had quadruplets, who stated "God gave us this blessing . . . so it's our job to make sure we do our best").

68. See Michelle Oberman, *Mothers and Doctors' Orders: Unmasking the Doctor's Fiduciary Role in Maternal-Fetal Conflicts*, 94 NW. U. L. REV. 451, 469–78 (2000) (discussing a patient's reliance on his or her physician to provide accurate information about medical options in obtaining informed consent for treatment). Oberman indentifies pregnancy as a time when doctors "assert the right to compel their patients to heed medical advice" and questions the idea that a physician can "transform the observation that pregnant women are different from other patients into a justification for betraying their patients' trust in them . . ." *Id.* at 469, 476.

69. See AM. MED. ASS'N COUNCIL ON ETHICAL AND JUDICIAL AFFAIRS, ISSUES OF ETHICAL CONDUCT IN ASSISTED REPRODUCTIVE TECHNOLOGY, VI CODE OF MEDICAL ETHICS: REPORTS 10, 15 (1996) (recommending that the American Medical Association adopt the recommendation of professional self-regulation for ART); *id.* at 456 ("[A]bsent the enforcement mechanism provided by . . . legal regulations,

Indeed, the affirmative duties described above are patient-centered, rather than physician- or technology-focused, as the law and professional norms require.<sup>70</sup>

Trust and fiduciary responsibility are the cornerstones of the physician-patient relationship.<sup>71</sup> The very notion of physicians' "affirmative" duties to their patients dates back to Hippocrates and Socrates.<sup>72</sup> However, an analysis of the physician-patient *legal* relationship in reproductive contexts has been absent from legal scholarship about ART and generally overlooked in the broader contexts of reproductive liberty. Property law has been the primary domain for legal scholarship about reproductive technology.<sup>73</sup> Essentially, *who owns the embryos* in family disputes has been the question most explored by courts and scholars.<sup>74</sup> Yet, the legal struggles over the ownership of embryos

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there is little means for patients to hold doctors to the . . . standards they profess to have embraced . . ."); William Silverman, *Unnatural Selection*, 107 PEDIATRICS 1421 (2001) (expressing concern about reproductive technologies and genetic experimentation, with such reproduction resembling an under-acknowledged history of eugenics worldwide).

70. See Oberman, *supra* note 68, at 453–54. Oberman argues that the doctor's role in "maternal-fetal conflicts" is often marginalized. *Id.* at 454. When doctors offer opinions on the actions that are in the best interest of the fetus, they "often invest[] the fetus with interests and rights that directly coincide with [the doctor's] own personal treatment preferences" and thus frame the pregnant woman's concerns as being "in direct opposition to those attributed by the doctor to her fetus . . ." *Id.*

71. See *id.* at 455–56 (describing the expanding definition and application of fiduciary duties and the history of the term's applicability to physicians, concluding that "it is utterly commonplace to refer to doctors as fiduciaries for their patients").

72. See Lycurgus M. Davey, *The Oath of Hippocrates: An Historical Review*, 49 NEUROSURGERY 554, 555–57, 563 (reviewing Hippocrates's biography and his contemporaries, including Socrates, and analyzing a physician's "obligations" under the Hippocratic Oath).

73. See Jessica Berg, *Owning Persons: The Application of Property Theory to Embryos and Fetuses*, 40 WAKE FOREST L. REV. 159 (2005) (arguing that courts should and are applying property law principles when analyzing legal disputes involving embryos); Les A. McCrimmon, *Gametes, Embryos and the Life in Being: The Impact of Reproductive Technology on the Rule Against Perpetuities*, 34 REAL PROP. PROB. & TR. J. 697 (2000); Kayla VanCannon, *Fathering a Child from the Grave: What Are the Inheritance Rights of Children Born Through New Technology After the Death of a Parent?*, 52 DRAKE L. REV. 331 (2004).

74. See, e.g., *In re Marriage of Witten*, 672 N.W.2d 768 (Iowa 2003) (holding that embryos are not "children" within the meaning of a post-divorce child custody statute, and that it violates public policy for a court to enforce a prior agreement between partners who create embryos as part of an in vitro fertilization program when one of the partners has changed his or her mind concerning the disposition or use of the embryos); *In re Marriage of Dahl and Angle*, 194 P.3d 834 (Or. Ct. App. 2008) (holding that the contractual right to possess or dispose of frozen embryos created during marriage is "personal property" subject to a just and proper disposition in a dissolution proceeding); *Davis v. Davis*, 842 S.W.2d 588 (Tenn. 1992) (holding that preembryos are not "persons" under state or federal law, nor

do not address the legal and ethical questions about the practice of ART, the affirmative duties of physicians, or physician-patient conflicts of interests. Providing infertility services for patients will earn U.S. clinics billions of dollars in 2009.<sup>75</sup> A group of eight clinics that have joined to form an ART insurance company has generated nearly \$200 million in revenue.<sup>76</sup> This revenue generated by the eight partners represents only a fraction of the profits derived from ART in the United States.<sup>77</sup>

The less-than-positive reports of children born through ART with cognitive delays, low birth weight, hearing impairment, blindness, cerebral palsy, and other disabilities indicate the importance of assessing the role and obligations of physicians to advise, monitor, and protect.<sup>78</sup> The lure of ART as a technology, which provides “choice,” can blind couples to the less desirable outcomes and unanticipated economic and emotional strains associated with this technology.<sup>79</sup> Often overlooked is the toll on

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are they property, and that cases involving the disposition of preembryos should be resolved by first looking to the preferences of the progenitors, and, if they are in dispute, to their prior agreement concerning the preembryos' disposition); Laura S. Langley & Joseph W. Blackston, *Sperm, Egg, and a Petri Dish: Unveiling the Underlying Property Issues Surrounding Cryopreserved Embryos*, 27 J. LEGAL MED. 167 (2006) (arguing for model legislation treating preembryos as property); Ellen A. Waldman, *Disputing Over Embryos: Of Contracts and Consents*, 32 ARIZ. ST. L.J. 897 (2000) (criticizing judicial decisions that validate without question contracts for the disposition of embryos produced via ART).

75. Saul, *supra* note 2.

76. See Press Release, IntegraMed America, Inc., IntegraMed America Announces Formation of Assisted Reproductive Technology Insurance Company (Jan. 4, 2005).

77. *Id.*

78. See, e.g., Lars Noah, *Assisted Reproductive Technology and the Pitfalls of Unregulated Biomedical Innovation*, 55 FLA. L. REV. 603 (2003) (arguing that the Food and Drug Administration should consider restricting or withdrawing pharmaceutical products used to induce ovulation in order to curb abuses by fertility clinics and specialists).

79. See David BenEzra, *In-Vitro Fertilisation and Retinoblastoma*, 361 LANCET 273, 273 (2003) (positing that “a high frequency of cytogenetic abnormalities and errors in cell-cycle regulation are detected in oocytes generated from IVF or intracytoplasmic sperm injection”); F. Bruinsma et al., *Incidence of Cancer in Children Born After In-Vitro Fertilization*, 15 HUM. REPROD. 604 (2000); Green, *supra* note 66; Ruwan Wimalasundera & Nicholas M. Fisk, *In Vitro Fertilisation and Risk of Multiple Pregnancy*, 359 LANCET 414 (2002) (reporting the increased risk of multiple pregnancies among women who use IVF); Jane Glen Haas, *Late or Never, Motherhood Remains a Matter of Choice*, HERALD NEWS (Passaic County, N.J.), Nov. 28, 2004, at D13 (scrutinizing the decision of a fifty-six-year-old Florida resident to undergo in vitro fertilization); see also Bo Stromberg et al., *Neurological Sequelae in Children Born After In-Vitro Fertilisation: A Population-Based Study*, 359 LANCET 461 (2002). Dr. Stromberg and his colleagues found that:

Children born after IVF are more likely to need habilitation services than controls (odds ratio 1.7, 95% CI 1.3-2.2). For singletons, the risk was 1.4 (1.0-2.1). The most common neurological diagnosis was cerebral palsy, for

marriages of couples who use ART, resulting in a higher rate of divorce than couples who conceive without these techniques.<sup>80</sup> The health<sup>81</sup> and social risks associated with ART give rise to questions about physicians' duties, parental responsibility, conception at all costs, and the government's role in regulating the market in medical choice.<sup>82</sup>

In an effort to accommodate infertile couples, might physicians be less inclined to fully explain the potential health risks posed to fetuses? The role of physicians, in this context, is not uncomplicated. There are important questions to unpack in this domain. For example, to what extent is the physician's duty compromised by the pecuniary gain attached to providing specialized reproductive services? What qualifies as informed consent if patients are blinded by an overwhelming desire to conceive at all costs? What duty does the physician have to the unborn fetuses? What do physicians owe their ART patients, and indeed, each other?

Ironically, in each ART case there are likely to be multiple physicians: the reproductive endocrinologist, the obstetrician, and the neonatologist.<sup>83</sup> Yet none of these individual physicians coordinate services from beginning to end, and rarely with each other.<sup>84</sup> Each steps in to assume what may appear to be an isolated task, partial duty, or at least a limited comprehensive duty to the patient.<sup>85</sup> Determining physicians' responsibilities to ART parents reframes the contemporary maternal/fetal debates.

This Symposium offers the opportunity to unpack the fiduciary implications of ART. Equally, this Symposium provides a clearer view of other important dynamics in reproduction,

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which children born after IVF had an increased risk of 3.7 (2.0-6.6), and IVF singletons of 2.8 (1.3-5.8). Suspected developmental delay was increased four-fold (1.9-8.3) in children born after IVF. Twins born after IVF did not differ from control twins with respect to risk of neurological sequelae. Low-birthweight and premature infants were more likely to need habilitation than fullterm babies.

*Id.*

80. See Nell Raven, *Quintuplets Inspired 1930s Theme Park*, PRESS ASSOCIATION, Aug. 15, 2001 (noting a higher divorce rate among ART parents who receive less support during the first year).

81. See *id.* The risks for pregnant women using ART include a higher risk for diabetes, high blood pressure, pre-eclampsia, and miscarriage.

82. Winston & Hardy, *supra* note 10.

83. For a discussion of the interaction among players in the ART process, see DAVID K. GARDNER ET AL., *TEXTBOOK OF ASSISTED REPRODUCTIVE TECHNIQUES; LABORATORY AND CLINICAL PERSPECTIVES* (2001).

84. See *id.*

85. See *id.*

including race, sexuality, gender, and class. These issues manifest the second wave of ART, where we can honestly, hopefully, and accurately assess benefits, risks, and political dimensions of biotechnological reproduction. The answers to the questions presented in this Symposium will undoubtedly unfold in a broad, robust literature to be read in this Journal, future books, law reviews, and scholarly critiques.

