Science as Culture
Vol. 14, No. 3, 237–264, September 2005

Routledge
Taylor & Francis Group

Biomedicalizing Kinship: Sperm Banks and the Creation of Affinity-ties

LAURA MAMO

Sociology, University of Maryland, USA

Over the past 25 years, the availability of commercialized sperm banks providing donor sperm to be used in assisted reproduction has altered public understandings of procreation as the 'natural' product of hetero-sex. The commodifications of this biomaterial and its associated services were formerly excluded from the marketplace; now they are omnipresent as objects for consumption. Furthermore, the consumer base of sperm banks, while slightly varied, is not very elastic. As a result, to increase profits, these services need to offer additional services, increase 'unit' costs, or increase their consumer base. This is especially the case as heterosexual couples increasingly shift from recipients of donor sperm to users of advanced reproductive services such as In Vitro Fertilization (IVF) with Intracytoplasmic Sperm Injection (ICSI)[1] to maximize their chances of 'biological' relatedness (Becker, 2000). In the US, single women and same-sex partners located within and beyond US borders, comprise an increasing proportion of the consumer base of sperm banks (Dornin, 1998).

This paper examines lesbian practices and meanings of selecting (i.e. consuming) donor sperm from commercial sperm banks.[2] Situated in theories of science, technology, and medicine studies (ST&MS), I pose two central questions: (1) in what ways do sperm banks, a technoscientific institution and set of practices, constitute kinship choices; and (2) in what ways do lesbian users interact with and make meanings from these technoscientific practices? Answering these questions requires close examination into the ways genetic knowledges, central to biomedicalization, are diffused into clinical practices and, the social mechanisms through which meaning-making is generated in consumption.

Through in-depth interviews with 31 lesbians about their practices of selecting sperm and analysis of advertising and marketing materials provided by three sperm banks, I argue that there are several implications of the politics of commercialized sperm for kinship and technoscientific practices. In particular, in selecting sperm, lesbians negotiate and construct a form of relatedness I call affinity-ties, a kinship device co-constructed by lesbians imagining shared social and cultural characteristics with potential children

Correspondence Address: Laura Mamo, Assistant Professor of Sociology, Affiliate Assistant Professor, Women's Studies, University of Maryland, 2112 Art-Sociology Building, College Park, MD 20742, USA. Email: lmamo@socy.umd.edu

0950-5431 Print/1470-1189 Online/05/030237–28
DOI: 10.1080/09505430500216833

and sperm banks' investment of the biomaterial, sperm, with an ability to create relatedness. Technoscientific practices produce possible transformations of the markers of kinship, family, and relatedness and are, therefore, consequential for not only lesbian reproduction, but reproduction in general.

Analytical Perspectives

Feminist technoscientific studies of new health technologies and knowledges provide an entrance into the theoretical approach of this paper (Casper and Koenig, 1996; Lock *et al.*, 2000). For over ten years several feminists have shifted analytic focus from gender to science (Franklin, 1995). The important move here is an emphasis on science as culture and 'natural facts' as cultural concerns (see Latour, 2004). Part of this shift includes taking the perspectives (i.e. meanings) of 'patients' seriously (Lock and Kaufert, 1998; Charmaz and Olesen, 1997) and understanding 'meaning' as conjoined with 'materiality' (Hayles, 1999; Gray *et al.*, 1995; Haraway, 1985). Users of technologies and their material, embodied, and interpretive practices are brought forward to examine biomedical technologies for the social, cultural, and corporeal work they accomplish as much as for their particular—intended—purpose (Traweek, 1988; Moore and Clarke, 2001).

Doing so has shown, for example, that technologies do not always work as they are idealized [see Timmermans' (1999) examination of the practice of CPR], and more so, that as different actors interact with technologies in various ways technologies themselves are transformed into the 'right tools for the job' (Clarke and Fujimura, 1992). That is, heterogeneously situated actors variously follow, modify, and/or reject technological scripts for their own purposes (Moore, 1997) often transforming the meanings of technologies and the identities of users themselves (see especially Oudshoorn, 2003). Relations between cultural meanings and material realities (i.e. human activities) are mutually understood as co-constitutive sources of social and historical change (see Bourdieu, 1979; Giddens, 1979) and embody the ways knowledges and meanings are embedded in differing visions and social relations (see especially Haraway, 1988).

Cultural and Social Analyses of Genes, Genetics, and Assisted Reproduction

In 1992, the anthropologist Abby Lippman introduced the concept of geneticization to refer to a process in which differences between individuals are reduced to their DNA codes (Lippman, 1992). Her concern was that the new knowledges about genetics and their clinical applications were producing new ways of knowing about the body and, thus, re-defining health, disease and impairment in essentialist, biologically determinist ways (Lippman, 1992, p. 34). There was a warning here that these processes were indirectly reinforcing racism, social inequalities, and discrimination of various kinds through the (returning) conflation of social issues and essentialized biology grounded in the knowledge of small differences in DNA sequences among individuals. Her assessment is similar to others (see especially Nelkin and Lindee, 1995) who argue that social and cultural consequences accompany developments in genetic knowledges and their technological applications (i.e. technoscience). What in modernity was carried out and enforced by the state is now part of a postmodern rubric of individual choice (see Clarke *et al.*, 2003). A core concern here is with the social and cultural consequences that take place when genetic knowledges are diffused into clinical/health care practices.

The term geneticization, however, overly emphasizes the outcome or impact of genetic knowledge, leaving little room for understanding what the social mechanisms are that might actually produce a process of geneticization (see especially Gibbon, 2002). As Gibbon (2002) argued in her assessment of breast cancer genetic screening, the complex relations that constitute the dynamic practices of health care encounters are mostly absent in such accounts. Consequently a model of unilinear action and impact is suggested or presumed which oversubscribes the agency of the genetic knowledge itself and the ways it is used by practitioners and, denies the investment and actions of patients. In other words, geneticization fails to recognize the dense networks of agency and constraint on both sides of the lay/practitioner divide which constitute newly emerging arenas of medical, technoscientific practices of genetic knowledges.

Feminist scholars enter here with the assertion that patients (users) respond to developments in genetics and other new health technologies and knowledge in ways that (can) challenge the strong deterministic thesis implied by a notion of geneticization (Rapp, 1999; Lock and Kaufert, 1998; Cussins, 1996). Like those examining the public understanding of science more broadly (see especially Irwin and Wynne, 1996), challenges are made to the notion of passive or ignorant patients and lay publics in a variety of social arenas.

The paper fills a need to examine the varied and different ways patients, publics (i.e. users) respond and (inter)act with technoscience. In what follows, this paper foregrounds a close analysis of users' meanings and interactions with the technoscientific practice of sperm bank selection in general and genetic optics in particular. I therefore respond to the need for analysis that expands the current contours that constitute empirical social inquiry into the new genetics (Kaufert, 2000; see also Peterson and Bunton, 2002). Technoscience and kinship are theorized as co-constitutive social and cultural formations demonstrated through the empirical site of lesbian donor sperm selection practices.

Technoscience and Kinship

In analyzing the concept of kinship, I follow several feminist sociologists and anthropologists concerned with the use and meanings of assisted reproduction for social relations. Charis Cussins Thompson (Cussins, 1996, 1998; Thompson, 2001) examined the ways technological interventions effect kin relations by transforming the very basis and meanings of biological kinship. She argued that recipients map genetics back onto cultural (and socio-economic) factors in their emphasis on 'genetic similarity' and shared cultural heritage as significant signposts for relationships. She used the term 'choreography' to depict how women negotiate 'the natural and the cultural' (Thompson, 2001, p. 198) making an important argument that biological and social kinship are flexibly negotiated and underdetermined. I follow her work and explore the very means through which technologies permit the form of choreography she described and do so with consumers situated as queer (i.e. subverting the normative heterosexual user).

Sperm banks and their associated products and services are consumer products in which 'nature has been enterprised-up': what was once taken to be natural has become a matter of choice (Strathern, 1992, p. 30). Natural facts are revealed as social constructions (as described by Carsten, 2000, 2004) and through technoscience, new objects of popular knowledge for conceptualizing persons and relatedness include genetic destiny, genetic health, genetic origins, and genetic histories (Strathern, 1992). Nature and technology

are deployed interchangeably: demonstrating their imbrications or what Haraway (1997) calls 'naturecultures'.

Gay and lesbian theories of reproduction and kinship analyze the specific ways biology or 'the facts of life' are not only culturally created, but are themselves cultural. As Adria Schwartz (1994) argued so well, queer parents take the nature out of mother-nature. Kath Weston (1991) argued that lesbian families created through alternative insemination are at once similar to those formed in heterosexual unions (as biogenetic connections), yet also in opposition to those biological relations. The opposition, she argued, is found in the formation of new kinship ties forged on the basis of choice and love: a distinctive feature of lesbian alternative insemination, is its 'technique for acquiring children that challenges conventional understandings of biological offspring as the visible outcome of a gendered difference grounded in the symbolics of anatomy' (Weston, 1991, p. 169). Biological ties are displaced and distinctiveness (based on sexual difference) produced. In contrast, Lewin (1993) argued that 'motherhood' in American culture overrides most of the distinctiveness which differences of sexuality create. Lesbian mothers represent an example of traditional American social and gender accounts and do not allow room for alternative constructions of a sense of self, family, or kinship. In Lewin's account, biological ties remain central and sexual differences lose their relevance.

Resolving this difference, Hayden (1995) argued that biology is not displaced but appears in lesbian families' explicit mobilization of biological ties. She argued that lesbian mothers who conceive through the use of donor insemination simultaneously affirm the importance of bio-genetic ties as a symbol in American kinship and challenge the idea that biology is a self-evident fact upon which kinship is based (Hayden, 1995, p. 56). Thus, the American blood/love symbolic hierarchy is ruptured by lesbian and gay families' negotiations of biogenetic connections. Instead of a prerequisite for relatedness, biology is transformed into a mere signpost of parenthood.

This paper enters the discussion here but seeks to move away from the either/or framework. As such I am less concerned with the outcome or determinant of same-sex parenting, but with the material technoscientific practices that reveal the complex meanings and negotiations of kinship. The emphasis lies with situated knowledges to analyze the complex ways human actors interpret, respond, and modify the technoscientific knowledge of genes, heredity, and kinship offered by sperm banks.[3] Users have important perspectives and knowledges about sciences and technologies (Akrich, 1995; Cowan, 1987). Their perspectives matter, are valued, accounted for, and are the 'object' of focus. Finally, users are understood as able to modify or subvert a technology's intended meaning or ideal use (Moore, 1997), thus subverting the expectations and scripts of the developers and marketers of the technologies (Cockburn and Furst-Dilic, 1994).

Sperm Banks as Technoscientific Institutions

Today, sperm banks along with pharmaceutical treatments and an organized fertility and infertility healthcare delivery system comprise the current biomedicalization (Clarke *et al.*, 2003; Clarke, 1995) of reproduction.[4] Molecularization and geneticization comprise a central site through which biomedical sciences and practices have undergone substantial transformations since c. 1985. As a result, human characteristics, including its diseases, behaviors, and developments, are scrutinized for their sub(molecular) causes: proteins,

genes, and genomes are fast displacing germs, enzymes, and chemical compounds as the 'code' of life. In addition, corporatization and commodification are central trends in placing increasing aspects of people's lives and additional services under the healthcare sector.

As institutions, sperm banks evoke ideas of genes, biology, the 'natural facts of life' and are sites of capital investment in the future. A central part of the biomedicalization era, sperm banks commodify sperm and market it to potential consumers. Sperm banks offer a technologization of nature when they sell biomaterials that can produce social relations through technological interventions, thereby challenging our fundamental assumptions about kinship (see Janet Carsten, 2004, p. 163).

The elasticity of the consumer market for these services required a shift from infertility to fertility difficulties. While the social problem of 'infertility' (unable to conceive through heterosexual sex) was medicalized long ago with donor sperm as a 'treatment' for this newly established (heterosexual) disease, for lesbians, 'infertility' is most often the result of an absence of sperm in sexual activity and donor sperm is always a required biomaterial for its solution (whatever its mode of application).[5] While lesbians have always become mothers in a variety of ways, it is only recently that a large-scale commercial industry and a plethora of technoscientific practices are used to do so. This does not make it new, but it does produce new meanings and practices. Biomedicalization processes have shifted what was once a low-cost, relatively simple procedure of donor insemination into a highly commodified, complex, and elaborate process.

Prior to the 1970s, the method of cryopreservation of human sperm existed only on a small scale for private physicians' practices and as 'fertility insurance' for men who were to undergo a vasectomy and might desire a child at a later time.[6] Previously, when infertility was found among heterosexual couples desiring children, physicians, not the recipients, selected the sperm donors from small, private banks kept in doctors' offices. The donors were usually medical students, other university students, or hospital personnel, and fresh sperm was used for insemination.

In the early 1970s, this changed when cryobanking emerged as a commercial industry. The first for-profit, commercial sperm bank opened in 1972 (Sherman, 1979). A cryobank is a laboratory ensuring the screening, preparation, storage, and distribution of frozen sperm. Such large-scale laboratory facilities organized for the sole purpose of preparing, storing, and distributing sperm had not existed. At that time, additional procedures for 'disease washing and testing' of sperm were designed to ensure maximum health. As of 1992, the last year that the data was collected on this industry, commercial sperm banking represented a $164 million dollar per year industry. Whether used for screening, testing, or storage of known donor sperm, or as a commercial site for purchasing anonymous sperm, a large proportion of persons accessing fertility services turn to these banks for materials.

Until the 1980s, little screening of sperm donors beyond self-reporting of medical history was performed. After transmission of Acquired Immune Deficiency Syndrome (AIDS) became a known risk, sperm was tested for Human Immunodeficiency Virus (HIV), frozen and quarantined for six months when a second testing would be performed. In the US, guidelines (not regulations) for anonymous sperm banking practices are established by the Society for Reproductive Medicine. The regulatory guidelines for both commercial sperm banks and private sperm banks located in physicians' offices do

not merely protect recipients and their potential children, but they also regulate the reproduction of several types of men. Men are excluded as sperm donors for such past behaviors as engaging in sex work, having sex with men, and using injection drugs, as well as past use of acupuncture, tattoos, or body piercing. In sharp contrast, setting standards concerning who is an appropriate recipient of insemination services is professionally regulated on a de facto basis.[7] In this case, medical professionals, physicians and sperm bank administrators, are granted the freedom to decide to whom they will provide services.

Contemporary Delivery Services

Today, with cryopreservation and the development of a large-scale sperm bank industry, recipients are able to choose from among a far greater number of donors, and donor characteristics than they could when fresh sperm was needed. In marketing their products, sperm banks have made available a plethora of print and on-line sperm catalogues to assist their recipients in choosing sperm for reproduction (see Table 1 for an example of a donor template).

There are two types of donors available at most sperm banks: identity-release or 'yes' donors, wherein the man agrees to have his identity be known to the child (usually when he or she is 18 years old), and 'unknown' or 'no' donors, men who seek to remain anonymous. There are usually many more 'no' donors available at mainstream sperm banks and more 'yes' donors at gay-friendly banks. Donor sperm is represented to prospective recipients using various classification grids taking the form of a donor catalogue. All sperm banks provide similar short donor catalogues that report donor characteristics in an easy to read manner. As the example donor template illustrates, the most common characteristics provided are race/ethnicity, height, weight, eye color, hair color, body-build, complexion, and health history of the donor and his immediate family.

Along with donor sperm are a full menu of services available on a fee-for-service basis. Technologies performed include similar screening procedures and technologies such as 'testing' for sperm count and motility; infectious disease screening; sperm quarantine; sperm washing; and sperm analysis. Sperm samples are prepared to accommodate either vaginal or intra-uterine inseminations (IUI). IUI sperm must undergo additional preparations to remove prostaglandin. Finally, in addition to the usually free short donor catalogues, in-depth 'long' profiles of donors are often available for a fee ($15–$25).

The imperatives of corporate biomedicine have infused all aspects of sperm bank institutions. While it may not be surprising that for-profit sperm banks are profiting from this growth-oriented market, non-profit organizations are also maximizing their fees. Of course, these organizations face fiscal difficulties for a variety of reasons and when funding and charitable giving are down, they often secure monies through fees for services rendered. This trend exists for sperm banks as 'cyberspace is rapidly becoming a lucrative place for sperm banks to advertise' (Dornin, 1998). Thus, the move of corporate biomedicine as a culture is indicative of the biomedical and economic factors. As a commodity, sperm is marketed and sold to consumers within the context of a biomedical industrial complex (i.e. commercial sperm bank industry), and as customers seeking services, lesbians respond. Although not the imagined or state legitimated producers of 'families', lesbian parents-to-be use sperm banks to produce kin and, in doing so, challenge the state's denial of queer citizens' right to produce families.

Table 1. Donor catalogue

Donor #	Ethnicity	Hair/ Eyes	Height/ Weight	Complexion/ Face	Body build/ Blood type	Medical history/Family medical history	Education/work	Personality/hobbies
201*	French Canadian	Brown, thin	5′11′	Medium	Tall, medium build	Excellent health	B.A. Psychology/ M.A. Sociology	Amicable and outgoing
(Limited supply)	Italian	Brown	165	Rounded, nice looking, European features	O+	M—migraines	Production manager	Gardening, biking
205*	German/ English/ Norwegian	Brown, straight	5′8′	Medium	Medium frame, compact	Mild seasonal hay fever, excellent health	B.S. Design	Strong, self motivated, adventurous
		Blue	165	Pleasant features, attractive eyes	A−	F—high blood pressure, PGF/ MGF—heart problems in old age, MGM—breast cancer	Marketing, hospitality services	Reading, drumming, skiing, mountain biking
253*	African-American and Irish	Reddish brown	5′6′	Light brown	Small, trim, muscular	Excellent health	B.A. in Child Psychology	Friendly, energetic, sensitive
(Limited supply)		Brown	143	Strong jaw, freckled, boyish	A +	M—alcoholic	Behavioral therapist, professional boxer	Athletics, outdoors, literature, cooking
296*	Japanese	Black, thick, straight	5′7′	Medium	Small, strong, compact	Childhood asthma, allergies, glasses	B.A. in Film/ M.A. Education	Thoughtful, conscientious, empathetic
		Brown	125	Soft eyes, high cheekbones	B +	S—Down's Syndrome. Donor has been tested and is not a carrier	Retail management	Outdoor sports, reading, film, motorcycle

M = mother, MGF = maternal grandfather, MGM = maternal grandmother; F = father, PGF = paternal grandfather, PGM = paternal grandmother, etc.; S = sibling.

Methods and Analysis

The data for this paper is drawn from a multi-sited ethnography of lesbian conception practices in the San Francisco Bay area of the United States. The project was conducted from 1998 to 2001 during which time I interviewed 36 self-identified queer women (i.e. lesbian, gay, bisexual, etc.) who were trying to get pregnant using assisted reproductive technologies. Following the principles of multi-sited ethnography (Gupta and Ferguson, 1997; Rapp, 1999), I followed the data to sperm banks, support groups, and fertility services that respondents described as key resources and services shaping their practices. I subsequently interviewed three executive directors of sperm banks, two providers of pre-conception services, attended numerous pre-conception support groups, gathered materials and resources from eight organizations, and informally interviewed reproductive specialists and legal scholars at two local conferences.

This paper foregrounds interviews with 31 of the 36 respondents who used or were using commercial sperm banks to purchase donor sperm. Respondents were recruited using a variety of sampling methods from snow-balling to posting flyers and placing solicitations in newsletters published by local organizations providing assisted reproductive services to this population. These interviews lasted from one to one and a half hours and were tape-recorded.

During interviews, a group of questions focused on sperm donor selection. In these questions I tried to ascertain the ways selections were made, the 'factors' considered important and, more so, the meanings of these choices. I followed the general principles of 'grounded theory' (Glaser and Strauss, 1967; Strauss, 1987; Strauss and Corbin, 1990). After transcription and initial coding was complete, I imported all in-depth interview data into QSR NUD∗IST, a qualitative computer software program, and categorized data using the limited set of conceptual categories I knew to be significant from open coding. As an inductive method, grounded theory allowed me to begin to build an analytical framework of sperm selection and the meanings of these practices. Beginning with the following dimensions: 'imagining future families', 'negotiating genetics', 'the power of nurture over nature', 'the power of nature over nurture', 'heteronormative conventions', and emphasizing process, I constructed analytic memos describing and theorizing the meanings as I interpreted them. I then sorted and integrated the written memos to develop drafts of findings. I used these to develop the theoretical processes of constructing affinity-ties and the biomedicalization of kinship described in this paper.

Findings: Biomedicalizing Kinship through Technoscience

Sperm Banks in Consumer Culture

The product stored and invested at these banks is not a neutral biomaterial available for purchase, but is imbued with certain qualities that affect its value. Diane Tober (2001), for example, argued that sperm banks' emphasis on altruism is an attempt to redefine the commodity quality of sperm as gift, in order to imbue it with higher emotional and moral value. The commodification of sperm is thereby effaced. In this study, sperm banks are found to emphasize investment in the future as demonstrated in a mock advertisement appearing in the San Francisco Chronicle Magazine in 1999 (see Figure 1). The advertisement depicts a department store setting in which women

Figure 1. 'Long gone are the days when a single woman visiting a fertility clinic would be asked where her husband was, then receive nothing but helpless shrugs. Families today are what you make them . . .'. *Credit*: Sperm Bank of California

happily gather around a cosmetic-counter with sales staff and product 'testers' available. The caption reads: 'MAXIMUM RETURN: Long gone are the days when single women visiting a fertility clinic would be asked where her husband was, then receive nothing but helpless shrugs . . . Families today are what you make them . . .'. The implication here is

that by choosing anonymous sperm one can achieve a maximum return on one's investment in the future and, more so, on one's formation of family.

In practice, sperm banks produce a variety of sales templates (displayed on-line and in copy form) for consumer sperm selection. The donor catalogue is a grid structure visually displaying information on each available donor. These classification grids promote differences and allow recipients to compare across donors and select 'the right sperm for the job' (Clarke and Fujimura, 1992). In the long profiles, donors respond to a series of open-ended questions such as 'describe your hobbies and interests'; 'Why are you becoming a sperm donor?'; 'What are your goals in life?'

In analyzing promotion materials collected at three local sperm banks, my findings confirmed research conducted by Matt Schmidt and Lisa Moore in 1998. In their content analysis, Schmidt and Moore (1998) argued that donor catalogues are a form of 'discourse templates' encouraging recipients to both 'pick a winner' and re-materialize donor sperm into donors with full personalities. In addition, in their promotional materials, sperm banks highlight screening procedures to ensure trust in the integrity of the sperm, to attest to selectivity of men invited to participate in reproduction, and to offer an array of options in an effort to maximize their market base. While this research supports their analysis, I move beyond a content analysis to analyze concrete material practices of selecting sperm donors.[8]

What emerges from women's interactions is that the organizational structure of sperm banks transforms a lack of sperm from a problem to an opportunity (Schmidt and Moore, 1998). Sperm banks highlight cultural beliefs about sperm, race, heredity, social desirability, power, and so on that women then draw upon when making their selection choices. The lesbian recipients of donor sperm in this study interpreted these catalogues in ways that support Schmidt and Moore's findings that sperm banks market sperm differences and, thus, provide an opportunity to re-materialize, reconstitute, and reproduce the body of the donor. The ethos of maximization is discursively linked with one's 'investment choices'. As Table 1 illustrates, these choices include cultural and social characteristics thought to maximize one's chances in the competitive marketplace (i.e. choosing a tall donor emerged as the most frequent donor 'choice').

Recipients mobilized late twentieth century cultural understandings of human life, genetics, heredity, and notions of relatedness in making their choices meaningful. In presenting social characteristics of the donors in donor catalogue listings, sperm banks inscribe sperm with social and cultural differences and imply that these acquired characteristics may be inheritable ones. In turn, women mobilize cultural understandings of genes and relatedness in the context of this highly commodified biomedical arena in ways that reinforce and challenge the nature/culture divide. In my analysis, rematerializing donors with full personalities enabled potential parents to imagine social (and genetic) connections with potential children.

Further, respondents clearly understood that lesbians represented an emergent consumer market for sperm banks. One interviewee stated: 'I'm sure you know or have heard stories about how odd it is to go shopping for a donor in those catalogues and on-line'. Another said: 'It feels really weird to walk in off the street and pick-up a bottle of sperm and pay for it'. Finally, Esther said: 'I feel like lesbians trying to get pregnant is a whole market. Every time prices go up, I get so mad . . . We really feel like, "Oh! Here's a market that doesn't have a lot of options, so, we [can] jack the price up and they'll still come"'.

Selecting Donor Characteristics, Imagining Future Relations

Since one can buy sperm and the number of sperm donors is numerous, the next question becomes which sperm to purchase. Making this decision varied extensively depending on the respondents. In my interviews, I asked: 'What were the factors and donor characteristics you considered as important when choosing a sperm donor?' The elements considered most variously included (a) whether or not a donor was willing to be known to offspring, (b) the donor's health status and family health history, (c) the donor's racial/ethnic background and religious ancestry, and (d) the donor's social and cultural characteristics. In analyzing how women understand and construct these elements, I concluded that users select sperm, thereby creating kinship, by piecing together issues such as knowing one's biological identities, drawing conclusions about a donor's genetic health history, and considering social subjectivities. That is, they constructed a liminal space between biogenetic and social ties as markers for future relatedness. I use the concept 'affinity-ties' to signal what I found to be a priority of recipients to select a donor who appeared to have a likeness to the mother or mothers to be. Likeness was a future connection forged not by blood, but by similarity. I use the term affinity-ties to move beyond the terms blood-ties (or biogenetic ties) and social-ties often used in kinship studies and lesbian and gay theory.

The lesbian participants described the ways they imagined future social relationships as given meaning through shared biological and social characteristics. Affinity-ties were elaborated through the construction of sperm as possessing an ethnic origin, a health history, and a range of social or personality characteristics. Recognizing the person who produced the sperm, Kaye stated: 'It's kind of like buying a husband'. While a sperm donor is clearly not a husband, Kaye illustrated to me that in selecting a sperm donor, recipients re-materialize and imagine the donor as a means to imagine the potential offspring. Kaye not only understood donor selection as a consumer practice in her use of the term buying, but she also acknowledged that by listing such an array of donor characteristics, sperm banks shape selection in much the same way that dating services do. That is, they list a range of biological, cultural, and social options for recipients to select. Kaye described this below:

> My partner and I were overwhelmed with the choices. At first we did not know what to choose. We were a bit surprised by all the options. But then we decided we felt we should choose somebody tall. That was important. And I felt we should be making a choice based on health, that if it was at all possible [we should] give *the child* the gift of good health. [That] was something that was worth something. And we both thought athletic and smartness was important. And then the whole ethnicity discussion came out. And that's a whole difficult discussion even to have. . . . [My partner] felt it was going to be difficult enough for our child to be the child of lesbian parents, that to raise a child of mixed ethnicity who was also the child of white lesbian parents was just basically too much. So we chose a white donor.

Significant here are two findings. First, recipients implicitly rely on cultural understandings of inheritance when imagining their potential child's development. That is, they rely less on conceptions of their own nurturing as parents when imagining their children

than they do on cultural understandings of heredity and genetics. This practice serves as a kinship device in that it mobilizes the nature/culture divide in ways that give meaning to future families (real or imagined). In other words, while ambiguities and uncertainties exist in terms of nature and nurture, recipients select sperm in ways that privilege natural explanations, but do so in cultural terms. The cultural and physical traits of the donors are *re-materialized* into the imagined potential offspring. This serves as a kinship device in that the potential parents are then able to envision their own social connection to the imagined child. Kinship becomes relational: potential mothers select donor characteristics they might share with, that is have in common with potential offspring. These are not only physical attributes, but also social and cultural ones.

Second, technoscience does not determine, but is co-productive with practices of kinship formation. Affinity ties are not only central to imagining future relationships within the 'family' unit, but also outside the family as affinity is constructed as potentially providing social legitimacy.[9] This was most clear in racial/ethnic decisions to select a donor who 'matched' the parents when they were of the same ethnicity or to select based on the ethnicity of the mother to be who would not become pregnant (i.e. what is often described as the non-biological mother). In terms of social legitimacy, respondents in this research were grappling with idealized kinship forms and wondering where they fit-in: what type of families would they create? Assisted reproductive technologies and sperm banks provide the institutional and technical practices necessary to bypass social conventions of the heterosexual family, but they do not necessarily bypass cultural and social ideals of what and who make a family. Affinity-ties, as I interpret it, is cultural; it provides legitimacy in the context of uncertain legal rights and in the context of everyday interactions with heteronormative society.

In this context, technoscientific practices of selecting sperm through sperm banks selectively constitute 'true' family-hood. That is, looking like and being like someone accomplishes social legitimacy and erases the stigma that often accompanies apparent differences. In one interview a respondent asked:

> Who am I? I mean, where do I fit in? It just felt like societal messages, because there's that one unit model of the mother and the father, you know. There are maternal feelings and paternal feelings . . . I was always told by my family that I'm not nurturing, you know, and I believed them.

Another respondent said:

> I have a couple of straight friends and they get married and they have families and it becomes nuclear. And, most gays and lesbians, for so long the nuclear family was lost or separated. So we created our own families. And now, we have other [extended] families in place and when we started having children, the other family's already there, so by adding children we make different types of families beyond the nuclear kind.

And a third respondent said:

> The importance of defining a family should be a group of people who love each other, not who are all biologically related. Families can take any form. There is

> no 'right' way that things have to be. We have to be careful not to overcompensate, not to make the mistake of going the other way and freak out about not having 'daddies' as if that REALLY means something.

On the other hand, other respondents said: 'It was like a fairly conventional, heterosexual marriage in which we saw ourselves building a family. It just seemed natural in that way'. Technoscience allowed a mobilization of 'nature' as a means to produce 'culture'.

For heterosexuals, it has been shown that a goal of donor insemination was to create an 'as if' family, one in which the children appeared to be biological offspring of the husband and wife (Becker, 2000). Practices of 'matching' and anonymity facilitated this heteronormative goal (Agigian, 2004).[10] In contrast, in this project, affinity-ties are a kinship device used to create social and cultural legitimacy. Sperm banks market sperm using donor traits such as national origin, personality, physical composition, and health history; consumers select a donor by drawing on contemporary discourses of genetics, despite the ambiguity in the connection between 'genes' and human development.

Presented with the opportunity to choose sperm (and whatever else sperm embodies), women are compelled to think in terms of maximizing their return (i.e. producing offspring with competitive advantages). Recipients prioritized characteristics from the short catalogue templates and then selected one to four 'top pick' donors to purchase long profiles for additional information. These long forms were read as windows into donors' personalities. Recipients described reading these for clarity of handwriting, articulateness, perceived empathy and generosity. At times, recipients described the ways they *re-materialized* or imagined the characteristics and attributes of the donor himself and, at times, the potential children. That is, they envisioned social connections with potential children as formed by shared social, cultural, and ancestral histories. This process of re-materialization was evident in Janella's description of her and her partner's process of selecting a sperm donor:

> It then became like we knew the donor. Whatever nationality they were, we gave them a name and they were like novel characters or whatever. 'Oh there's Juan!' we said as we spotted someone who looked like our image of him. They became these people that we felt like we got really attached to.

This process involved re-materializing the donors and, I believe, involved imagining future children as possessing attributes once belonging to the donor, attributes that would be shared by the parent to be.

Genes and Heredity: Managing Health, Minimizing Risk

Late twentieth century discourses of geneticization are constitutive of these re-materializations. Today, with the Human Genome Project and heightened scrutiny of genes as causal factors in one's health, donor selection processes draw deeply on this discourse. Most sperm banks provide health histories of donors going back between one and five generations. In selecting donors, women engaged in a process of understanding their own health and family health history in relation to the donors. Their decision

became a way of reducing risk for the potential child: if breast cancer was present in a 'bio-moms'' family, a donor would be chosen with no cancer in his family.

In selecting donor characteristics, nature is not only 'enterprised-up' (Strathern, 1992, p. 30) through selecting positive characteristics, but is also enabled by minimizing potential risk through a careful selection of disease histories. Dominant cultural discourses about genetics, heredity and health was not transparent to the women I interviewed. Joyce said: 'My family and I were calling it genetic engineering'. All of the respondents thought they knew that some aspects of health are inheritable and identified certain illnesses as proof. Tina describes: 'It did feel like genetic engineering though. How tall would we like him? Do we prefer a graduate student or an athlete? What about physique, intelligence, and health? Is there a history of cancer?' Raquel, Paula, and Esther indicate knowledge about what is and is not inheritable. While Raquel emphasizes cancer and schizophrenia as genetically determined 'risks', Paula raises a concern of alcoholism as a genetic risk and Esther perceives good eyesight as genetically inheritable.

> Raquel: We wanted to pick someone who, even though we trusted that [the sperm bank] probably wouldn't have someone who had a huge amount of schizophrenia in their close relatives or something like that. We wanted to stay clear of people with even an appearance of some kind of cancer.
> Paula: I think what was a really big issue for me was people who had alcoholics in their family. I don't know that there's hard conclusive evidence, but there's a lot of [studies] that have shown that there is an inheritance of alcoholism. And I guess 'cause I've seen situations of families who've adopted kids whose parents were alcoholics and what's happened to their child ... And there isn't any alcoholism in my family.
> Esther: I think my really big issues are health and then eyesight. I've really gotten stuck on eyesight lately. I want to give him a chance [Laugh] and figure if the donor has 20/20 vision, then I figure they've got a shot, you know.

In the biomedicalization era, genetics have emerged as key means through which life is understood and by which disease will be cured. As the mapping of the human genome has uncovered the BRCA1 and 2 breast cancer genes and the media has purported the 'discovery' of genes for Downs syndrome, Alzheimer's disease, prostate cancer etc., cultural understandings of 'health' and 'illness' are increasingly geneticized (Lippman, 1992) and sperm banks have participated in promoting their services using these knowledges.

Sperm, as commercial sperm banks tell us, can be sick or healthy. Socially and physically dominant donors were selected assuming that their sperm would help 'build' socially dominant offspring. At times donors were also selected by way of enhancing familial qualities (i.e. choosing a tall donor if one is short). In addition, social-health (such as education, hobbies, and interests) also emerged as important qualities in donors. In both cases, selection decisions mirrored dominant US cultural understandings of physical and social power. Key indicators of 'ideal' physical and social power include health, as well as height, weight, body build, sports, occupation, grade point average, and years of college. As Schmidt and Moore (1998) argued, these are social indicators of one's ability to be physically and socially dominant. This selection

practice informs my finding that technoscientific practices and lesbian elaborations of kinship are co-constitutive.

Below, June describes her belief that health is genetically inherited:

> We were looking for someone with remarkable health that extended out to maternal, paternal grandparents and aunts and uncles too; someone healthy without a cancer history or Alzheimer's or other things that seemed genetic. My mother said, 'you know more about this donor then I ever knew about your father when we started having kids'. But we figured, as long as we have a choice we might as well try to go for the most remarkable health stuff.

Similarly, Judith links the commodification of sperm with the ability to 'buy' health.

> What really affects me is how much I have to pay to get healthy sperm that can survive freezing. Sperm that has been quarantined and tested for all the diseases. I know a lot about this person in terms of health. I know what he's not carrying. If I met him at a bar or he was my best friend who didn't tell me a few things, I wouldn't know. I think it's important to know these things and it's not anything personal. It's a matter of health. It's a matter of viruses. It's a matter of self. So let's stay healthy about it. And that's one of the reasons we went to the sperm bank.

Not only are women making these decisions 'because they can', but they are also identifying the commodification of sperm, health and genetic inheritance raising the questions: what are screened sperm worth? What are 'good' genes worth?

Affinity-ties as Kinship Device

Beyond managing health by reducing risk, recipients also constructed potential relationships by selecting shared histories, physicalities, and social subjectivities with donors. For example, race/ethnicity was often discussed as a form of physical 'matching', a desire for a child to resemble the non-biological and biological parent. However, race/ethnicity was also discussed in terms of national origin and thus, as shared cultural/ancestral roots. In all, respondents emphasized social qualities alongside biological ones. By emphasizing social ties, kinship expands into new conceptual spaces.

The power of 'knowing' one's identity is a potent narrative in US culture, a culture shaped by immigrant narratives emphasizing one's origin, and it is a narrative that appeared as central to sperm selection practices. This translates into many women feeling that their child must be able to 'know' his or her identities at a later time. In these narratives, identity is constructed as one's ancestral place of origin. In the US, racial/ethnic/geographic identity is a central way in which people come to 'know' oneself, one's family, and other social groups. As a result, selecting an identity release or 'yes' donor was described as an important selection criterion by most respondents. Women asked themselves, 'What would it mean to get a phone-call? What would it mean for the child, for the parent(s)? To potential siblings or others in one's social circle'. In one woman's description of choosing a donor she said: 'Probably the biggest criterion was having a yes donor. We thought our child should have the option, the choice to learn who their donor was. To know where he or she came from'. She further

stated that the donor 'had to be somebody who was willing to be known when our child is 18. That was No. 1 priority'.

Another couple agreed. In this scenario, at first Michelle did not feel strongly about the importance of what she called 'knowing' one's origin. She attributed this insistence on knowing to American cultural ideals. As an Italian born, she seems to feel that knowing one's roots is more important in the US.

> I think it is cultural. Americans are very conscious of their roots, where they come from, Identity. That is not something that is true for me . . . probably because it is so much more homogeneous in Italy. I never knew anyone who was adopted, but here in the US, I know a lot of people who are and I realize the importance of knowing your biological roots.

When Paula described the importance of a willing to be known donor, this included a consideration of personality attributes she understood as providing a window into the donor's potential response to the child if and when the 18 year old contacted him.

> I don't know if you've ever seen the list, but it's pretty extensive. They have three categories: known or never known; the ones who make the videos; and then the ones who the child gets to call. So we basically said the only option for us was the one where at least our child would get one phone call [to the sperm donor]. That was real important to us. So, he had to be a nice guy who would take the call someday.

A perception of 'niceness' becomes important to her decision. It is interesting that the one phone call is understood here as closure, and not an opening-up of possibilities. I interpret this as knowing one's roots creates a form of wholeness, a means to know thyself and to close the unanswered question of who you are and where you came from.

Affinity-ties emerged as women translated donor catalogue listings into imagined children and potential social relationships. Many recipients discussed a desire for potential offspring to resemble either the bio-mom or the non-biological mom in terms of race/ethnicity. This is often termed 'matching' by sperm banks. Depending on the sperm bank, ethnic characteristics are listed in terms of national ancestry (i.e. Dutch, German, and Italian) or as racial phenotype (i.e. Caucasian, Hispanic). Matching, in my analysis, is not a straightforward 'let's make a baby that looks like me'; it is more accurately indicative of the mobilization of biology and culture to create shared ancestry and histories with potential offspring. Matching signals a strategy by which to maximize affinity. Marilyn explains this well: 'I tried to match the men in my family, blonde, blue eyed, 6 feet, 180 pounds, Irish, English, Northern European'. For her, the Irish, English racial origin provided knowledge and shared characteristics. While Marilyn matched to her brothers, Judith describes the match as based on the non-biological mom: 'We looked at characteristics and phenotype. We started off romantically putting her phenotype into me'. Both women incorporated 'phenotype' into their selection criteria as a means of 'mixing' or blending together. Joyce also matched in this way: 'I ruled out ones that were nationalities that I wasn't interested in or ethnic backgrounds that I wasn't. I basically chose donors that were similar to

me in that . . . I went for donors that I felt would have looked similar to me maybe, blue-eyed and with a light complexion'.

In an interview with Shari and Robin, the non-biological mother identified as Latina and the bio-mom as Caucasian. A key criterion for donor selection included Spanish or Mexican ancestry. The bio-mom said, 'He's three quarters Spanish and a quarter Mexican with Green eyes and that fits her most, you know. The dark hair and everything'. She continued:

> Having mixed children is social. I think that in this environment and this society it's better to not be identified one way or the other. It's my ideal world for everybody to be a blend of something. That's how people are, are learning to get along better on a social basis. We were choosing someone who was some Latino mix. Dark features and tall [laugh]. He's like 5'11', 170 lbs, nice, trim athletic guy. He's educated. He has a big family as we do and he has no health problems.

Constructions of race and ethnicity in women's narratives were mostly taken-for-granted and, often, unproblematized by respondents. Yet a close coupling of race/ethnicity with origin permeated women's stories. Origin was used to emphasize social relatedness through physical likeness or 'matching', 'identity' and 'knowing'. I found that women drew upon US cultural ideas of biology, hereditary and kinship.

One area in which this was most instructive was its application to personality characteristics. In Lynda's narrative below, personality was constructed as genetically inheritable:

> My big thing was I wanted someone who was just a nice, good human being with good sense of humor and smart. Things I would find appealing in a person. You don't really get that part from the bio-sketches. Since we went to our friend who knew all of the donors at the bank we told him we really want a great guy who is light in color [i.e. this woman was a fair white skinned Caucasian] and pale in complexion. We narrowed it down to a couple of different ones. One was really, really handsome and a great guy who was a bit darker in color and another was a super guy and cute. So we said, 'O.K. We'll take the super and cute one because he's lighter in coloring'.

I interpreted this to indicate the importance of social characteristics for potential shared affinity-ties and for projecting a normal idealization of themselves and their families in the face of uncertain legal ties and a generally heteronormative culture. As Lynda explained above, she and her partner relied heavily on the donor's own words and own handwriting to ascertain his values, beliefs, and personality. Sperm banks sell these long profiles to recipients thereby implying that these qualities imply that sperm may be qualitatively different because of the donor's personal history and that these may be consequential for the potential child. In doing so, sperm is inscribed with personalities of the donor and the users are given the opportunity to re-materialize these characteristics.

Respondent's desire for shared affinity with the potential child indicates another desire for normality and acceptance. The recipients mobilize social characteristics as

being, in some ways, genetically inheritable and therefore overriding nurture. Janella, for example, illustrated how recipients consider a range of factors when selecting a donor.

> What were the characteristics about the guys we picked? Somebody athletic and well educated. Someone who seemed nice and decent. Someone not too freaked out or Type-A. Those were the biggest things.

Since all of these characteristics are listed on the sperm bank donor profiles, it is not surprising that women prioritized these attributes and made decisions based on them. What is interesting, however, is the meanings these attributes held for the women. I found the process of constructing relatedness based on affinity to be played out through the construction of shared subjectivities. Affinity includes aspects beyond appearance and encompasses social and cultural characteristics such as national origin, religious ancestry, cultural interests, hobbies, and social characteristics. While these are not known to be genetically hereditary traits, their meanings were mobilized in such a way that they could be. Thus, they serve as a kinship device for not only constructing imagined relatedness and social connection, but also constructing social legitimacy.

Biomedicalized Kinship through Technoscience

What is the significance of sperm as a culturally relevant object and biomaterial? One answer interpreted here is that sperm is invested with the potential to forge connection with offspring (and partners). Two extended examples support both the arguments above as well as the emergence of a basic social process: the biomedicalization of kinship through technoscience.

Sara is a 38 year old Caucasian health care provider who is in a partnered relationship with Sue, a Korean-American physician. They have two children by donor insemination. Sara described the donor selection process. She began by discussing the lengthy discussions she and her partner had about race and their experiences, one as white and one as Asian American, with race and racism. After describing their discussion of the US stigma attached to Asian women, she said:

> There was absolutely no question in my partner's mind that she wanted our children to be mixed in the same way as her sisters' [children] are. We had a lot of discussion about race. She feels that if we have an all-Korean child who is a girl, she would only be valued for being very beautiful. She felt like whether a boy or girl, an all-Korean child would experience different kinds of racism, if purely something. So she wanted both of our children to be [racially] mixed.

In Sara's story, race/ethnic origin of Korean emerged as an important attribute: First, 'to match' with other members of their family (i.e. the cousins of one of the mothers) thereby constructing a relational notion of kinship. This exemplifies how affinity-ties as kinship signifier include shared ethnicity and genetic similarity (see also Thompson, 2001). This construction of relatedness is not based solely on bio-genetic ties nor is it based on social ties. Here, biology and sociality are mobilized to create shared ancestry and the similarities and histories that embodies.

Selecting a Korean donor also enables a perceived reduction of the US cultural stigma the recipients understand as attached to 'all-Asian' girls. Sara's partner's emotional experiences of stigma shaped her selection choices. In the narrative below, Sara continues her discussion of selecting donors. In this passage she emphasizes the importance of health and does so using a language of 'stacking the deck'. I read this to mean a strategy of both reducing risk and enhancing or shaping identities, a result of the commodification of sperm and the 'choice' this enables.

> Health was first and then music. Intelligence wasn't really an issue because the people they recruit, at least among the Asian donors, are very intelligent already. They all had over 1400 on their SAT scores and were in graduate school or they were undergraduates and had amazing grade point averages. They all seemed really intelligent already. If you can pick, we figured we definitely wanted someone that can do what they'd like in life, whatever they'd like to make them happy. Handwriting and creativity were also important issues. I guess it extended to include general creativity and what they seemed like, their personality. Part of this was what they thought of the women in their lives. They write opinions of their relatives and siblings and what they said gave us an idea of their personality. What is their mother like. We asked ourselves, 'do they feel really positively towards the women in their life?' . . . I think our primary concern was genetic. I change all the time on how much I think is genetic and how much is environment, but our general feeling then, which has changed now that we *actually have* kids. Then we thought that we know so much about mental illness and genetics and even a lot of personality traits . . . We had the belief and it's often true that a lot of personality traits are influenced by genetics. Our feeling was, stacking the deck as much as you can. Even though every single pregnancy and every single combination of genes is different, it's a total crap shoot. With our understanding of medicine and genetics and personalities we thought that we would stack the deck as much as possible in favor of having someone who was flexible, creative, would cope well in life, and would be happy. Our family is fairly prone to depression, so we thought we could avoid that. No major mental illnesses, no suicidality, no episodes of clinical depression.

Cultural ideas concerning genetics and heredity are mobilized here as if each health condition is known and mapped as inheritable through blood-ties. Heredity therefore is privileged over culture. Sara says, 'we know how biological all this is' and 'I think my primary concern was genetics'. Throughout, she emphasizes what she believes we 'know' and 'don't know' about heredity. Further, in managing uncertainties and minimizing risk, she further discounts environmental explanations by eliminating donors with any history of mental illness and substance use in their ancestral lineage. These and other health issues are considered as ways to enhance potential offspring, reduce risk, thereby enterprising-up nature. Further, social characteristics such as musical abilities, intelligence, not being a misogynist, being creative, flexible, and possessing strong coping skills weigh heavily in donor selection choices. While these characteristics may not be literally thought of as hereditary, they are mobilized in a similar way to both imagine future children and future social connections. Thus, the characteristics are

envisioned as possible hereditary attributes despite the fact that these are more commonly construed as acquired.

Elizabeth and Tina are both white investment bankers. They are 33 and 35 years old and have one child. Elizabeth is pregnant with their second child. Both children were conceived by donor insemination using a commercial sperm bank.

> Tina: I remember making that first call to the sperm bank and saying, 'You know, we're ready to start looking at donor profiles, but we don't know what your process is'. And the woman said, 'No problem, we'll send you the fall catalogue'. It was like, 'OH! SEARS! or JC Penney's'. It was just such an unusual phenomenon. It was interesting. In terms of our criteria, the most important thing for us was a white donor, just because it seemed easier. The next biggest criteria was having a 'yes' donor because we thought as parents it was important to give the child a chance of knowing, to at least leave that open to the kids just to have the option to find out who the donor was. After those two criteria it was kind of who looked like us, I guess, who has similar hair color. We never really cared too much about anything else.
> Elizabeth: It was kind of fun. I remember being really surprised when the extensive profiles came with handwritten copies. I remember, just thinking, well this is interesting. It sort of allows some handwriting analysis. If people write well or not, you know, you get some sort of sense . . . This guy, I remember, used a lot of exclamation marks and, I can't remember if they asked if they wore boxers or briefs, but he said, I wear 'Briefs and proud of it!' with exclamation marks. You see a different sort of personality come through with handwriting versus typed data. That was kind of interesting. It was fun. We thought, 'he has a personality, he seems vibrant'.

Decisions concerning racial/ethnic origin were significant for Elizabeth and Tina. In this case, selecting white donors was perceived as 'easier'. The ease appears to be a future imagining of being like one's parent would be easier on the child and having a child like themselves would be easier on them. The perceived affinity shared whiteness would create serves as kinship device and is driven by technoscience. Affinity-ties made through whiteness would maximize social legitimacy and project a 'normal' family form ripe with shared ancestral histories.

Looking like and being like someone not only creates an affinity, a connection with the donor and his characteristics as they might be re-materialized into the child, but looking like and being like someone also accomplishes social legitimacy and a version of oneself that 'fits' these hegemonic ideals of 'true' family-hood. Elizabeth described this well:

> Did the donor look enough like both of us that the child would look enough like both of us? That it wouldn't be a constant flag in the world that this wasn't REALLY our child. I know that a lot of other people deal with that, certainly with international adoptions and interracial adoptions and it's not insurmountable, but since we had enough similar coloring ourselves, we thought a donor who also had similar coloring would make us all seem connected, you know?

Elizabeth and Tina described how physical appearance can serve as social legitimacy. In the passage below a desire to minimize risk and maximize health become part of their consideration.

> We wanted her [my partners] features. Since I'm carrying the baby, it's going to obviously have some of mine, so we looked for physical characteristics like blonde hair, blue eyes. That was what we started with. From there we looked at personality type and other physical characteristics (weight, height) . . . We also looked for things to eliminate. Things like a sister who was schizophrenic.

Finally, the importance these respondents place on 'yes' donors also exemplifies the significance they place on knowing one's origin and ancestry. Here, genetic ties are viewed as providing a necessary link with the ancestral past and are perceived as being in the interest of the child. This affirms the cultural narrative that 'knowing' one's ancestral past facilitates the formation of one's selfhood. Further, the donor's personality characteristics are interpreted through his handwriting and emerge as significant to the selection choices made.

In all, donor characteristics were mobilized in such a way that they were imagined as shared with the parent(s)-to-be. As such, whether the donor characteristics were personality traits, cultural ancestry, health status or family health history, or physical appearance these were constructed as inheritable. I argue this because if the respondents believed musical ability and athleticism to be the result of one's environment and nurture then the likely scenario would be that their influence as parents could lead to a child's interest and, thus, abilities in sports and music. They did not discuss what they as parents would offer, instead, they give credence to the belief that nature and, thus, biology, influence musical and athletic traits. Sarah stated, 'I was looking for somebody that had music as one of their interests. My partner wanted somebody with athletic interests or, or some of the same things that she shares, some of, perhaps athletic or other things'. While biological determinism is clear here, a literal reading of their assertions would be a bit overdetermining of the meanings they attribute to nature and culture. However, a strong desire for potential mothers to share affinities with potential offspring cannot be oversimplified. Marie's partner expressed a desire for the donor to share social characteristics with her. Finally, as Janella attests below, she believed that personalities are something one is born with, something inheritable. Thus, her comments express her and her partner's desire for shared subjectivities with the donor and, by extension, with the potential child:

> Even though we didn't know the person, any sign at all about what he was like felt really important. Anybody who seemed really uptight or something we thought [laughing] no way. I mean, they're born with a personality. You have some influence, but we thought we could try. They're kind of like an imaginary person. Their personality is imaginary. If you think the person [donor] is kind of a nice person, it's better to hope . . .

Respondents frequently mentioned selecting donors based on personality characteristics such as 'niceness' and 'decency'; social characteristics such as 'well-educated'; and physical characteristics such as being 'athletic', strong or in excellent health.

In my analysis, users' understandings of donor characteristics are not read literally, but are viewed as a kinship device in which cultural understandings of nature/culture, and genes/environment are mobilized at the point of consumption. The social and the biological, the natural and the cultural, the genetic and the social are negotiated and merged as futures are imagined and legitimacy is maximized. That is, this merging is performed not only to share affinities but also to secure social legitimacy.

Conclusion

Practices of donor selection are more than recipient interpretations and choices. These are networks of agency and constraint produced through sets of knowledges, including but not limited to genetic knowledges and their technoscientific applications. That is, while technoscience is powerful, it is not determining. Human actions and technoscience are co-constitutive. Situated in the biomedicalization era, sperm banks commodify sperm and market it to potential consumers, in ways evoking ideas of genetic determinism, commodity exchange and capital investment in the future.

These organizational practices could lead to genetically determined ways of knowing sperm and its potentialities, but such a geneticization scenario is destabilized by bringing users forward in meaning-making. In practice, geneticization is contingent: people respond to and negotiate these meanings in a variety of ways. Sperm recipients' practices reveal the agencies of heterogeneous actors and porous bonds between 'nature' and 'culture'. While marketing materials may suggest a genetic destiny, users' interpretations of these scripts and their own negotiations of these and other legal and social ideals constitute their practices.

In analyzing donor selection practices, this paper has shown that a sperm bank, as an arena of medical, technoscientific practices of genetic knowledges, is highly variable in its meanings. Instead of users' understanding of genetics as determining futures, they negotiate and imagine ways cultural, social, and physical traits might interplay in potential children. At times, this results in maximizing competitive traits (i.e. increased height, decreased depression), but at other times it is a way to build and imagine shared connections. In all, practices of sperm selection, users themselves, and sperm bank services mutually constitute a technoscientific practice of kinship, which I have called affinity-ties.

Affinity-ties is an extended form of kinship produced by the biomedicalization and commodification of social attributes, attributes shaped by cultural discourses of biology, genetics, and social connection. These social attributes, when imagined by potential parents as shared with potential children, contribute to imagined social connection and parental legitimacy. Further, in constructing affinity-ties, lesbian consumers reveal a contradictory cultural logic of genetics in contemporary American society. While recipients understand genetics and heredity to be extremely important to their selection choices, arbitrary lines are drawn and meanings applied to ideas of what is and is not genetic, what environment or nurture can overcome, and what is firmly known to be passed through blood and genes. The nature/nurture divide is not only negotiated, but shown to be co-constitutive.

Specifically, while lesbians often rely on cultural beliefs in genes and generation in their understandings of heredity, they do so in complex ways. Potential mothers select physical, social, and cultural donor characteristics they might share with the potential offspring as if these will be re-materialized into the potential child. Yet genetic knowledges do not

over-ride social understandings of identity and selfhood: Euro-American ideas of kinship already *combine* notions of individualism, biological relatedness, and sociality (see also Strathern, 1995). This confirms Edwards (2000) idea that who is included in the family and who 'drops out' are shaped by patterns of sociality and senses of alliance and affiliation that are not determined by the crude criteria of blood connection. In all, genetic knowledges (i.e. cultural understandings of genes and heredity) are mobilized in a variety of ways. As a kinship device, affinity-ties captures the complex ways 'natureculture' is mobilized.

The 'right to know' donor policies reinforce the cultural ideal that ones identity stems from blood and ancestral knowledge (see for example Modell, 1994). This raises the question of whether knowledge of biological ancestry is necessary to move into the future and to develop one's sense of self? Sperm banks market sperm in ways that enact the possibility for women to re-materialize sperm into ideal forms. These ideal forms mirror US cultural discourses of not only masculinity as Schmidt and Moore (1998) argue, but also kinship and relatedness. Seeking legitimacy is highly necessary in US culture in which biological connections are sanctioned by legal state sanctioned marriage, legitimated by science, and sanctioned by law (Collins, 1999). It is not biology per se, but racial/ethnic and other physical, visual 'likeness' that operate as markers of family boundaries.

Cynically, one could assert that selecting sperm donors is a form of genetic engineering in that it resembles positive eugenics and supports reproduction among those possessing socially desirable characteristics (i.e. 'the best stock'). On the flip side, however, selecting donors can just as easily be read as a form of negative eugenics in that certain donors are excluded outright from sperm banks and thus do not appear in the catalogues. Neither is the case here. Instead, I argue that through technoscientific practices of selecting sperm, affinity-ties emerge as a kinship device. That is, sperm donors are selected in ways that both normalize and disrupt hegemonic, albeit constructed, notions of true-familyhood and ideal kinship forms. More so, affinity-ties relies not on the false Western separation of nature and culture but on naturecultures.

Contemporary America is a place in which kinship has become fragile. For some it is a time in which the family is an idealized form and all those subverting the two-parent heterosexual family are viewed as assaults on the family. In an era of constitutional amendments defining marriage, lesbian mothers and gay and lesbian families are on unstable ground. As assisted reproductive practices have long shown, nothing within biology demands the nuclear family. Yet, in the US this family represents social order, idealized kinship, and legitimate relations. As cultural ideals, these are flexible (see Gayle Rubin, 1975). Kinship theories have long complicated the 'biological' 'social' and 'legal' bases for the idealized family form. As Strathern (1992, 1995) argued, reproductive technologies alter what was once taken to be natural to instead be a 'matter of choice'. Biological reproduction is the taken-for-granted kinship signifier in Western culture and assisted reproductive technologies intervene in this biological foundation.

Today, reproductive technologies construct new ways of knowing about kinship and their use by lesbians and other queer social groups extend the contours of kinship further. As Strathern (1992, 1995) argued, a 'dispersed kinship' now signals the multiplicity of procreators who are defined by their participation in the acts of conception. I conclude this paper with my own assertion that 'affinity-ties' reveals a kinship device in which shared social and cultural connections are re-materialized into the future.

Lesbian practices of consuming sperm are shaped and enabled through a culture of biomedicine with its reliance on genetic explanations of self, sociability, and relatedness and a culture of identity locked in dominant heteronormative ideals of what and who make a family. The material practices of biomedicalized kinship are consequential for lesbian as well as heterosexual reproduction. As biomedical institutions, sperm banks market social and cultural characteristics as inheritable characteristics by offering this information alongside the genetic markers found in screening donors' blood, sperm, and health histories. The meaning and consequences, however, can be found in the ways that consumers mobilize these in use. When recipients (i.e. users) interact with and consume sperm for reproductive purposes, they reveal that their meanings and actions are variously and interpretively flexible. In this context, I found that the biomedicaliztion of kinship is enabled by larger shifts in the technoscientization of biomedicine. While this includes processes of geneticization (Lippman, 1992) it moves beyond this to examine the co-constitutiveness of technoscientific knowledges (in sperm banks) and meanings in use (by recipients). Lesbian users, however, co-construct the meanings of these technoscientific shifts. Through processes of kinship-in-the-making, lesbians imagine and construct donors and children through their mobilization of 'naturecultures'. In doing so, kinship itself is produced and transformed through cultures of biomedicalization.

Acknowledgements

This research was supported by generous funding from the University of Maryland, General Research Board and a dissertation award from the Forsyth Memorial dissertation fund at the University of California, San Francisco. The author is most grateful to Adele Clarke, Virginia Olesen, Valerie Hartouni, and Gay Becker for their generous feedback on an earlier draft of this paper and to Jennifer Ruth Fosket, Janet K. Shim, Kelly Joyce, Celine-Marie Pascale and Elizabeth Marshall for their feedback. George Ritzer, Jackie Orr, Kelly Moore and Patricia Clough provided helpful comments on some of the ideas here. And finally a special thanks to Les Levidow and the anonymous reviewers at *Science as Culture.* An earlier draft of this paper was presented at the 2003 American Sociological Association's Science, Knowledge, and Technology section panel on Futures of Feminism and Technoscience.

Notes

[1]ICSI involves injecting a single sperm into an egg in the IVF lab. It is used in cases where the man has weak sperm or a very low sperm count. If the ICSI procedure is successful, the fertilized egg is transferred to the woman's uterus using normal IVF procedures. Recent statistics show that ICSI is used in about 47% of IVF procedures in the US (Center for Disease Control, Atlanta, 2000).

[2]I use the term lesbian as a social position and optic productive of material practices and meanings. This social position, while privileged, is intersectional with race, class, gender, and other social markers and materialities.

[3]With the turn to practices, many sociologists in science and technology studies also shifted analysis to the concrete activities that go into the creation of facts and artifacts (Timmermans and Leiter, 2000) and the use of technologies themselves.

[4]The emergence of this industry was enabled by historical developments in sciences, technologies, and cultural discourses from c. 1950 to 1980. The break-through that fully launched this new biomedical industrial sector was the conception of Louise Brown, the first 'test-tube' baby born as a result of in-vitro fertilization

in 1978. The emergence of the sub-specialty of endocrinology/infertility and its associated assistive reproductive techniques, including IVF, created a market for those techniques and services and getting pregnant became big-business (Scritchfield, 1989). From 1978 through the 1980s, the number of commercial IVF clinics and reproductive health specialists exploded, ovulation enhancement drugs hit the market and reached blockbuster status, and high-tech procedures such as in vitro fertilization, intracytoplasmic sperm injection (ICSI), and gamete intrafallopian tube transfer (GIFT) became widely available. This development in the US takes place within a for-profit health care industry predicated upon biomedicalization processes, professional control, and large-scale expansion of the 'Biomedical TechnoService Complex, Inc.' (Clarke *et al.*, 2003; Ehrenreich and Ehrenreich, 1971; Relman, 1980).

[5]Practices associated with assisted reproduction, the discourses that surround them, and the institutional worlds built up to support them have historically functioned ideologically in ways that reinforce dominant heteronormative narratives of relatedness (see work by Haraway, 1991, 1992, 1997; Hartouni, 1997, 1999; Casper, 1998) that reinforce assumptions of heterosexuality and the ways these are built-into institutional, social, and cultural practices.

[6]The history of frozen semen dates back to the eighteenth century, when it was found that freezing stallion semen did not destroy motility. In 1897, Charles Davenport, an American zoologist, first reported that human sperm could survive freezing (Herman, 1981, p. 85). It was not until the 1950s that the technologies used to produce frozen semen were pioneered in artificial insemination for livestock (Herman, 1981; Parkes, 1910) and then humans (Sherman, 1954; Bunge and Sherman, 1954).

[7]As I complete this paper, the Food and Drug Administration is poised to implement new rules recommending that any man who has engaged in homosexual sex in the previous five years be barred from serving as an anonymous sperm donor. This moved beyond guidelines to regulations.

[8]Little is previously known about how recipients actually select sperm donors for reproduction (exceptions include Hanson, 2001; Jacob and Maier, 1999; Scheib *et al.*, 2000).

[9]While official definitions of what makes a 'family' vary in the US (Minow, 1998), the privatized nuclear family holds a sacred place in the American psyche and is embedded in most major social and legal institutions. As Bernstein and Reimann (2001) argue, 'as an ideal type, *The Family* consists of a legally married (biologically male) husband and a (biologically female) wife' and their children. In the US, the non-birthing parent in a lesbian couple does not have *any* automatic parental legal rights of parenthood (Murphy, 2001). The ideal of heterosexual two person, monogamous couples underpins this hegemonic view of the nuclear family and it has been argued that lesbian co-mothers manage their self-representation of family in such a way as to minimize threats to familial legitimacy (see especially Reimann, 2001; Sullivan, 2001). I argue that processes of securing social legitimacy in the face of a hegemonic family narrative begin with donor selection as recipients imagine and construct kinship with potential children. Further, they do so as a means to secure legitimacy in the face of a heteronormative culture.

[10]In the late 1980s, RESOLVE, a national consumer organization on infertility, focused additional efforts on advocacy (i.e. mandating insurance coverage for infertility treatments) and de-emphasized infertility as a health issue. Using pro-family rhetoric to make medical treatment a 'natural and necessary' response to heterosexual infertility, they reinforced parenthood as a natural feature of heterosexual unions and motherhood a basic female role (Britt, 1998).

References

Agigian, A. (2004) *Baby Steps: How Lesbian Alternative Insemination is Changing the World* (Middletown, CT: Wesleyan University Press).

Akrich, M. (1995) User representations: practices, methods and sociology, in: A. Rip, T. J. Misa and J. Schot (Eds) *Managing Technology in Society: The Approach of Constructive Technology Assessment*, pp. 167–184 (New York: Pinter/St. Martin's Press).

Becker, G. (2000) *The Elusive Embryo: How Men and Women Approach New Reproductive Technologies* (Berkeley: University of California Press).

Bernstein, M. and Reimann, R. (Eds) (2001) *Queer Families, Queer Politics: Challenging Culture and the State* (New York: Columbia University Press).

Bourdieu, P. (1979) *Distinction: A Social Critique of the Judgment of Taste* (Cambridge: Harvard University Press).

Britt, E. C. (1998) Infertility as a medical problem: recasting feminist accounts of nature, science, and the law, *Science as Culture*, 7, pp. 265–280.

Bunge, R. and Sherman, J. (1954) Frozen human semen, *Fertility and Sterility*, 5, pp. 193–194.

Carsten, J. (Ed.) (2000) *Cultures of Relatedness: New Approaches to the Study of Kinship* (Cambridge: Cambridge University Press).

Carsten, J. (2004) *After Kinship* (Cambridge: Cambridge University Press).

Casper, M. J. (1998) *The Making of the Unborn Patient: A Social Anatomy of Fetal Surgery* (New Brunswick, NJ, and London: Rutgers University Press).

Casper, M. J. and Koenig, B. (1996) Reconfiguring nature and culture: intersections of medical anthropology and technoscience studies, *Medical Anthropology Quarterly*, 10, pp. 523–536.

Charmaz, K. and Olesen, V. (1997) Ethnographic research in medical sociology: its foci and distinctive contributions, *Sociological Methods and Research*, 25, pp. 452–494.

Clarke, A. E. (1995) Modernity, postmodernity & reproductive processes ca. 1890–1990 or, 'Mommy, where do cyborgs come from anyway?', in: C. H. Gray (Ed.) *The Cyborg Handbook*, pp. 139–156 (New York: Routledge).

Clarke, A. E. and Fujimura, J. H. (1992) *The Right Tools for the Job: At Work in Twentieth Century Life Sciences* (Princeton: Princeton University Press).

Clarke, A. E., Shim, J., Mamo, L., Fosket, J. R. and Fishman, J. R. (2003) Biomedicalization: theorizing techno-scientific transformations of health, illness, and US biomedicine, *American Sociological Review*, 68, pp. 161–194.

Cockburn, C. and Furst-Dilic, R. (1994) *Bringing Technology Home: Gender and Technology in a Changing Europe* (Philadelphia: Open University Press).

Collins, P. H. (1999) Will the real mother please stand up, in: A. E. Clarke and V. Olesen (Ed.) *Revisioning Women, Health and Healing: Feminist, Cultural, and Technoscience Perspectives*, pp. 266–282 (New York: Routledge).

Cowan, R. S. (1987) The consumption junction: a proposal for research strategies in the sociology of technology, in: W. E. Bijker, T. P. Hughes and T. J. Pinch (Eds) *The Social Construction of Technological Systems: New Directions in the Sociology of History and Technology*, pp. 261–280 (Cambridge: The MIT Press).

Cussins, C. (1996) Ontological choreography—agency through objectification in infertility clinics, *Social Studies of Science*, 26, pp. 575–610.

Cussins, C. M. (1998) 'Quit sniveling cryo-baby. We'll work out which one's your mama!', in: R. Davis-Floyd and J. Dumit (Eds) *Cyborg Babies: From Techno-Sex to Techno-Tots*, pp. 40–66 (New York and London: Routledge).

Dornin, R. (1998) Vol. 1998. Available at Cnn.com.

Edwards, J. (2000) *Born and Bred: Idioms of Kinship and New Reproductive Technologies in England* (Oxford: Oxford University Press).

Ehrenreich, B. and Ehrenreich, J. (1971) *The American Health Empire: Power, Profits, and Politics [a Health-Pac Book]* (New York: Vintage).

Franklin, S. (1995) Science as culture, cultures of science, *Annual Review of Anthropology*, 24, pp. 163–184.

Gibbon, S. (2002) Re-examining geneticization: family trees in breast cancer genetics, *Science as Culture*, 11, pp. 429–457.

Giddens, A. (1979) *Central Problems in Social Theory* (California: University of California Press).

Glaser, B. G. and Strauss, A. (1967) *The Discovery of Grounded Theory* (New York: Aldine de Gruyter).

Gray, C. H., Figueroa-Sarriera, H. J. and Mentor, S. (Eds) (1995) *The Cyborg Handbook* (New York: Routledge).

Gupta, A. and Ferguson, J. (1997) *Anthropological Locations: Boundaries and Grounds of a Field Science* (Berkeley: University of California Press).

Hanson, F. (2001) Donor insemination: eugenic and feminist implications, *Medical Anthropology Quarterly*, 15, pp. 287–311.

Haraway, D. (1988) Situated knowledges: the science question in feminism and the privilege of the partial perspective, *Feminist Studies*, 14, pp. 575–600.

Haraway, D. J. (1985) Manifesto for cyborgs: science, technology, and socialist feminism in the 1980s, *Socialist Review*, 80, pp. 65–108.

Haraway, D. J. (1991) *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge).

Haraway, D. J. (1992) The promises of monsters: a regenerative politics for inappropriate/d others, in: C. Nelson, P. Treichler and L. Grossberg (Eds) *Cultural Studies*, pp. 295–337 (New York: Routledge).

Haraway, D. J. (1997) *Modest_Witness@ Second_Millennium.FemaleMan©_Meets_Onco Mouse: Feminism and Technoscience* (New York: Routledge).

Hartouni, V. (1997) *Cultural Conceptions: On Reproductive Technologies and the Remaking of Life* (Minneapolis: University of Minnesota Press).

Hartouni, V. (1999) A study in reproductive technologies, in: A. E. Clarke and V. L. Olesen (Eds) *Revisioning Women, Health, and Healing*, pp. 254–265 (New York and London: Routledge).

Hayden, C. P. (1995) Gender, genetics, and generation: reformulating biology in lesbian kinship, *Cultural Anthropology*, 10, pp. 41–63.

Hayles, K. N. (1999) *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press).

Herman, H. A. (1981) *Improving Cattle by the Millions: NAAB and the Development and Worldwide Application of Artificial Insemination* (Columbia and London: University of Missouri Press).

Irwin, A. and Wynne, B. (Eds) (1996) *Misunderstanding Science: The Public Reconstruction of Science and Technology* (Cambridge: Cambridge University Press).

Jacob, M. C. K. and S C Maier, D. (1999) Lesbian couples as therapeutic donor insemination recipients: do they differ from other patients?, *Journal of Psychosomatic Obstetrics and Gynaecology*, 20, pp. 203–215.

Kaufert, P. (2000) Health policy and the new genetics, *Social Science and Medicine*, 51, pp. 821–829.

Latour, B. (2004) *Politics of Nature: How to Bring the Sciences into Democracy* (Cambridge: Harvard University Press).

Lewin, E. (1993) *Lesbian Mothers: Accounts of Gender in American Culture* (Ithaca: Cornell University Press).

Lippman, A. (1992) Led (astray) by genetic maps: the cartography of the human genome and health care, *Social Science and Medicine*, 35, pp. 1469–1476.

Lock, M. and Kaufert, P. A. (Eds) (1998) *Pragmatic Women and Body Politics* (New York: Cambridge University Press).

Lock, M., Young, A. and Cambrosio, A. (Eds) (2000) *Living and Working with the New Medical Technologies: Intersections of Inquiry* (Cambridge: Cambridge University Press).

Minow, M. (1998) Redefining families: who's in and who's out, in: K. V. Hansen and A. I. Garey (Eds) *Families in the US: Kinship and Domestic Politics*, pp. 7–19 (Philadelphia: Temple University Press).

Modell, J. S. (1994) *Kinship with Strangers: Adoption and Interpretations of Kinship in American Culture* (Berkeley: University of California Press).

Moore, L. J. (1997) 'It's like you use pots and pans to cook, it's the tool': the technologies of safer sex, *Science, Technology and Human Values*, 22, pp. 343–471.

Moore, L. J. and Clarke, A. E. (2001) The traffic in cyberanatomies: sex/gender/sexuality in local and global formations, *Body & Society*, 7, pp. 57–96.

Murphy, J. S. (2001) Should lesbians count as infertile couples? Antilesbian discrimination in assisted reproduction, in: M. Bernstein and R. Reimann (Eds) *Queer Families, Queer Politics: Challenging Culture and the State*, pp. 182–200 (New York: Columbia University Press).

Nelkin, D. and Lindee, S. (1995) *The DNA Mystique: Genes as Cultural Icon* (New York: WH Freeman and Company).

Oudshoorn, N. (2003) *The Male Pill: Biography of a Technology in the Making* (Durham, NC: Duke University Press).

Parkes, A. S. (Ed.) (1910) *Marshall's Physiology of Reproduction* (London: Longmans, Green).

Peterson, A. and Bunton, R. (2002) *The New Genetics and the Public's Health* (New York: Routledge).

Rapp, R. (1999) *Testing Women, Testing the Fetus: The Social Impact of Amniocentesis in America* (New York: Routledge).

Reimann, R. (2001) Lesbian mothers at work, in: M. Bernstein and R. Reimann (Eds) *Queer Families, Queer Politics: Challenging Culture and the State*, pp. 254–271 (New York: Columbia University Press).

Relman, A. S. (1980) The medical–industrial complex, *New England Journal of Medicine*, 303, pp. 963–970.

Rubin, G. (1975) The traffic in women, in: R. R. Reiter (Ed.) *Towards an Anthropology of Women*, pp. 157–210 (New York: Monthly Review).

Scheib, J. E. R., Shaver, M. and Phillip, R. (2000) Choosing between anonymous and identity-release sperm donors: recipient and donor characteristics, *Assisted Reproduction*, 9, pp. 1–9.

Schmidt, M. and Moore, L. J. (1998) Constructing a 'good catch', picking a winner: the development of technosemen and the deconstruction of the monolithic male, in: R. Davis-Floyd and J. Dumit (Eds) *Cyborg Babies: From Techno-Sex to Techno-Tots*, pp. 21–39 (New York and London: Routledge).

Schwartz, A. E. (1994) Taking the nature out of mother, in: D. Bassin, M. Honey and M. M. Kaplan (Eds) *Representations of Motherhood*, p. 240 (Berkeley: University of California Press).

Scritchfield, S. A. (1989) The infertility enterprise: IVF and the technological construction of reproductive impairments, in: D. C. Wertz (Ed.) *Research in the Sociology of Health Care: A Research Annual*, Vol. 8, pp. 61–97 (Greenwich: JAI Press).

Sherman, J. K. (1954) Freezing and freeze-drying of human spermatozoa, *Fertility and Sterility*, 5, pp. 357–371.

Sherman, J. K. (1979) Historical synopsis of human semen preservation, in: G. David and W. Price (Eds) *Human Artificial Insemination and Semen Preservation* (Paris: International Symposium on Artificial Insemination and Semen Preservation).

Strathern, M. (1992) *Reproducing the Future: Essays on Anthropology, Kinship, and the New Reproductive Technologies* (New York: Routledge).

Strathern, M. (1995) Displacing knowledge: technology and the consequences for kinship, in: F. D. Ginsburg and R. Rapp (Eds) *Conceiving the New World Order: The Global Politics of Reproduction*, pp. 346–364 (Berkeley: University of California Press).

Strauss, A. (1987) *Qualitative Analysis for Social Scientists* (Cambridge: Cambridge University Press).

Strauss, A. and Corbin, J. (1990) *Basics of Qualitative Research* (Newbury Park, CA: Sage).

Sullivan, M. (2001) Alma mater: family 'outings' and the making of the modern other mother (MOM), in: M. Bernstein and R. Reimann (Eds) *Queer Families, Queer Politics: Challenging Culture and the State*, pp. 231–253 (New York: Columbia University Press).

Thompson, C. (2001) Strategic naturalization: kinship in an infertility clinic, in: S. Franklin and S. MacKinnon (Eds) *Relative Values: Reconfiguring Kinship Studies*, pp. 175–202 (Durham, NC: Duke University Press).

Timmermans, S. (1999) *Sudden Death and the Myth of CPR* (Philadelphia: Temple University Press).

Timmermans, S. and Leiter, V. (2000) The redemption of Thalidomide: standardizing the risk of birth defects, *Social Studies of Science*, 30(1), pp. 41–71.

Tober, D. M. (2001) Semen as gift, semen as goods: reproductive workers and the market in altruism, *Body & Society*, 7, pp. 137–160.

Traweek, S. (1988) *Beantimes and Lifetimes: The World of High Energy Physicists* (Cambridge: Harvard University Press).

Weston, K. (1991) *Families We Choose: Lesbians, Gays, Kinship* (New York: Columbia University Press).