
ESSAY

REGULATING REPRODUCTIVE TECHNOLOGIES: TIMING, UNCERTAINTY, AND DONOR ANONYMITY

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Reviewing:

NAOMI R. CAHN, TEST TUBE FAMILIES: WHY THE FERTILITY MARKET NEEDS
LEGAL REGULATION (2009).

INTRODUCTION	1190
I. TEST TUBE FAMILIES	1195
II. THE ADOPTION OF A COMPREHENSIVE REGULATORY REGIME: TIMING AND UNCERTAINTY	1196
A. <i>Timing</i>	1197
B. <i>Uncertainty</i>	1202
III. DONOR ANONYMITY AND THE DIFFUSION OF ART.....	1205
A. <i>Prohibitions on Donor Anonymity and the Supply of Donor Gametes</i>	1207
1. Sweden	1207
2. Victoria (Australia).....	1209
3. United Kingdom.....	1211
B. <i>Reactions to Shortages in Donated Gametes</i>	1213
CONCLUSION.....	1218

Two global trends have emerged in the regulation of Artificial Reproductive Technology (“ART”): the adoption of a comprehensive regime to regulate the practice of ART and the prohibition on gamete donor anonymity. This Essay uses the publication of Naomi Cahn’s book, Test Tube Families, which advocates both the adoption of a comprehensive regime and the anonymity prohibition, as a lens through which to assess the suitability of these regulatory trends to the United States. First, this Essay develops two dimensions of law and technology theory – timing and uncertainty – to evaluate the effectiveness of adopting a comprehensive regulatory regime. This Essay argues that although belated regulation of a new technology may incur enforcement hurdles due to the entrenchment of social norms, these

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hurdles are alleviated when, as in the case of ART, the technology is administered by intermediaries. This Essay then distinguishes between two ultimate goals of reducing uncertainty surrounding the use of new technologies: alleviating fears that inhibit the adoption of a new technology and protecting individuals already using a widely adopted technology from unexpected legal circumstances. It argues that the adoption of a comprehensive regulatory regime for ART will relieve the latter type of uncertainty. Secondly, the Essay examines the effects of the prohibition on gamete donor anonymity on the availability of donor gametes and the consequent social adoption of ART technology that is dependent on donor gametes. The Essay analyzes the data from three representative jurisdictions that prohibit anonymity: Sweden, Victoria (Australia), and the United Kingdom. It reveals that these jurisdictions suffer from significant shortages in donor gametes and underscores that efforts to combat these shortages resulted in eroding commitments to equality and the prevention of commodification. The Essay, therefore, cautions against the adoption of a prohibition on donor gamete anonymity in the United States.

INTRODUCTION

Artificial Reproductive Technology (“ART”) has recently received rather unfavorable media attention. On January 26, 2009, a woman gave birth to octuplets: six boys and two girls.¹ Many argued that the lack of oversight of the fertility industry led to the implantation of eight embryos in an unemployed woman who could not support her own children.² The octuplets controversy highlighted the need to regulate certain aspects of the practice of ART.

Naomi Cahn’s book, *Test Tube Families*,³ reveals that the regulatory void in the area of reproductive technology is a much broader phenomenon encompassing practically all aspects of the practice of ART. *Test Tube Families* is a masterful synthesis incorporating an expansive description of a medical practice governed by few legal mandates with a thoughtful analysis arguing for a comprehensive regulatory regime and elaborating on the intricate scheme of laws needed to regulate the practice of ART.⁴

¹ Shari Roan & Jeff Gottlieb, *Octuplets Rattle Fertility Experts*, L.A. TIMES, Jan. 28, 2009, at A1.

² See, e.g., Kim Yoshino & Jessica Garrison, *States Consider Stricter Rules on Fertility Industry; Some Doctors Worry that Abortion Rights Could Be Limited*, L.A. TIMES, Mar. 6, 2009, at A8. To compare states’ reactions, see, for example, Ethical Treatment of Human Embryos Act, S.B. 169, 150th Gen. Assem. (Ga. 2009), available at http://www.legis.ga.gov/legis/2009_10/pdf/sb169.pdf; H.B. 810, 95th Gen. Assem., Reg. Sess. (Mo. 2009), available at <http://www.house.mo.gov/billtracking/bills091/biltxt/intro/HB0810I.htm>.

³ NAOMI R. CAHN, *TEST TUBE FAMILIES: WHY THE FERTILITY MARKET NEEDS LEGAL REGULATION* (2009).

⁴ *Id.* at 4, 24-25.

Cahn's analysis is divided into three parts. First, Cahn exposes the minimal regulation currently governing the practice of ART, including the market for eggs and sperm ("gametes").⁵ Cahn argues for expansive federal regulation that would cover many aspects of the practice of ART, such as the number of transferred embryos, access for gamete recipients, and the prevention of the exploitation of gamete donors.⁶ Second, Cahn evaluates the impact of the practice of ART on the donors and the individuals seeking to conceive a child.⁷ *Test Tube Families* underscores the uncertainty involved in legal determinations of parenthood for many of ART's donors and recipients.⁸ Cahn proposes that the principle of "intent" could effectively guide these determinations.⁹ Specifically, Cahn proposes that the law should enforce contracts that determine in advance who is the legal parent.¹⁰ Third, Cahn turns to examine the interests of the children conceived with donor gametes. Cahn focuses on the interests of these children in developing their identity by incorporating information about their genetic parents.¹¹ She argues that although donor anonymity is the prevailing norm, the interests of the children conceived through use of donated gametes justify a law prohibiting donor anonymity that would also allow these children, once they reach the age of eighteen, to receive information about the donor.¹²

This Essay uses the publication of this major work by Naomi Cahn as a lens through which to assess whether two global ART regulatory trends are suitable to the United States. First, Cahn's proposal advocates that the United States join other jurisdictions in adopting a comprehensive regime to regulate both the practice of ART and the relationships between the parties using ART.¹³ This Essay examines the effects of adopting a comprehensive regulatory

⁵ *Id.* at 52-64.

⁶ *Id.* at 25, 153, 194-96, 197-200.

⁷ *Id.* at 88-113.

⁸ *Id.*

⁹ *Id.* at 27, 211-12.

¹⁰ *Id.*

¹¹ *Id.* at 125-29.

¹² *Id.* at 116, 228-34.

¹³ There are other commentators and groups advocating that the United States adopt a comprehensive regulatory regime, see, for example, PRESIDENT'S COUNCIL ON BIOETHICS, REPRODUCTION & RESPONSIBILITY: THE REGULATION OF NEW TECHNOLOGIES 183-240 (2004), available at http://bioethics.georgetown.edu/pcbe/reports/reproductionandresponsibility/_pcbe_final_reproduction_and_responsibility.pdf (recommending comprehensive monitoring and oversight of ART in place of the current patchwork of regulation); Weldon E. Havins & James J. Dalessio, *The Ever-Widening Gap Between the Science of Artificial Reproductive Technology and the Laws Which Govern that Technology*, 48 DEPAUL L. REV. 825, 829 (1999); Robert L. Stenger, *The Law and Assisted Reproduction in the United Kingdom and United States*, 9 J.L. & HEALTH 135, 159 (1994-1995) (arguing that the United Kingdom's Human Fertilisation and Embryology Act can guide U.S. efforts to address assisted reproductive technology).

regime for ART by developing two dimensions of law and technology theory¹⁴: uncertainty and timing.

Timing can play an important role in evaluating potential legal reactions to new technologies. ART consists of a group of technologies, the oldest of which, artificial insemination, has been in popular use since the 1930s.¹⁵ Cahn's account shows that the law's failure to resolve many of the legal issues related to the use of artificial insemination further complicates the resolution of issues stemming from use of newer forms of ART, such as egg and embryo donations.¹⁶ This Essay posits that, in certain instances, late regulation of new technologies is harder to accomplish due to the entrenchment of contradictory social norms.¹⁷ However, it is important to distinguish between technologies that are used through an intermediary and technologies that are employed directly by the end-user. Where a technology is administered by an intermediary, particularly a professional intermediary, even a late regulatory scheme would face lower hurdles in overturning entrenched norms. Consequently, the regulation of ART, which is usually administered by physicians, fertility clinics, and sperm or egg banks, is unlikely to face the same obstacles as decentralized technologies.

Uncertainty also plays a role in technology regulating regimes. Comprehensive regulatory regimes can effectively dispel uncertainty in the use of new technologies. This Essay distinguishes between two ultimate goals of reducing the uncertainty surrounding uses of new technologies: alleviating fears to encourage the adoption of a new technology and protecting individuals using a widely adopted technology from entering unexpected legal circumstances. An example of a law reducing uncertainty to encourage the adoption of a new technology is the long-awaited federal Genetic Information Nondiscrimination Act of 2008 ("GINA").¹⁸ GINA encourages use of genetic

¹⁴ For writings in the burgeoning field of law and technology theory scholarship, see generally Arthur Cockfield & Jason Pridmore, *A Synthetic Theory of Law and Technology*, 8 MINN. J. L. SCI. & TECH. 475 (2007); Arthur J. Cockfield, *Towards a Law and Technology Theory*, 30 MANITOBA L.J. 383 (2003-2004); Gregory N. Mandel, *History Lessons for a General Theory of Law and Technology*, 8 MINN. J. L. SCI. & TECH. 551 (2007); Andrea M. Matwyshyn, *Technology, Commerce, Development, Identity*, 8 MINN. J. L. SCI. & TECH. 515 (2007); Lyria Bennett Moses, *Understanding Legal Responses to Technological Change: The Example of In Vitro Fertilization*, 6 MINN. J. L. SCI. & TECH. 505 (2005).

¹⁵ Gaia Bernstein, *The Socio-Legal Acceptance of New Technologies: A Close Look at Artificial Insemination*, 77 WASH. L. REV. 1035, 1060-71 (2002) (describing the advent of artificial insemination into popular use).

¹⁶ CAHN, *supra* note 3, at 209-10.

¹⁷ See generally Gaia Bernstein, *When New Technologies Are Still New: Windows of Opportunity for Privacy Protection*, 51 VILL. L. REV. 921 (2006) (arguing that regulation to change privacy norms online is less likely to be effective once these norms are entrenched).

¹⁸ Pub. L. No. 110-233, 122 Stat. 881 (2008) (codified in scattered sections of 26, 29, and 42 U.S.C.).

testing technology by allaying fears of discrimination.¹⁹ Yet, users of ART in recent years have not been significantly deterred by the uncertainty enveloping use of the technology. The desire to have a child usually trumps any such hesitations. This Essay argues, however, that the adoption of a comprehensive regime to regulate ART will accomplish the second goal of dispelling uncertainty. Regulation will protect individuals lured by the technology and the promise of a child from entering unforeseen, life-devastating legal circumstances, such as a lesbian couple who discover that they share parental rights over the conceived child with the sperm donor.²⁰

This Essay will then turn to evaluate a second global regulatory trend: the prohibition on gamete anonymity. Eleven jurisdictions worldwide have adopted an open identity donor system, which prohibits donor anonymity.²¹ In *Test Tube Families*, Cahn emerges as the leading protagonist of the proposal to prohibit donor anonymity in the United States. Cahn advocates a prohibition on anonymity that would allow a child conceived through donor gametes to find out the donor's identity once she turns eighteen, justifying the prohibition on the basis of the child's need to develop her identity.²²

Commentators evaluating the effects of open identity systems consider different interests, including the privacy and procreative liberty interests of the parents, the privacy interests of the donors, and the potential effect of disclosure requirements on supply and demand of donor gametes.²³ This Essay does not evaluate all the interests at stake, but instead focuses on a detailed assessment of the effect of prohibiting donor anonymity on the availability of donor gametes and the consequent diffusion, that is the social adoption, of ART technology that is dependent on donor gametes.²⁴ I provide an in-depth

¹⁹ See Jessica L. Roberts, *Preempting Discrimination: Lessons from the Genetic Information Nondiscrimination Act*, 63 VAND. L. REV. 439, 471-74 (2010); Perry Wayne, *Genetic Information Nondiscrimination Act of 2008: The Federal Answer for Genetic Discrimination*, 5 J. HEALTH & BIOMEDICAL L. 33, 38-39 (2009).

²⁰ See *Jhordan C. v. Mary K.*, 224 Cal. Rptr. 530, 531 (Ct. App. 1986).

²¹ Eric Blyth & Lucy Frith, *Donor-Conceived People's Access to Genetic and Biographical History: An Analysis of Provisions in Different Jurisdictions Permitting Disclosure of Donor Identity*, 23 INT'L J. L. POL'Y & FAM. 174, 175 (2009).

²² CAHN, *supra* note 3, at 114-29, 215-37.

²³ See, e.g., *id.* at 217-28; Lucy Frith, *Gamete Donation and Anonymity: The Ethical and Legal Debate*, HUM. REPROD., May 2001, at 818, 820-22 (discussing the interests of parents and children); Sonia M. Suter, *Giving in to Baby Markets: Regulation Without Prohibition*, 16 MICH. J. GENDER & L. 217, 260-73 (2009) (discussing the interests of parents, donors, and children); Ilke Turkmendag, Robert Dingwall & Thérèse Murphy, *The Removal of Donor Anonymity in the UK: The Silencing of Claims of Would-Be Parents*, 22 INT'L J. L. POL'Y & FAM. 283, 292 (2008) (emphasizing the neglect of the interests of the parents under the new U.K. policy).

²⁴ The technological life cycle is comprised of three stages: invention – the technical discovery; innovation – the first commercially successful application of the technology; and diffusion – the technology's widespread social adoption. GEORGE S. FORD, THOMAS M.

analysis of the data from three representative jurisdictions that prohibit anonymity: Sweden, the Australian state of Victoria, and the United Kingdom. The data, although at times inconsistent, reveals a disconcerting overall picture. These jurisdictions suffer from significant shortages in donor gametes accompanied by long wait-lists for recipients. I posit that although the prohibition on donor anonymity is not necessarily the only factor leading to a shortage in donor gametes, it appears to have played an important role in all three jurisdictions.

This Essay underscores that donor shortages extend the detrimental psychological effects of infertility on those seeking to conceive and erect another obstacle to overcoming the low birth rates now prevalent in most European countries. It then goes beyond assessing the supply of donor gametes and the effects of donor scarcity on the adoption of the relevant technologies to examine the efforts to overcome the resulting shortages. Alternative recruitment methods targeting older donors are partly effective but do not produce the required supply of donor gametes, particularly eggs for which quality is age dependent. Individuals faced by long wait-lists in their jurisdictions resort to fertility tourism to countries that maintain an anonymous system. Finally, jurisdictions are increasingly recognizing the effects of combining a prohibition on donor compensation with a prohibition on donor anonymity and beginning to reevaluate their commitment to banning compensation. This Essay emphasizes that the efforts to combat the shortages threaten additional values, beyond privacy and procreative rights. Specifically, I show that commitments to equality and to the prevention of commodification are eroded by reactions to donor gamete shortage. I caution that while open donor systems may carry some advantages to children, the described effects urge against transforming the United States into a mandatory open identity donor system.

This Essay will proceed as follows: Part I will discuss the contribution of *Test Tube Families*. Part II will develop law and technology theory to evaluate the regulatory scheme proposed by *Test Tube Families*, examining the issues of uncertainty and timing. Part III will discuss the proposal to prohibit donor anonymity and argue that the effects on the diffusion of donor gamete dependent ART technologies contend against adopting a prohibition on donor anonymity.

KOUTSKY & LAWRENCE J. SPIWAK, U.S. DEP'T OF COMMERCE, TECH. ADMIN., A VALLEY OF DEATH IN THE INNOVATION SEQUENCE: AN ECONOMIC INVESTIGATION 10 (2007), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1093006; see also EVERETT M. ROGERS, DIFFUSION OF INNOVATIONS 11 (5th ed. 2003) (defining "diffusion as the process by which (1) an innovation (2) is communicated through certain channels (3) over time (4) among the members of a social system" (emphasis omitted)); Gaia Bernstein, *In the Shadow of Innovation*, 32 CARDOZO L. REV. (forthcoming 2010) (manuscript at 2, 39-57), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1395779 (arguing for the importance of regulating the diffusion processes of new technologies).

I. TEST TUBE FAMILIES

In *Test Tube Families*, Cahn expertly describes the regulatory void in the area of reproductive technology. Cahn draws a disturbing picture of a medical practice guided by few legal mandates and exposes the consequences of this lack of oversight for all parties involved. *Test Tube Families* identifies the need for a comprehensive regulatory scheme. It demonstrates that the industry's self-regulation failed and further articulates a complex network of laws needed to regulate the practices of ART.²⁵ Specifically, Cahn calls for regulation in three areas: the practice of ART, including the market for eggs and sperm; parental relationships; and donor identity.

Test Tube Families examines current federal and state regulations of the practice of ART highlighting their limited scope.²⁶ Existing regulations are mainly limited to requiring minimal testing to assure the medical safety of donated gametes and requiring clinics to provide information about their success rates.²⁷ Cahn, therefore, argues for the need to legislate a comprehensive set of federal laws that will include a limitation on the number of embryos that can be transferred to a woman,²⁸ prevent the exploitation of gamete donors,²⁹ guarantee access for gamete recipients,³⁰ and consider the creation of a federal national registry (which will prevent donors from misrepresenting the quality of their gametes and their history of donations).³¹

Cahn looks beyond the practice of ART to assess its impact on the parties involved: the parents and the children. *Test Tube Families* exposes the uncertainty surrounding the resolution of the seemingly innocuous questions: "who is your mom?" and "who is your dad?"³² Particularly, Cahn points to the absence of laws governing the parental rights of egg and embryo donors and their recipients.³³ She also underscores the particularly uncertain parental status of all parties involved when single women and lesbians use ART.³⁴ For example, significant uncertainty accompanies the accordance of parental rights to a same sex partner who is not the biological parent.³⁵ Finally, she describes the conflicting state laws that govern the practice of surrogacy. While some courts will enforce surrogacy agreements and grant the intended parents parental rights, other courts will not enforce parental rights according to the

²⁵ CAHN, *supra* note 3, at 4, 24-25.

²⁶ *Id.* at 52-64.

²⁷ *Id.* at 52-62.

²⁸ *Id.* at 194, 196.

²⁹ *Id.* at 25, 197-200.

³⁰ *Id.* at 153.

³¹ *Id.* at 162-63.

³² *Id.* at 88-113.

³³ *Id.* at 88, 93-98.

³⁴ *Id.* at 89, 107-12.

³⁵ *Id.* at 109-03.

surrogacy agreement and may even award parental rights to the surrogate.³⁶ Cahn proposes to reduce the uncertainty surrounding the resolution of these crucial questions by promoting the principle of “intent.”³⁷ Specifically, she proposes a law enforcing private contracts signed in advance by the parties who may claim the title of legal parent. Cahn also proposes the law should require parents and known donors to execute a written agreement in advance that will determine their parental responsibilities.³⁸

Finally, Cahn turns to examine the interests of the children conceived through ART. Cahn focuses on the interests of children conceived with donor gametes in developing their identity by incorporating information about their genetic parents.³⁹ Cahn discusses the current trend, prevailing particularly among heterosexual parents, who do not disclose to their children that they were conceived through gamete donation.⁴⁰ However, Cahn argues that the children’s identity interests create the need for a law mandating that children conceived with donor gametes receive information about their donor parents once they reach the age of eighteen.⁴¹

II. THE ADOPTION OF A COMPREHENSIVE REGULATORY REGIME: TIMING AND UNCERTAINTY

Naomi Cahn, in her elaborate proposal in *Test Tube Families*, joins a growing number of commentators who advocate for the adoption of a comprehensive regime in the United States to govern the practice of ART.⁴² Law and technology theory can assist in evaluating some of the effects of the adoption of such a comprehensive regime in the United States.⁴³ In this Part, I examine the likelihood that the new regime will effectively alter the social norms governing the practice of ART, given that the timing of the regulation lags well behind the adoption of the technologies. I will then discuss the types of uncertainty associated with new technologies and the ways that

³⁶ *Id.* at 99-107.

³⁷ *Id.* at 27, 211-12.

³⁸ *Id.* at 211-12.

³⁹ *Id.* at 125-29.

⁴⁰ *Id.* at 117-21.

⁴¹ *Id.* at 116, 228-34.

⁴² See sources cited *supra* note 13.

⁴³ Bernstein, *supra* note 15; Gregory N. Mandel, *Technology Wars: The Failure of Democratic Discourse*, 11 MICH. TELECOMM. & TECH. L. REV. 117 (2005); Lyria Bennett Moses, *Adapting the Law to Technological Change: A Comparison of Common Law and Legislation*, 26 U. N.S.W. L.J. 394 (2003); Symposium, *Toward a General Theory of Law and Technology*, 8 MINN. J. L. SCI. & TECH. 441 (2007); see also sources cited *supra* note 14.

comprehensive regulatory regimes can alleviate them. Finally, I will identify the specific type of uncertainty that can be resolved in the case of ART.⁴⁴

A. *Timing*

ART consists of a group of technologies, the oldest of which, artificial insemination, has been in popular use since the 1930s.⁴⁵ Surrogacy has been practiced since the mid-1970s⁴⁶ and in vitro fertilization (“IVF”) has been in use since the late the 1970s.⁴⁷ In *Test Tube Families*, Cahn shows that the legal regime mostly abstained from regulating these technologies.⁴⁸ Physicians, fertility clinics, and sperm banks are largely left to their own devices in determining the practice of ART, including implantation proceedings, selection of donors and recipients, and disclosure of donors’ identities.⁴⁹ The medical profession filled this regulatory void with its own norms. While anonymity became the general norm governing donor identity,⁵⁰ a “laissez-faire” norm governs the other aspects of the practice of ART. For example, physicians, fertility clinics, and sperm banks have diverse policies regarding recipient access and the number of embryos transferred.⁵¹

In *Test Tube Families*, Cahn proposes a comprehensive regulatory regime, which would govern both donor identity and other practices currently governed under the “laissez-faire” norm. Assuming that regulation is desirable, the obvious question raised by *Test Tube Families* is whether it is practicable to regulate a technology that has been left unregulated for decades. This question is pertinent, particularly because the regulation of newer forms of ART, such

⁴⁴ In *Test Tube Families*, Cahn discusses extensively the need for regulation and the types of law, whether federal or state, that would be most suitable for regulating the different areas of ART. This Essay departs from where Cahn has left off. It assumes that regulation is necessary and examines the effects of such regulation on the uncertainty surrounding the use of ART and the effectiveness of such regulation despite the problem of timing. The type of regulatory tools used is an issue that is relevant to the topic timing, yet that discussion is beyond the scope of this Essay.

⁴⁵ Bernstein, *supra* note 15, at 1060-71.

⁴⁶ Lisa L. Behm, *Legal, Moral & International Perspectives on Surrogate Motherhood: The Call for a Uniform Regulatory Scheme in the United States*, 2 DEPAUL J. HEALTH CARE L. 557, 561-63 (1999) (stating that the first surrogacy through artificial insemination was practiced in the mid-1970s in California while the first gestational surrogacy (surrogacy via use of IVF) occurred in 1986).

⁴⁷ Louise Brown was the first child to be born through IVF in 1978. See Peter Gwynne et al., *All About That Baby*, NEWSWEEK, Aug. 7, 1978, at 66.

⁴⁸ CAHN, *supra* note 3, at 49-51.

⁴⁹ *Id.* at 43-72. An alternative source of guidance is the non-binding guidelines of medical associations. *Id.* at 62-64.

⁵⁰ *Id.* at 114-20.

⁵¹ See *id.* at 61; Naomi R. Cahn & Jennifer M. Collins, *Eight Is Enough*, 103 NW. U. L. REV. COLLOQUY 501, 507-08 (2009).

as egg and embryo donations, is closely related to the regulation of the basic procedures of artificial insemination and IVF.

Law can shape the use of new technologies.⁵² Yet, timing is crucial in the regulation of new technologies. Regulation can be delayed both through late enactment of laws and through belated enforcement of existing laws. Once social norms are created, it is sometimes too late to change them through law.⁵³ The 1990s and the first decade of the twenty-first century are replete with instances of technology regulating failures. Timing problems contributed to some of these failures. In these instances, social norms became rapidly entrenched and legal regulation failed to alter them. Specifically, laws prohibiting uses of technologies that amount to a copyright violation have been particularly ineffective. A primary example is peer-to-peer music file sharing on the internet. The Recording Industry Association of America repeatedly sued individuals who used file-sharing systems to download music on the internet.⁵⁴ Yet, file sharing remains a prevalent phenomenon.⁵⁵ Although music downloading violates copyright law, individuals engaging in downloading do not view file sharing as immoral.⁵⁶ Similarly, the law has

⁵² Technologies do not have determined uses but react to social reforms that seek to make them compatible with social values and structures. See Robert Heilbroner, *Do Machines Make History?*, in *CONTROLLING TECHNOLOGY* 213, 219-20 (William B. Thompson ed., 1991); John Law & Michel Callon, *The Life and Death of an Aircraft: A Network Analysis of Technological Change*, in *SHAPING TECHNOLOGY/BUILDING SOCIETY: STUDIES IN SOCIOTECHNICAL CHANGE* 21, 21 (Wiebe E. Bijker & John Law eds., 1992); Stewart Russell & Robin Williams, *Social Shaping of Technology: Frameworks, Findings and Implication for Policy with Glossary of Social Shaping Concepts*, in *SHAPING TECHNOLOGY, GUIDING POLICY: CONCEPTS, SPACES AND TOOLS* 37, 39 (Knut H. Sørensen & Robin Williams eds., 2002).

⁵³ See Bernstein, *supra* note 17, at 937-46 (drawing on insights from the law and social norms theory, the economic theory of path dependence, and the science and technology studies theory of "Closure" to demonstrate the importance of timing for legal regulations).

⁵⁴ See, e.g., Matt Richtel & Sharon Waxman, *The Media Business; Film Studios Prepare Suits on Illegal Sharing of Files*, N.Y. TIMES, Nov. 5, 2004, at C4.

⁵⁵ Ben Depoorter & Sven Vanneste, *Norms and Enforcement: The Case Against Copyright Litigation*, 84 OR. L. REV. 1127, 1127 (2005); David W. Opperbeck, *Peer-to-Peer Networks, Technological Evolution, and Intellectual Property Reverse Private Attorney General Litigation*, 20 BERKELEY TECH. L.J. 1685, 1688 (2005); ELEC. FRONTIER FOUND., *RIAA v. THE PEOPLE: TWO YEARS LATER* 2 (2005), http://w2.eff.org/IP/P2P/RIAAatTWO_FINAL.pdf; Press Release, NPD Group, Inc., The NPD Group: Consumers Acquired More Music in 2007, But Spent Less (Feb. 26, 2008), available at http://www.npd.com/press/releases/press_080226a.html. For a general discussion of the effect of law on file-sharing social norms, see Yuval Feldman & Janice Nadler, *The Laws and Norms of File Sharing*, 43 SAN DIEGO L. REV. 577 (2006).

⁵⁶ See Steven A. Hetcher, *The Music Industry's Failed Attempt to Influence File Sharing Norms*, 7 VAND. J. ENT. L. & PRAC. 10, 10-13 (2004); Chris Collins, *Downloading Lowdown: File-Sharing Is the Moral Equivalent of Stealing a Car*, SEATTLE TIMES, Oct. 25,

failed to prevent the unauthorized copying of software, music CDs, and videotapes.⁵⁷

Lack of compliance, like that in the digital legal arena, results from a failure of the law to alter existing social norms that vary significantly from the legal pronouncement. Law and social norms theory shows that laws are less likely to be effective where they sharply digress from existing social norms.⁵⁸ These laws may even backfire by enhancing the very norms they seek to change.⁵⁹ Attempts to change the norms surrounding the use of a technology after they are entrenched encounter significant hurdles and, under certain circumstances, fail. Scholars offer two main theories to explain this phenomenon. First, the law can more easily enforce a rule that does not contradict existing social norms because prohibited conduct is already embedded in social stigma and people follow it to avoid the disapproval of their social group.⁶⁰ It is a much more difficult task to establish a successful legal norm which has to restructure social stigma in order to achieve compliance.⁶¹ Second, legitimacy – the belief that the law-making authority and the content of the law is entitled to deference – is undermined when the law diverges from social norms.⁶²

The norms surrounding the use of reproductive technologies are similarly entrenched. An attempt to enforce a comprehensive regulatory regime on the use of reproductive technologies would conflict with the prevailing “laissez-faire” norm, while mandating the disclosure of donor identity would diverge from the prevailing norm of donor anonymity. However, I suggest that timing, the gap between the creation of existing norms and the proposed regulation, is unlikely to pose the same hurdle in the case of reproductive technologies as in the case of digital technologies.

2003, at D4 (quoting Gallop poll showing that eighty-three percent of thirteen- to seventeen-year-olds considered downloading music to be morally acceptable).

⁵⁷ See Stuart P. Green, *Plagiarism, Norms, and the Limits of Theft Law: Some Observations on the Use of Criminal Sanctions in Enforcing Intellectual Property Rights*, 54 HASTINGS L.J. 167, 173, 237 (2002).

⁵⁸ See Dan M. Kahan, *Gentle Nudges vs. Hard Shoves: Solving the Sticky Norms Problem*, 67 U. CHI. L. REV. 607, 608 (2000); Elizabeth S. Scott, *Social Norms and the Legal Regulation of Marriage*, 86 VA. L. REV. 1901, 1926-28 (2000).

⁵⁹ See Francesco Parisi & Georg von Wangenheim, *Legislation and Countervailing Effects from Social Norms*, in THE EVOLUTION AND DESIGN OF INSTITUTIONS 25, 30 (Christian Shubert & Georg von Wangenheim eds., 2006).

⁶⁰ *Id.*

⁶¹ See Lawrence Lessig, *The Regulation of Social Meaning*, 62 U. CHI. L. REV. 943, 986-87, 999 (1995); Parisi & Wangenheim, *supra* note 59, at 32; Paul H. Robinson, *Why Does Criminal Law Care What the Layperson Thinks Is Just? Coercive Versus Normative Crime Control*, 86 VA. L. REV. 1839, 1861-63 (2000); Lior Jacob Strahilevitz, *How Changes in Property Regimes Influence Social Norms: Commodifying California's Carpool Lanes*, 75 IND. L.J. 1231, 1266-67 (2000).

⁶² See TOM R. TYLER, *WHY PEOPLE OBEY THE LAW* 19-57 (1990); Parisi & Wangenheim, *supra* note 59, at 27-28.

One important respect in which digital technologies differ from reproductive technologies is their mode of diffusion. Specifically, the technologies differ in the type of entity that adopts and controls the use of the technology. Digital technologies are adopted by the end user. The diffusion process of digital technologies is decentralized in that diffusion emerges horizontally through peer networks: there is no central expert group that administers the diffusion.⁶³ Conversely, reproductive technologies have centralized diffusion systems. Technical subject matter experts control decisions and diffuse the technology to local users.⁶⁴ Sperm banks, fertility clinics, and physicians administer the technologies. Most reproductive technologies cannot be used by individuals without the help of an intermediary – a gatekeeper – who applies them.⁶⁵

Law and social norms theory posits that people comply with the law for their own benefit or to avoid sanctions. The threat of punishment deters certain behavior, while rewards encourage other behavior.⁶⁶ Deterrence depends on the perceived risk that a person will, in fact, be sanctioned.⁶⁷ Individual users violating copyright laws through unauthorized copying or downloading have a low perceived risk of sanction. Individual users are unlikely to be punished due to the broad range of infringements and geographical and technological restraints.⁶⁸

To overcome the problem of a low perceived risk of sanction, many intellectual property right owners, and some commentators, support targeting enforcement measures at intermediaries, such as search engines, file sharing distribution systems, or Internet Service Providers (“ISPs”).⁶⁹ The rationale

⁶³ See ROGERS, *supra* note 24, at 180, 394-98; Brian Butler & Deborah E. Gibbons, *Power Distribution as a Catalyst and Consequence of Decentralized Technology Diffusion*, in INFORMATION SYSTEMS INNOVATION AND DIFFUSION: ISSUES AND DIRECTIONS 3, 4-5, 12-13 (Tor J. Larson & Eugene McGuire eds., 1998); Steven R. Salbu, *Who Should Govern the Internet?: Monitoring and Supporting a New Frontier*, 11 HARV. J.L. & TECH. 429, 435-36 (1998); Lawrence B. Solum & Minn Chung, *The Layers Principle: Internet Architecture and the Law*, 79 NOTRE DAME L. REV. 815, 832 (2004).

⁶⁴ See ROGERS, *supra* note 24, at 180, 394-98; DONALD A. SCHON, *BEYOND THE STABLE STATE* 80-115 (1971).

⁶⁵ An exception is artificial insemination with a known donor sperm, which can be administered at home without the intervention of an institutional setting.

⁶⁶ See LAWRENCE M. FRIEDMAN, *THE LEGAL SYSTEM: A SOCIAL SCIENCE PERSPECTIVE* 69, 71 (1975). See generally George J. Stigler, *The Optimum Enforcement of Laws*, 78 J. POL. ECON. 526 (1970) (providing a theory of rational law enforcement).

⁶⁷ FRIEDMAN, *supra* note 66, at 83.

⁶⁸ See Depoorter & Vanneste, *supra* note 55, at 1137.

⁶⁹ See, e.g., *MGM Studios, Inc. v. Grokster Ltd.*, 545 U.S. 913, 920 (2005) (litigating the music industry’s lawsuit to impose liability on the file sharing distribution system Grokster); Oren Bracha & Frank Pasquale, *Federal Search Commission? Access, Fairness, and Accountability in the Law of Search*, 93 CORNELL L. REV. 1149, 1151 (2008) (arguing for the need to regulate search engines); Stacey L. Dogan & Mark A. Lemley, *Trademarks and Consumer Search Costs on the Internet*, 41 HOUS. L. REV. 777, 804 (2004) (referring to

underlying the focus on intermediaries is that enforcement should be addressed at the bottleneck point. A law is more likely to achieve compliance if the number of people who need to comply is smaller.⁷⁰ Consequently, enforcing copyright laws on intermediaries rather than the general public is more likely to achieve compliance.

Efforts to impose liability on intermediaries to achieve compliance with copyright laws have often failed because ISPs and search engines have only partial control over the individuals who use the technologies.⁷¹ Conversely, physicians, sperm banks, and fertility clinics represent the bottleneck in the diffusion process of reproductive technologies. They are the gatekeepers. Physicians control the administration of reproductive technologies. Individual users usually cannot use the technologies without professional help. Reproductive technologies are generally administered in a limited number of institutional medical settings.⁷² Furthermore, physicians are licensed intermediaries who can be sanctioned for lack of compliance through the revocation of their medical license.

Admittedly, regulation rarely accomplishes perfect compliance and may at times fail even when it targets intermediaries. The medical arena is no exception.⁷³ Yet, the belated regulation of reproductive technologies is less likely to suffer the same fate as the regulation of digital technologies even though the norms surrounding reproductive technologies are similarly entrenched. The legal regime's ability to target the intermediaries who control

trademark owners' arguments that search engines providing advertisements should be liable for unlawfully contributing to trademark infringement).

⁷⁰ FRIEDMAN, *supra* note 66, at 85.

⁷¹ See, e.g., Mark A. Lemley & Philip J. Weiser, *Should Property or Liability Rules Govern Information*, 85 TEX. L. REV. 783, 800-01 (2007) (discussing the inability of Google to feasibly prevent the display of thumbnails of infringing photos); Matthew Schruers, *The History and Economics of ISP Liability for Third Party Content*, 88 VA. L. REV. 205, 208-22 (2002) (discussing the history of ISP liability, focusing on the enactment of § 230 of the Communications Decency Act of 1996, 47 U.S.C. § 230 (2006), which granted ISPs immunity for liability from actions of users).

⁷² The latest government report is from 2006, and it lists 483 facilities that provide ART. U.S. DEP'T OF HEALTH & HUMAN SERVS., CTRS. FOR DISEASE CONTROL, ASSISTED REPRODUCTIVE TECHNOLOGY SUCCESS RATES 5, 567-70 (2006), available at <http://www.cdc.gov/ART/ART2006/508PDF/2006ART.pdf>.

⁷³ On the effects of regulation in the medical arena, see Robert Gatter, *Human Subjects Research and Conflicts of Interest: Walking the Talk of Trust in Human Subjects Research: The Challenge of Regulating Financial Conflicts of Interest*, 52 EMORY L.J. 327, 383-99 (2003) (arguing that legal enforcement in the medical arena can backfire by undermining trustworthiness); James Gibson, *Doctrinal Feedback and (Un)Reasonable Care*, 94 VA. L. REV. 1641, 1653-92 (2008) (arguing that legal regulation can lead to over-compliance by doctors); Carol A. Heimer, *Competing Institutions: Law, Medicine, and Family in Neonatal Intensive Care*, 33 LAW & SOC'Y REV. 17, 47 (1999) (showing that regulatory law is more likely to achieve compliance in the medical arena than tort law and criminal law).

the technologies improves the odds of compliance and reduces the timing obstacle.

B. *Uncertainty*

Comprehensive regulatory regimes can help dispel uncertainty in the use of new technologies. It is important to address the legal uncertainty surrounding the use of new technologies for two reasons. First, legal uncertainty can inhibit the adoption of a new technology. Second, individuals may be blinded by the strong lure of a new technology and find themselves in unanticipated legal situations due to that uncertainty.⁷⁴

Comprehensive regulatory regimes are particularly effective in dispelling legal uncertainty that inhibits the adoption of a new technology. The law has two functions: coercive and expressive. The law's coercive function influences conduct through enforcement, while the law's expressive function operates by sending a message. The expressive function of the law influences behavior by expressing moralizing features, such as normative principles and social values.⁷⁵ The law's expressive function publicizes a social consensus that certain conduct is required to comply with an internalized norm and the violation of the concrete obligation induces behavioral change by producing guilt.⁷⁶

Different types of regulation of new technologies have diverse effects on users' perceptions of risk related to the use of the technology.⁷⁷ A clear-cut, comprehensive legal proclamation can accelerate the diffusion of a new technology. The diffusion process of the technology of artificial insemination in humans demonstrates the importance of such clear-cut, comprehensive pronouncements. Despite the simplicity of the procedure of artificial

⁷⁴ Although even where legal certainty exists, individuals can find themselves in unanticipated legal situations due to lack of knowledge and understanding of the law; legal uncertainty increases the probability of such a result.

⁷⁵ See Elizabeth S. Anderson & Richard H. Pildes, *Expressive Theories of Law: A General Restatement*, 148 U. PA. L. REV. 1503, 1508-09 (2000); Richard H. McAdams, *The Origin, Development, and Regulation of Norms*, 96 MICH. L. REV. 338, 398 (1997); Steven D. Smith, *Expressivist Jurisprudence and the Depletion of Meaning*, 60 MD. L. REV. 506, 510, 515 (2001).

⁷⁶ McAdams, *supra* note 75, at 400-09.

⁷⁷ Law is not the only influence on individuals' perception of risk regarding a certain technology. A rich literature describes the effects of individuals' perceptions of safety and risk involved in the use of a technology. See generally DANIEL M. KAMMEN & DAVID M. HASSENZAHN, *SHOULD WE RISK IT? EXPLORING ENVIRONMENTAL, HEALTH, AND TECHNOLOGICAL PROBLEM SOLVING* (1999) (discussing the effects of risk analysis on decision making); *THE SOCIAL AND CULTURAL CONSTRUCTION OF RISK: ESSAYS ON RISK SELECTION AND PERCEPTION* (Branden B. Johnson & Vincent T. Covello eds., 1987) (discussing the social construction of risk); CASS R. SUNSTEIN, *RISK AND REASON: SAFETY, LAW, AND THE ENVIRONMENT* (2002) (discussing ways to reduce risks rationally by promoting governmental responses); Mandel, *supra* note 43.

insemination and its existence since the late eighteenth century, the general public hesitated to use artificial insemination until the 1960s. Conflicting legal pronouncements regarding the legal issues surrounding the procedure inhibited adoption of the technology for many years.⁷⁸ Artificial insemination reached mainstream adoption only during the 1960s as the legal regime shifted toward a comprehensive and consistent assurance for married couples using this technology.⁷⁹ During the 1960s and into the 1970s, states consistently began to guarantee that the husband of the woman who is inseminated with donor sperm is the legal father, the donor whose sperm was used is not the legal father, the wife using donor sperm does not commit adultery, and the child conceived through donor sperm is legitimate.⁸⁰ The assurances of the legal regime reduced the uncertainty surrounding the technology and encouraged its adoption.

A comprehensive federal statute is particularly effective in its ability to eliminate risk perceptions through its expressive function.⁸¹ One current effort to combat fears surrounding the adoption of a new technology involves genetic testing and preventing the threat of genetic discrimination. Despite the absence of genetic discrimination, many individuals resisted undergoing genetic testing.⁸² Individuals feared that if they tested positive for a genetic

⁷⁸ Bernstein, *supra* note 15, at 1048-97.

⁷⁹ N.Y. STATE TASK FORCE ON LIFE & LAW, SURROGATE PARENTING: ANALYSIS AND RECOMMENDATIONS FOR PUBLIC POLICY 19 (1988); Bernstein, *supra* note 15, at 1083-97 (providing data on the rising popularity of artificial insemination and demonstrating that legalization was an important factor in the increased diffusion of artificial insemination).

⁸⁰ The legal shift was comprised of several well-publicized cases and the enactment of state laws. See GA. CODE ANN. § 74-9904 (1973) (enacting the first statute to legitimize artificial insemination in 1967); *People v. Sorensen*, 437 P.2d 495, 498-99 (Cal. 1968) (ruling that a child born through artificial insemination is legitimate and the husband of the woman who gave birth through insemination is liable for support); *Gursky v. Gursky*, 242 N.Y.S.2d 406, 411-12 (Sup. Ct. 1963) (ruling that the husband of the woman who gave birth to a child through artificial insemination is liable for support). The Uniform Parentage Act, which was adopted in 1973, provided that artificial insemination with donor sperm is legal and that the donor is not the legal father. UNIF. PARENTAGE ACT §§ 201, 204 (amended 2002), 9B U.L.A. 11, 13 (2001). By the end of the 1970s at least fifteen states had statutes regulating artificial insemination. Bernstein, *supra* note 15, at 1090. Furthermore, since the 1960s courts began to align with state legislatures and ceased to issue conflicting opinions. *Id.* at 1083-97; Carol A. Donovan, *The Uniform Parentage Act and Nonmarital Motherhood-by-Choice*, 11 N.Y.U. REV. L. & SOC. CHANGE 193, 208 (1982-1983).

⁸¹ See Gaia Bernstein, *The Paradoxes of Technological Diffusion: Genetic Discrimination and Internet Privacy*, 39 CONN. L. REV. 241, 287 (2006).

⁸² For evidence of the fear of genetic discrimination, see COUNCIL FOR RESPONSIBLE GENETICS, GENETIC DISCRIMINATION: POSITION PAPER 3 (2001), <http://www.councilforresponsiblegenetics.org/pageDocuments/2RSW5M2HJ2.pdf>; Henry T. Greely, *Genotype Discrimination: The Complex Case for Some Legislative Protection*, 149 U. PA. L. REV. 1483, 1489-91 (2001); Mark A. Hall & Stephen S. Rich, *Genetic Privacy Laws and Patients' Fear of Discrimination by Health Insurers: The View from Genetic*

mutation they may lose their health insurance or employment.⁸³ These fears prevailed although empirical data demonstrates that genetic discrimination was, in fact, rare.⁸⁴ At the same time, until recently, protection against genetic discrimination was comprised of a partial and inconsistent patchwork of federal and state laws.⁸⁵ The uncertainty surrounding the legal protection from genetic discrimination exacerbated the public's fears.⁸⁶ An important goal in the adoption of the recent Genetic Information Nondiscrimination Act of 2008 ("GINA"), which provides a clear, relatively comprehensive federal restriction on genetic discrimination,⁸⁷ was to encourage use of genetic testing technology by allaying uncertainty due to fears of discrimination.⁸⁸

Comprehensive legal regimes are also effective in dispelling the second type of legal uncertainty and protecting individuals lured by the promise of a new technology from entering an uncertain legal terrain and unanticipated legal consequences. The type of comprehensive scheme proposed by Cahn would accomplish this second goal of dispelling uncertainty: it would protect individuals lured by the technology and the promise of a child from entering unforeseen, life-devastating legal circumstances.

Individuals seeking to have a child are often willing to undertake drastic measures and disregard medical as well as legal risks. Despite the legal uncertainty and absence of regulation, reports show an increase in the number of reported ART procedures.⁸⁹ While the growth in the practice of ART is doubtless also the result of the improvement in results, that is, live pregnancies and increasing social acceptance, there is no indication that fears of legal uncertainty are halting the use of ART.⁹⁰

Counselors, 28 J.L. MED. & ETHICS 245, 246-48 (2000); Eric Mills Holmes, *Solving the Insurance/Genetic Fair/Unfair Discrimination Dilemma in Light of the Human Genome Project*, 85 KY. L.J. 503, 556-57 (1996-1997); Paul A. Lombardo, *Genetic Confidentiality: What's the Big Secret?*, 3 U. CHI. L. SCH. ROUNDTABLE 589, 596 (1996); Geoffrey Cowley et al., *Flunk the Gene Test and Lose Your Insurance*, NEWSWEEK, Dec. 23, 1996, at 48.

⁸³ Bernstein, *supra* note 81, at 255-62.

⁸⁴ *Id.*

⁸⁵ *Id.* at 262-63.

⁸⁶ *Id.* at 264.

⁸⁷ Pub. L. No. 110-233, 122 Stat. 881 (2008) (codified in scattered sections of 26, 29, and 42 U.S.C.).

⁸⁸ See Roberts, *supra* note 19, at 471-74; Wayne, *supra* note 19, at 38-39.

⁸⁹ The number of reported ART procedures increased from 64,724 in 1996 to 134,260 in 2005. L.A. Schieve, G. Jeng, L.S. Wilcox & M.A. Reynolds, *Use of Assisted Reproductive Technology – United States, 1996 and 1998*, 51 MORBIDITY & MORTALITY WKLY. REP. 97, 97, available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5105a2.htm>; Victoria Clay Wright et al., *Assisted Reproductive Technology Surveillance – United States, 2005*, 57 MORBIDITY & MORTALITY WKLY. REP. 1, 1 (2008), available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5705a1.htm>.

⁹⁰ The percentage of live births from ART procedures in 1998 was 24.7%, while in 2005 the percentage was 35%. Schieve et al., *supra* note 89, at 97; Wright et al., *supra* note 89, at

The type of comprehensive regime, proposed by Cahn, will protect individuals and couples who use ART to conceive a child from finding themselves in unexpected dire circumstances. A comprehensive regime could prevent an increasingly common scenario in which individuals undergoing ART procedures learn that they unexpectedly share parental rights with additional individuals. Most commonly, these cases involve unmarried individuals using sperm or an egg from a known donor who initially agrees to waive parental rights but later sues for these rights in court. An example of such a situation occurred in *K.M. v. E.G.*⁹¹ In that case a woman gave birth to a child using her lesbian partner's eggs. A written agreement between the couple stated that the biological mother relinquished parental rights. However, when the couple separated, the court granted the biological mother parental rights.⁹² A comprehensive regime could also prevent another type of devastating circumstance in which individuals learn after the ART process culminates in the birth of a child that they do not have parental rights over that child. For example, in *In re Marriage of Moschetta*, the court held that the surrogate and not the intended mother who arranged for the surrogacy was the legal mother. The court, therefore, denied the intended mother custody over the conceived child.⁹³

III. DONOR ANONYMITY AND THE DIFFUSION OF ART

Prohibiting gamete donor anonymity is a growing global trend, currently adopted by eleven jurisdictions. Since 1985, Sweden, Austria, Switzerland, the Netherlands, Norway, the United Kingdom, New Zealand, Finland, and the Australian states of Victoria, Western Australia, and New South Wales have

5. Although other factors such as the age of the women and the specific procedure used can affect the number of live births, the reports indicate overall progress in the results achieved by ART technology.

⁹¹ 117 P.3d 673 (Cal. 2005).

⁹² *Id.* at 682; *see also* *Jhordan C. v. Mary K.*, 224 Cal. Rptr. 530, 531 (Ct. App. 1986) (granting paternity to a known donor who donated sperm to a lesbian couple); Robert E. Rains, *What the Erie "Surrogate Triplets" Can Teach State Legislatures About the Need to Enact Article 8 of the Uniform Parentage Act (2000)*, 56 CLEV. ST. L. REV. 1, 9 (2008) (discussing *J.F. v. D.B.*, 66 Pa. D. & C.4th 1, 17 (C.P. 2004), in which the court preliminarily granted the surrogate primary physical custody, while granting the intended parents partial custody); E. Gary Spitko, *The Constitutional Function of Biological Paternity: Evidence of the Biological Mother's Consent to the Biological Father's Co-Parenting of Her Child*, 48 ARIZ. L. REV. 97, 101-04 (2006) (analyzing case-law showing that while biological paternity alone does not give rise to constitutional protection, biological paternity coupled with some child-parent relationship does).

⁹³ *In re Marriage of Moschetta*, 30 Cal. Rptr. 2d 893, 903 (Ct. App. 1994); *see also In re Baby M*, 537 A.2d 1227, 1234 (N.J. 1988) (invalidating a surrogacy agreement and voiding the adoption of the child by the intended mother).

prohibited anonymous gamete donations.⁹⁴ U.S. law does not prohibit anonymous gamete donation.⁹⁵ While many commentators in the United States have examined this trend, Cahn emerges as the main protagonist advocating the prohibition of anonymous gamete donation in the United States.⁹⁶ Cahn, in *Test Tube Families*, argues that the interest of children conceived through gamete donors in constructing their identity justifies a law prohibiting donor anonymity and allowing these children, once they reach the age of eighteen, to receive information about the donor.⁹⁷

Commentators identify the need of children to develop their identity as the main reason for open-identity gamete donor systems.⁹⁸ Commentators evaluating open identity systems have highlighted different considerations including the privacy and procreative liberty interests of the parents, the privacy interests of the donors, and the effect on supply of donor gametes.⁹⁹ I do not endeavor, in this Essay, to assess all the interests at stake, but instead examine in detail the impact of prohibiting donor anonymity on the availability of donor gametes and consequently on the diffusion, that is the social adoption, of ART technology that is dependent on donor gametes.¹⁰⁰ This Part shows that although the data is not always consistent, the overall picture reveals a disconcerting scenario of dire shortages in donor gametes, overcome only partly by alternative recruitment methods of older gamete donors but mainly by fertility tourism to countries in which anonymity is not prohibited. This Part underscores that donor gamete shortage extends infertility and its detrimental psychological effects on those who seek to conceive while also

⁹⁴ Blyth & Frith, *supra* note 21, at 174-76; see Mary Lyndon Shanley, *Collaboration and Commodification in Assisted Procreation: Reflections on an Open Market and Anonymous Donation in Human Sperm and Eggs*, 36 LAW & SOC. REV. 257, 266-70 (2002) (arguing for the need to prohibit anonymous gamete transfer).

⁹⁵ CAHN, *supra* note 3, at 115.

⁹⁶ For additional support for prohibiting donor anonymity in the United States, see, for example, Michelle Dennison, *Revealing Your Sources: The Case for Non-Anonymous Gamete Donation*, 21 J.L. & HEALTH 1, 3 (2007-2008) (arguing that “legislating the end of anonymous gamete donation” and allowing current children of anonymous gamete donation “the ability to access identifying information about their donors is in the best interest of all parties”).

⁹⁷ CAHN, *supra* note 3, at 114-29, 215-37. See generally Naomi Cahn, *Necessary Subjects: The Need for a Mandatory National Donor Gamete Databank*, 12 DEPAUL J. HEALTH CARE L. 203 (2009).

⁹⁸ See CAHN, *supra* note 3, at 218-20; Jean Benward et al., *Maximizing Autonomy and the Changing View of Donor Conception: The Creation of a National Donor Registry*, 12 DEPAUL J. HEALTH CARE L. 225, 232-34 (2009); Shanley, *supra* note 94, at 268-70. Other reasons raised by advocates of open identity systems are health concerns related to genetic disease and the risk of incest. See, e.g., Dennison, *supra* note 96, at 14-16.

⁹⁹ See, e.g., CAHN, *supra* note 3, at 217-28; Frith, *supra* note 23, at 820-22; Suter, *supra* note 23, at 260-73; Turkmendag et al., *supra* note 23, at 291-305.

¹⁰⁰ See sources cited *supra* note 24.

posing an additional obstacle to resolving the problem of low birth rates in European countries. It further shows that efforts to combat gamete shortage erode commitments to equality and to the prevention of commodification. Hence, I caution that while open donor systems may carry some advantages to children, the resulting shortages inhibiting the use of donor gamete dependent ART and the range of compromised values and commitments underscore the need to avoid the adoption of an open identity system in the United States.

A. *Prohibitions on Donor Anonymity and the Supply of Donor Gametes*

This Section takes a close look at the data available from three representative jurisdictions that prohibit donor anonymity: Sweden, the Australian state of Victoria, and the United Kingdom.¹⁰¹ In Sweden and Victoria, the relevant data is of sperm donors, since anonymity was prohibited before egg donors became common. The data in the United Kingdom, where anonymity was prohibited later, includes both sperm and egg donors.

1. Sweden

In 1985, Sweden was the first jurisdiction in the world to allow a child born through artificial insemination with donor sperm to find out the identity of the donor when she reached maturity.¹⁰² Early reports showed a significant decline in the number of donors over the first couple of years after the law came into effect. The number of children born with donor sperm declined from two hundred new donors per year just before the law came into effect to thirty new donors per year by 1988.¹⁰³ Furthermore, reports indicated that half the hospitals that offered artificial insemination by donor closed their

¹⁰¹ I have selected Sweden and Victoria because they are the first jurisdictions in which donor anonymity was prohibited. Therefore, donor-conceived children have reached or are reaching the age at which they can demand to know the donor's identity. Additionally, in these jurisdictions there is relatively more data than in other jurisdictions on the effects on the number of gamete donors. I have selected the United Kingdom as a representative of a jurisdiction in which anonymity was recently prohibited. The prohibition on anonymity in the United Kingdom is currently in the midst of a heated debate and, therefore, the effects of this move are well-documented and quantified. I should add that although I do not provide detailed information on the data in the other jurisdictions in which anonymity was prohibited, the overall situation of gamete shortage and long wait-lists in these jurisdictions does not appear to differ from the situation in Victoria, Sweden, and the United Kingdom.

¹⁰² Erling Ekerhovd, Anders Faurskov & Charlotte Werner, *Swedish Sperm Donors Are Driven by Altruism, but Shortage of Sperm Donors Leads to Reproductive Travelling*, 113 *UPSALA J. MED. SCI.* 305, 305 (2008).

¹⁰³ M. Bygedemen, *The Swedish Insemination Act*, 70 *ACTA OBSTET GYNECOL SCAND.* 265, 266 (1991); see also Ken Daniels & Othon Lalos, *The Swedish Insemination Act and the Availability of Donors*, 10 *HUM. REPROD.* 1871, 1871-72 (1995) (confirming that the number of children born through donor insemination dropped between 1983 and 1988/1989).

programs.¹⁰⁴ Commentators attributed the closure of sperm donor programs and decrease in children born through donor sperm to the prohibition on donor anonymity.¹⁰⁵ At the same time, a 1995 study showed that data accumulated between 1989 and 1993 indicated a 65% increase in the number of donors, from 69 new donors in 1989 to 106 in 1993.¹⁰⁶ Based on the 1995 study, commentators believed that the prohibition on donor anonymity caused only an initial decline in the number of donors, which was later overcome through recruitment measures.¹⁰⁷

Unfortunately, no one has published an additional study of the number of new donors since 1995. Furthermore, while the Swedish authorities do not currently publish data of the number of new donors registered yearly,¹⁰⁸ indirect information points to a scarcity of donors. One study, providing data of the number of donor inseminations conducted from the enactment of the law until 2005, indicates a steady decline from 900 yearly inseminations in 1985 to 300 yearly inseminations in 2005.¹⁰⁹ Insemination data is not as indicative as donor data, since a decrease in the number of inseminations can be a result of other factors, such as the advent of alternative technologies including IVF. However, recent reports by commentators and the news media of donor sperm shortages causing long wait-lists of six to eighteen months support the conclusion that the decrease in the number of inseminations is at least partly a result of the shortage in donors.¹¹⁰ Initially, demand may have been lower in Sweden than in other countries like the United States because, until 2005, lesbians were not allowed to use donor sperm.¹¹¹ Once demand in Sweden leveled with the demand in other countries, acute shortages became evident.¹¹²

¹⁰⁴ Bygedemen, *supra* note 103, at 266; *see also* Daniels & Lalos, *supra* note 103, at 1872.

¹⁰⁵ Bygedemen, *supra* note 103, at 266; *see also* Daniels & Lalos, *supra* note 103, at 1871-72.

¹⁰⁶ Daniels & Lalos, *supra* note 103, at 1872.

¹⁰⁷ *See id.* at 1872-73.

¹⁰⁸ Email from Henrik Nordin, Statistics Coordinator, Nat'l Bd. of Health & Welfare, to author (Jan. 29, 2010) (on file with the Boston University Law Review) (stating that the Swedish National Board of Health and Welfare does not have information of the yearly number of new sperm donor and providing a list of clinics and hospitals from which the information can be collected).

¹⁰⁹ Lars Hamberger, *Anonymous and Non-Anonymous Gamete and Embryo Donations: Pros and Cons*, 14 REPROD. BIOMEDICINE ONLINE 50, 51 (2007).

¹¹⁰ Ekerhovd et al., *supra* note 102, at 306, 311-12.

¹¹¹ *See Swedish Sperm Banks Unable to Meet Demand*, UPI.COM, July 24, 2009, http://www.upi.com/Top_News/2009/07/24/Swedish-sperm-banks-unable-to-meet-demand/UPI-46501248453389.

¹¹² *See, e.g., id.* (reporting on increased demand for donor sperm by same sex couples and tying the shortage to the prohibition on anonymity).

Finally, Sweden allows compensation of donor gametes.¹¹³ Therefore, a prohibition on compensation of donors has not played a role in creating the shortage.

2. Victoria (Australia)

Victoria, an Australian state, was one of the first regimes to prohibit donor gamete anonymity. In 1985 Victoria enacted the Infertility (Medical Procedures) Act 1984 (“The Infertility Act of 1984”), which went into effect in 1988, and created a donor register.¹¹⁴ However, under the Infertility Act of 1984, no information could be released without the donor’s consent.¹¹⁵ In 1995, the Victorian legislature enacted the Infertility Act of 1995, which came into effect in 1998, and allowed donor conceived children to access information about donors once they reach the age of eighteen.¹¹⁶

The table below shows the number of newly registered sperm donors in Victoria in periods relevant to the legal changes:¹¹⁷

¹¹³ Since 2006, Sweden has begun prohibiting trading in eggs and sperm for profit; gamete owners who donate their gametes are still compensated. 8 ch. 6 § LAG OM GENETISK INTEGRITET [The Genetic Integrity Act], (Svensk författningssamling [SFS] 2006:351), available at <http://www.smer.se/Bazment/266.aspx>.

¹¹⁴ *The Infertility (Medical Procedures) Act 1984* (Vic) (Austl.).

¹¹⁵ *Id.*

¹¹⁶ *The Infertility Act 1995* (Vic) s 70 (Austl.). For a description of the legislative history in Victoria, see Moses, *supra* note 14, at 555-59. In addition, the National Health and Medical Research Council in Australia publishes ethical guidelines requiring use only of gametes of donors who agree to release of information. These guidelines are not mandatory. AUSTRALIAN NAT'L HEALTH & MED. RESEARCH COUNCIL, ETHICAL GUIDELINES ON THE USE OF ASSISTED REPRODUCTIVE TECHNOLOGY IN CLINICAL PRACTICE AND RESEARCH, § 6.1, at 25-26 (2007), available at http://www.nhmrc.gov.au/_files_nhmrc/file/publications/synopses/e78.pdf; Moses, *supra* note 14, at 552.

¹¹⁷ The presentation of the data accounts for the effects of laws as they are enacted and discussed and even before they go into effect. The data presents the lowest and highest number of donors per year during the period represented. The data in this table is based on Helen Szoke, *The Victorian Experience of Administering Donor Birth Registers*, 1271 INT'L CONGRESS SERIES 357, 358 (2004). Additional numbers derived from the publications of the Victorian Assisted Reproduction Treatment Authority (formerly Infertility Treatment Authority (“ITA”)) are as follows: 25 in 1998; 29 in 1999; 38 in 2000; 28 in 2001; 10 in 2002; 14 in 2003; 23 in 2004; 17 in 2005; 16 in 2006; 31 in 2007; 21 in 2008. INFERTILITY TREATMENT AUTH., 1999 ANNUAL REPORT 25; INFERTILITY TREATMENT AUTH., 2000 ANNUAL REPORT 28; INFERTILITY TREATMENT AUTH., 2001 ANNUAL REPORT 25; INFERTILITY TREATMENT AUTH., 2002 ANNUAL REPORT 27; INFERTILITY TREATMENT AUTH., 2003 ANNUAL REPORT, 24; INFERTILITY TREATMENT AUTH., 2004 ANNUAL REPORT 24; INFERTILITY TREATMENT AUTH., 2005 ANNUAL REPORT 25; INFERTILITY TREATMENT AUTH., 2006 ANNUAL REPORT 25; INFERTILITY TREATMENT AUTH., 2007 ANNUAL REPORT 27; INFERTILITY TREATMENT AUTH., 2008 ANNUAL REPORT 31; INFERTILITY TREATMENT AUTH., 2009 ANNUAL REPORT 29. All of the Infertility Treatment Authority Reports are available at <http://www.varta.org.au/www/257/1003057/displayarticle/1003573.html>.

Time Period	Range of Numbers of Newly Registered Sperm Donors Per Year
1977-1983	125-200
Enactment of the Infertility Act of 1984	
1984-1987	50-95
Infertility Act of 1984 goes into effect in 1988	
1988-1994	40-55 (excluding 1988 in which 120 new donors registered)
Enactment of the Infertility Act of 1995	
1995-1997	35-40
Infertility Act of 1995 goes into effect in 1998	
1998-2008	10-38

While the numbers of sperm donors fluctuated between individual years, the assessment of the different relevant periods clearly indicates a consistent decline in the numbers of newly registered sperm donors. Other factors could have contributed to the decline in the number of donors. One such factor is the introduction of more effective procedures such as IVF and intracytoplasmic sperm injection (“ICSI”), which could have reduced the need for sperm donors.¹¹⁸ However, the media repeatedly reports of a shortage in donor sperm.¹¹⁹ To address the shortage, one Victorian IVF clinic resorted to innovative and reactionary measures by writing to all male politicians under forty-five, requesting them to serve as “role models” and donate sperm.¹²⁰

¹¹⁸ Both IVF and ICSI increase the likelihood of a successful treatment cycle. ICSI injects sperm into the egg enhancing the likelihood of successful fertilization of the egg, therefore increasing the likelihood of a successful IVF cycle. A cycle of IVF has a higher rate of success than a cycle of artificial insemination for patients with certain fertility problems. Both ICSI and IVF, therefore, reduce the number of treatment cycles and the amount of donor sperm needed. In addition, ICSI is effective in overcoming male infertility problems, therefore reducing the need for donor sperm because the woman partner’s sperm can be used. See generally Gabor T. Kovacs et al., *In Vitro Fertilization, a Practical Option After Failed Artificial Insemination with Donor Semen*, 1 REPROD. FERTILITY & DEV. 383 (1989) (reporting better outcomes for couples undergoing IVF for tubal disease than those undergoing artificial insemination); A.M.E. Lintsen et al., *Predicting Ongoing Pregnancy Chances After IVF and ICSI: A National Prospective Study*, 22 HUMAN REPROD. 2455 (2007) (reporting higher rates of successful cycles for IVF using ICSI compared to IVF without ICSI); Lucette van der Westerlaken et al., *Intracytoplasmic Sperm Injection as a Treatment for Unexplained Total Fertilization Failure or Low Fertilization After Conventional In Vitro Fertilization*, 83 FERTILITY & STERILITY 612, 615-616 (2005) (reporting higher success rates of fertilization using ICSI).

¹¹⁹ See, e.g., Belinda Hickman, *Donors Lose Interest in Sperm Bank Deposits*, AUSTRALIAN, Apr. 7, 1998, at 5; Lucie van den Berg, *Shortfall for IVF Hopefuls*, HERALD SUN (Austl.), Jan. 27, 2010, at 25.

¹²⁰ See, e.g., Hickman, *supra* note 119, at 5; *Clinic Asks Australian MPs to Donate Sperm*, TURKISH DAILY NEWS, Jan. 14, 2005.

Another factor which contributed to the scarcity in donors is Australia's prohibition on compensation for donor gametes. However, the federal Australian law prohibiting compensation was only enacted in 2006 and went into effect in 2007. Therefore, it does not account for the earlier gamete shortage.¹²¹

3. United Kingdom

The Human Fertilisation and Embryology Authority (Disclosure of Donor Information) Regulations came into effect on April 1, 2006.¹²² The law prohibited gamete donor anonymity.¹²³ Under the new law, children conceived via donor gametes can receive information on the identity of the donor when they reach the age of eighteen.¹²⁴ The prohibition on donor gamete anonymity in the United Kingdom is currently at the center of a heated public debate.

The Human Fertilisation and Embryology Authority (the "Authority") publishes yearly figures of the number of gamete donors and donor procedures.¹²⁵ The published data portrays a mixed picture. On the one hand, the number of yearly newly registered gamete donors has not decreased since the law came into effect.¹²⁶ Moreover, the yearly number of newly registered egg donors only declined initially followed by resurgence in the number of donors.¹²⁷ However, some reports argue that the numbers of registered donors is misleading because of the "increase in the number of 'known donors' –

¹²¹ *The Prohibition of Human Cloning for Reproduction and the Regulation of Human Embryo Research Amendment Act 2006* (Cth) (Austl.), available at [http://www.comlaw.gov.au/ComLaw/Legislation/Act1.nsf/0/71AC9EAE4567788CA2572440012F18A/\\$file/1722006.pdf](http://www.comlaw.gov.au/ComLaw/Legislation/Act1.nsf/0/71AC9EAE4567788CA2572440012F18A/$file/1722006.pdf) (prohibits donor compensation excluding reasonable expenses). The relevant prohibition in the state of Victoria was enacted in 2008 and came into effect on Jan. 1, 2010. *The Prohibition of Human Cloning for Reproduction Act 2008* (Cth) s 17 (Austl.), available at [http://www.legislation.vic.gov.au/Domino/Web_Notes/LDMS/PubLawToday.nsf/a12f6f60fbd56800ca256de500201e54/6F6AAA927441A70CA25769600014441/\\$FILE/08-72a001.pdf](http://www.legislation.vic.gov.au/Domino/Web_Notes/LDMS/PubLawToday.nsf/a12f6f60fbd56800ca256de500201e54/6F6AAA927441A70CA25769600014441/$FILE/08-72a001.pdf); June Carbone & Paige Gottheim, *Markets, Subsidies, Regulation and Trust: Building Ethical Understandings into the Market for Fertility Services*, 9 J. GENDER RACE & JUST. 509, 510, 538 (2006) (tying gamete shortage in Australia to the prohibition on compensation).

¹²² Human Fertilisation & Embryology Authority (Disclosure of Donor Information) Regulations, 2004, S.I. 2004/1511 (U.K.), available at <http://www.opsi.gov.uk/SI/si2004/20041511.htm>.

¹²³ *Id.* art. 2, ¶ 2-4.

¹²⁴ *Id.*

¹²⁵ *New Donor Registrations*, HUMAN FERTILISATION & EMBRYOLOGY AUTH., <http://www.hfea.gov.uk/3411.html> (last visited Mar. 9, 2010).

¹²⁶ The numbers of newly registered sperm donors per year are: 224 in 2004; 250 in 2005; 285 in 2006; 364 in 2007; 384 in 2008. *Id.*

¹²⁷ The numbers of newly registered egg donors per year are: 1029 in 2004; 923 in 2005; 783 in 2006; 956 in 2007; 1084 in 2008. *Id.*

friends [or] relatives who donate for a [person]'s exclusive use."¹²⁸ These donors normally provide sperm only for one person.¹²⁹

At the same time, other parts of the data provided by the Authority raise concern. The Authority reports a decrease in the number of egg share donors – women undergoing IVF to have their own child and donating the excess eggs. The number of newly registered egg share donors has declined significantly since the law came into force from 504 in 2004 to 377 in 2008.¹³⁰ In addition, treatment cycles with donated eggs steadily decreased from 1915 in 2004 to 1514 in 2007.¹³¹ Similarly, IVF treatment cycles with donated sperm steadily decreased from 939 in 2004 to 711 in 2007 and insemination treatment cycles with donor sperm decreased from 6892 in 2004 to 3878 in 2007.¹³²

The decrease in egg share donors and treatment cycles warrants concern. However, apart from the egg share donor numbers that began declining when the law came into effect in 2005, the numbers of treatment cycles have been declining since 2001.¹³³ The earlier decline suggests that additional factors apart from the prohibition on anonymity restricted the number of treatment cycles. One factor that could have contributed to the earlier decline is the utilization of more effective fertility methods such as ICSI.

Although the available data is mixed, it raises concern regarding the effects of mandatory open identity donor systems on the availability of donor gametes. These concerns are reinforced by commentator and media reports which tie the prohibition on anonymity to the grave shortage in donor gametes in the United Kingdom. Reports point to wait lists of six months to two years for sperm and eighteen months to five years for eggs.¹³⁴ One survey revealed that seventy

¹²⁸ See, e.g., Rebecca Camber, *Britain Faces Fertility Crisis as Loss of Donor Anonymity Sees Sperm and Egg Donor Numbers Plummet*, MAIL ONLINE, June 26, 2008, <http://www.dailymail.co.uk/health/article-1029712/Britain-faces-fertility-crisis-loss-donor-anonymity-sees-sperm-egg-donor-numbers-plummet.html>.

¹²⁹ See, e.g., *id.*

¹³⁰ The numbers of newly registered egg share donors per year are: 504 in 2004; 417 in 2005; 339 in 2006; 471 in 2007; 377 in 2008. HUM. FERTILISATION & EMBRYOLOGY AUTH., EGG SHARE DONORS AND NON-PATIENT EGG DONORS (2009), <http://www.hfea.gov.uk/3412.html>.

¹³¹ The number of patients treated with donated eggs shows a similar decline from 1794 in 2004 to 1416 in 2007. HUM. FERTILISATION & EMBRYOLOGY AUTH., DONOR CONCEPTION – TREATMENTS (2009), <http://www.hfea.gov.uk/donor-conception-treatments.html>.

¹³² The number of patients treated with donated sperm shows a similar decline from 743 in 2004 to 541 in 2007. *Id.* The decline does not appear to be a result of a general decline in the use of IVF because donor sperm treatments have declined from being 17% of all IVF treatments in 2004 to 9% of all IVF treatments in 2007. *Id.*

¹³³ *Id.*

¹³⁴ Turkmendag et al., *supra* note 23, at 294-97; Madeline Brindley, *Mums Who Are Desperate for a Baby Join Give Hope Give Life Drive for Egg Donors*, WESTERN MAIL, Nov. 17, 2008, at 22; Camber, *supra* note 128 (reporting that most clinics have a wait of at least two years for donor sperm); Jane Dreaper, *IVF Donor Sperm Shortage Revealed*, BBC

percent of fertility clinics in the United Kingdom either have no access to donor sperm or find it extremely difficult to obtain.¹³⁵ Due to the scarcity, residents of the United Kingdom now seek donor gametes in other countries.¹³⁶ Finally, the British Fertility Society, in a recent report, confirmed the media reports of the shortage in donor gametes, yet cautioned that the contribution of the prohibition on donor anonymity to the shortage is a matter of controversy.¹³⁷ Overall, the data and shortage reports suggest that the prohibition on anonymity has played a role in creating the current crisis in gamete donors. However, other factors, particularly the prohibition on compensation for gamete donors, have most likely also played an important part in augmenting the shortage.¹³⁸

B. *Reactions to Shortages in Donated Gametes*

The data on the availability of donor gametes in Sweden, Victoria, and the United Kingdom raises concern. The prohibition on donor gamete anonymity appears to have at least played a role, if not a major role, in the creation or enhancement of shortage in donor gametes. Reports of shortages and long waitlists are echoed in other jurisdictions in which anonymity of donor gamete was prohibited, such as the Netherlands and other Australian jurisdictions.¹³⁹

NEWS, Sept. 13 2006, <http://news.bbc.co.uk/2/hi/health/5341982.stm> (reporting on a BBC survey which included seventy-eight of the United Kingdom's eighty-five fertility clinics and which indicated over six month wait times for clients); Gareth Edwards, *It's a Barren Time for City's Infertility Unit*, EVENING NEWS, Mar. 21, 2005, at 9; Denise Grady, *Shortage of Sperm Donors in Britain Prompts Calls for Change*, N.Y. TIMES, Nov. 12, 2008, at A10 (reporting of long waits and clinics stopping offering donor sperm); *U.K. Facing Sperm Donor Shortage: Experts Say Scarcity Prompted by Reversing Confidentiality Laws*, CBS NEWS, Nov. 13, 2008, <http://www.cbsnews.com/stories/2008/11/13/health/main4597958.shtml> (discussing the scarcity of sperm in jurisdictions that prohibited donor anonymity and tying it to the prohibition on donor anonymity).

¹³⁵ Dreaper, *supra* note 134.

¹³⁶ *Id.*

¹³⁷ See British Fertility Soc'y, *Working Party on Sperm Donation Services in the UK: Report and Recommendations*, 11 HUM. FERTILITY 147, 148 (2008).

¹³⁸ The Human Fertilisation and Embryology Act of 1990, ch. 37, § 12(e) (U.K.), available at http://www.opsi.gov.uk/Acts/acts1990/pdf/ukpga_19900037_en.pdf; *FAQ for Donors*, HUMAN FERTILISATION & EMBRYOLOGY AUTH., (Apr. 14, 2009), <http://www.hfea.gov.uk/2627.html#2640> (last visited Mar. 9, 2010).

¹³⁹ P.M.W. Janssens et al., *A New Dutch Law Regulating Provision of Identifying Information of Donors to Offspring: Background, Content and Impact*, 21 HUM. REPROD. 852, 854-55 (2006) (describing a drop in the number of donors as the debate on prohibiting anonymity commenced and pointing to the closure of half of all sperm banks); Stacy Farrar, *Sydney Sperm Shortage*, SYDNEY STAR OBSERVER, Apr. 20, 2008, at 3, available at <http://www.starobserver.com.au/news/2008/04/20/sydney-sperm-shortage/7354> (reporting on six-month wait-lists for sperm in Sydney); Angus Roxburgh, *Dutch Sperm Laws Threaten Donations*, BBC NEWS, Aug. 12, 2004, <http://news.bbc.co.uk/2/hi/>

The inhibition of the diffusion of donor gamete dependent ART resulting from shortage in donor gametes carries both individual and social ramifications. The scarcity of donor gametes extends the pain of infertility. Numerous studies record the psychological effects of infertility on both men and women. Infertility causes elevated levels of anxiety and depression, grief, anger, guilt and shock, or denial.¹⁴⁰ Studies record statements underscoring the suffering that accompanies infertility:

“A lot of people don’t understand that infertility is very much like having a child die. You grieve for the baby who wasn’t conceived this month, and for all the babies you will never have.”¹⁴¹

“We can’t conceive; my wife is depressed; I’m sick with disappointment; and I can’t do a thing about any of it. Nothing I have said or done has made a difference.”¹⁴²

“It is the end of the Bowes family and the Bowes Family name. It dies with us because of me. My husband is the last of the male children in his family . . . it is the death of a dream”¹⁴³

Beyond the individual psychological effects, the scarcity of donor gametes carries social implications. In Europe, birth rates are currently at a record low. European birth rates are consistently below two children per couple and in many countries revolve around 1.3 children per family.¹⁴⁴ Commentators have

europa/3555202.stm (reporting on the closure of a Dutch sperm bank as a result of a lack of donors due to new legislation).

¹⁴⁰ See, e.g., Colleen M. Padia, *Infertility Takes Psychological Toll on Patients*, UROLOGY TIMES, Oct. 1, 2006, at 14 (reporting on two studies that found increased levels of anxiety and depression among infertile couples); T. Wischmann et al., *Psychosocial Characteristics of Infertile Couples: A Study by the ‘Heidelberg Fertility Consultation Service,’* 16 HUMAN REPROD. 1753, 1760 (2001) (finding a high level of anxiety and depression particularly for infertile women); see also Christine Dunkel-Schetter & Marci Lobel, *Psychological Reactions to Infertility*, in INFERTILITY: PERSPECTIVES FROM STRESS AND COPING RESEARCH 29, 30-35 (Annette L. Stanton & Christine Dunkel-Schetter eds., 1991) (reviewing the findings of descriptive and empirical studies on the psychological effects of infertility). *But see id.* at 50-53 (concluding that although some of the studies record evidence of adverse effects of infertility, the empirical evidence is not sufficiently clear and significant research remains to be conducted on the issue).

¹⁴¹ JUDITH N. LASKER & SUSAN BORG, IN SEARCH OF PARENTHOOD 19 (1994).

¹⁴² P.P. Mahlstedt, *The Psychological Component of Infertility*, 43 FERTILITY & STERILITY 335, 343 (1985).

¹⁴³ B.E. Menning, *The Emotional Needs of Infertile Couples*, 34 FERTILITY & STERILITY 313, 317 (1980).

¹⁴⁴ POPULATION REFERENCE BUREAU, FERTILITY RATES FOR LOW BIRTH-RATE COUNTRIES, 1995 TO MOST RECENT YEAR (2008), <http://www.prb.org/pdf08/TFRTTable.pdf>.

noted that low birth rates will significantly affect pension funds and the work force as the number of elderly exceeds the number of young people.¹⁴⁵

The scarcity of donor gametes exacerbates the low birth rate problem and its consequent social implications because it impedes the ability of those who desire to conceive from achieving conception. Particularly, infertility and the need for donor gametes are more prevalent among older men and women. Studies have associated the low fertility rate in Europe with a substantial delay in childbearing. Hence, the scarcity of donor gametes presents an additional obstacle to resolving the low birth rate problem in Europe.¹⁴⁶

Faced with acute shortages, jurisdictions that prohibit gamete anonymity have been actively seeking solutions to enhance depleting donor gamete availability by changing their recruitment methods. ART providers found that donor recruitment in open identity systems is effective when efforts focus on a different group of donors than in anonymous systems. Anonymous donors are usually young students who donate for financial gain. These donors depend on anonymity and would not want to be contacted by offspring.¹⁴⁷ Identifiable sperm donors tend to be older, often married with children, and primarily motivated by compassion for infertile couples.¹⁴⁸ The age differences between prospective donors in an anonymous system and prospective donors in an open-identity system are quite profound. While anonymous donors' ages are generally in the early- to mid-twenties, the age of identifiable donors tends to range from the mid-thirties to forty.¹⁴⁹

However, while sperm supplies can be at least partly supplemented by the sperm of older men, egg supplies cannot benefit from the same recruitment

¹⁴⁵ Hans-Peter Kohler, Francesco C. Billari & José Antonio Ortega, *Low Fertility in Europe: Causes, Implications, and Policy Options*, in *THE BABY BUST: WHO WILL DO THE WORK? WHO WILL PAY THE TAXES?* 48, 50, 56 (Fred R. Harris ed., 2006); Elisabeth Rosenthal, *Europe, East and West, Wrestles with Falling Birthrates*, N.Y. TIMES ONLINE, Mar. 9, 2006, <http://www.nytimes.com/2006/09/03/world/europe/03iht-birth.2683302.html>.

¹⁴⁶ Francesco C. Billari & Hans-Peter Kohler, *Patterns of Lowest-Low Fertility in Europe* 4-5 (Max Planck Inst. for Demographic Research, Working Paper No. WD-2002-040, 2002), available at <http://www.demogr.mpg.de/papers/working/wp-2002-040.pdf>. On the inferior quality of older gametes, see, for example, Linda J. Heffner, *Advanced Maternal Age – How Old Is Too Old?*, 351 NEW ENG. J. MED. 1927, 1927-28 (2004) (showing the higher incidence of miscarriage and chromosomal defects among older women due to the inferior quality of their eggs).

¹⁴⁷ Ellen Waldman, *What Do We Tell the Children?*, 35 CAP. U. L. REV. 517, 551 (2006).

¹⁴⁸ Daniels & Lalos, *supra* note 103, at 1873; Ekerhovd et al., *supra* note 102, at 312; Tracy Hampton, *Anonymity of Gamete Donations Debated*, 294 JAMA 2681, 2681 (2010); Waldman, *supra* note 147, at 551-52.

¹⁴⁹ Frith, *supra* note 23, at 823; A. Lalos et al., *Recruitment and Motivation of Semen Providers in Sweden*, 18 HUM. REPROD. 212, 213, 216 (2003); Szoke, *supra* note 117, at 359; Anne-Maria Suikkari, Med. Dir., Family Fed'n of Fin., *Removing Donor Anonymity – What Were the Consequences?*, Presentation at the Nordic Fertility Society (Aug. 8, 2009) (on file with the Boston University Law Review).

strategy. The quality of eggs deteriorates rapidly with age and eggs of older women are more likely to result in miscarriage or produce a child with a chromosomal abnormality, such as Down Syndrome. Even the quality of eggs of women in their early thirties is inferior to that of eggs of women in their twenties.¹⁵⁰ Hence, facilities recruiting egg donors cannot alter their recruitment policy to recruit older women as egg donors.

An alternative recruitment method to enhance both sperm and egg supplies focuses on compensation. Jurisdictions, such as the United Kingdom, that bar compensation have recently recognized that the prohibition on anonymity in conjunction with a prohibition on compensation results in severe gamete shortages. In the United Kingdom, it appears that despite the heated atmosphere following the prohibition on donor anonymity, the government does not intend to repeal its prohibition. At the same time, the government is now reconsidering its limitations on donor compensation in the hope of alleviating the shortage in donated gametes.¹⁵¹ While authorities and clinics are focusing on alternative recruitment methods, individuals residing in open-identity systems are resorting to using ART facilities in jurisdictions in which anonymity is maintained. Recipients of gamete donors are driven to fertility tourism mostly by long wait lists resulting from shortages in their countries but also, at times, by a desire not to have their child conceived by an identifiable donor.¹⁵² For example, Denmark, which has an anonymous donor system, has become a fertility sperm center for residents of neighboring countries in which donor anonymity is prohibited, such as Sweden, Switzerland, and the Netherlands.¹⁵³ Similarly, since the change of law in the United Kingdom, British individuals have been seeking donor gametes in European countries that foster anonymous systems.¹⁵⁴

¹⁵⁰ See Frank J. Broekmans et al., *Female Reproductive Ageing: Current Knowledge and Future Trends*, 18 TRENDS IN ENDOCRINOLOGY & METABOLISM 1, 1 (2007); Heffner, *supra* note 146, at 1927-28.

¹⁵¹ The British Human Fertilisation and Embryology Authority agreed to consider whether to liberalize its compensation for donors. See Hum. Fertilisation & Embryology Auth., Statement Regarding Authority Decision to Review Sperm, Egg and Embryo Donation Policies (Dec. 9, 2009), <http://www.hfea.gov.uk/5666.html>; see also Clare Murphy, *Is It Right to Pay Women for Their Eggs?*, BBC NEWS, Dec. 9, 2009, <http://news.bbc.co.uk/2/hi/health/8401770.stm>.

¹⁵² Ekerhovd et al., *supra* note 102, at 306; Murphy, *supra* note 151.

¹⁵³ Lizette Alvarez, *Spreading Scandinavian Genes, Without Viking Boats*, N.Y. TIMES ONLINE, Sep. 30, 2004, <http://www.nytimes.com/2004/09/30/international/europe/30sperm.html>; Murphy, *supra* note 151; see also Guido Pennings, *Legal Harmonization and Reproductive Tourism in Europe*, 19 HUM. REPROD. 2689, 2691 (2004); Roxburgh, *supra* note 139 (reporting that Belgian clinics near the border of the Netherlands noticed a steady increase in Dutch patients as a result of the new Dutch law prohibiting anonymous sperm donation).

¹⁵⁴ Dreaper, *supra* note 134.

The threatened acute shortage in donor gametes is clearly an important consideration against the adoption of an open-identity system in the United States. Furthermore, it appears that the election of an open identity donor system affects not only the access to the practice of ART but also the nature of its practice. While commentators have acknowledged that choosing an open identity donor system promotes the value of identity over the privacy and procreative interests of the parents and donors,¹⁵⁵ it is important also to critically evaluate the commitments eroded by efforts to compensate for shortages of donor gametes.

First, efforts to compensate for donor shortage enhance the inequality already inherent in the practice of ART. Use of ART is expensive, particularly in countries such as the United States in which use of ART is not subsidized by the government. In the United States, donor compensation is permitted and the cost of donor gametes particularly eggs is already high.¹⁵⁶ A prohibition on anonymity could induce ART facilities to increase the compensation for gametes in order to lure donors inhibited by loss of anonymity. Hence, a recruitment tactic of raising compensation to offset the anonymity prohibition could further restrict access to ART and donor gametes only to those who are particularly well off.

Inequality is also enhanced by the resort to fertility tourism. Travel to other countries, which often needs to be repeated monthly until treatment is successful, further raises the costs of ART. In Europe, travel distances are relatively small because countries with open identity systems are immediately adjacent to other countries that foster anonymous systems. A prohibition on donor anonymity in the entire United States would require expensive long distance travel for those seeking donor gametes. This would again augment inequality and further restrict access to ART and donor gametes.¹⁵⁷

Second, countries committed to preventing commodification of the human body prohibit compensation for gamete donors.¹⁵⁸ Jurisdictions that reconsider the prohibition on compensation to offset the effects of an open-identity system are in effect eroding their commitment to preventing commodification to enable the existence of an open identity system.

¹⁵⁵ See, e.g., Lawrence Shaw, *Killing Sperm Donation*, GUARDIAN.CO.UK., June 24, 2009, <http://www.guardian.co.uk/commentisfree/2009/jun/24/sperm-donation-anonymity>.

¹⁵⁶ The compensation for egg donors ranges from \$5000 to \$15,000. *Fertility Treatment: Donor Eggs and Embryos*, BABYCENTER.COM, (Sept. 2006), http://www.babycenter.com/0_fertility-treatment-donor-eggs-and-embryos_4098.bc?page=2#articlesection7.

¹⁵⁷ See Lisa Ikemoto, *Reproductive Tourism: Equality Concerns in the Global Market for Fertility*, 27 LAW & INEQ. 277, 302-08 (2009) (arguing that fertility tourism affects inequality, because as more industrialized countries prohibit anonymity, less developed countries will become the destinations of fertility tourism); see also Eric Blyth & Abigail Farrand, *Reproductive Tourism: A Price Worth Paying for Reproductive Autonomy*, 25 CRITICAL SOC. POL'Y 91 (2005).

¹⁵⁸ On commodification generally, see MARGARET RADIN, *CONTESTED COMMODITIES* (1996).

Commentators have raised concerns regarding the effects on gamete donor supply and have acknowledged that the choice of an open-identity system promotes identity over privacy and procreational interests of donors and recipients. However, the in-depth analysis of the data in Sweden, Victoria, and the United Kingdom provides evidence of actual acute shortages threatening the diffusion of donor gamete dependent ART. Furthermore, the described efforts to combat these shortages underscore that additional values are at stake that should be balanced against the identity interests of the children. Efforts to combat shortages erode not only commitments to privacy and procreational interests but also commitments to equality and the prevention of commodification. While much research remains to be done to examine the advantages and harms of removing anonymity,¹⁵⁹ the above discussion points to the need for great caution in endorsing the prohibition on anonymity in the United States and points to the need for more conservative measures, such as voluntary donor registries, to accommodate the identity interests of donor-conceived children instead of a mandatory prohibition on anonymity.¹⁶⁰

CONCLUSION

Test Tube Families provides an important contribution to the evaluation of the law and policy in the area of ART. Cahn exposes the weakness and partiality of the current regime and offers an elaborate proposal designed to create a comprehensive regulatory regime to govern the practice of ART. This Essay evaluated the suitability of adopting a comprehensive regulatory regime and assessed one of the centerpieces of Cahn's proposal: the prohibition on donor gamete anonymity.

This Essay concluded that although a comprehensive regime could conflict with long-entrenched social norms, timing should not pose a significant problem for the successful implementation of this regime. It pointed to the existence of intermediaries – the medical profession – as a facilitating factor in changing current norms. This Essay then distinguished between two types of uncertainty a comprehensive technology-regulating regime can alleviate. In the case of ART, it concluded that a comprehensive regulatory regime would be particularly effective in dispelling uncertainty that currently entraps the users of ART in unanticipated life-devastating circumstances.

Finally, this Essay focused on the effects of the prohibition on donor anonymity on the diffusion of donor gamete dependent ART technologies

¹⁵⁹ See Olga Van Den Akker, *A Review of Family Donor Constructs: Current Research and Future Directions*, 12 HUM. REPROD. UPDATE 91, 98 (2006).

¹⁶⁰ For proposals advocating a voluntary donor registry, see Benward et al., *supra* note 98, at 240, which advocates a donor registry but recognizes that such contact cannot be compelled and Nanette R. Elster & Andrea Braverman, *The Future Is Now: A Voluntary Gamete Donor Registry Is Feasible*, 12 DEPAUL J. HEALTH CARE L. 195 (2009), which discusses the broad support among the symposium participants for the creation of a voluntary registry.

through an analysis of the data in three representative jurisdictions that foster an open identity system. The review of the data revealed a disconcerting picture portraying dire shortages in gamete supplies accompanied by long wait-lists. Furthermore, it showed that efforts to counteract the effects of a prohibition on anonymity erode commitments to equality and the prevention of commodification. Hence, this Essay cautioned against the adoption of a mandatory prohibition on anonymity in the United States.