Science and the Family

Mary Virnoche, Humboldt State University

in *Oxford Encyclopedia of Science, Technology and Society* edited by Sal Restivo.
New York: Oxford University Press.

The Changing Family

The family is a core social institution. While marriage and children have historically defined a family, today single parents living with children, heterosexual couples remaining without children, and same-sex couples with or without children have required redefinition of the American family.

Science itself is woven into the changing family. The average life expectancy rose from 47 years in 1900 to 77 years in 2000 (Hobbs and Stoops 2002 p. 11). So people marry later in life and have more years to spend together. Women are older when they have children. They have fewer births and the children live. In 1900 the infant mortality rate (the number of deaths to infants less than one year of age per 1,000 births) was well over 100; by 2000 the rate had dropped to 10 (Hobbs and Stoops 2002 p. 2). In 1900 the most common household size was seven. Between 1940 and 2000, the most common household size was two (Hobbs and Stoops 2002 p. 2). The "sandwich generation" comprised of those in their fifties will spend as many years caring for aging parents as they did their own children (Lund 1993). In the following sections, we will explore just a few of the discoveries in the world of science and their relationship to changes in the family.

Sex and Sexuality

While sex and sexuality were American taboo in the earlier part of the 1900s, growing knowledge about human biology, sexual reproduction and birth control contributed to the decoupling of sex from procreation and marriage. While 51 percent of

men and 87 percent of the women born before 1890 were virgins at the time of marriage (Ogburn and Nimkoff 1955 p. 51), less than 10 percent of Americans today are still virgins by the time they reach 20 years of age (Risman and Schwartz 2002). Marriage is no longer the frontier for exploring sexuality.

Between 1938 and 1963 Alfred Kinsey and his colleagues collected sexual histories from more than 18,000 research participants. The famous "Kinsey Reports": *Sexual Behavior in the Human Male* (Kinsey, Pomeroy, and Martin1948) and *Sexual Behavior in the Human Female* (Kinsey, Pomeroy, Martin, and Gebhard 1953) along with widespread public lectures set the stage for the *sexual revolution*. Though his methods have been critiqued, Kinsey's work challenged the Freudian psychoanalytic model of sexuality and replaced it with a biological and social science based paradigm (Bullough 1999).

Kinsey's work and a boom in health movement publications such as *Our Bodies, Ourselves* (Boston Women's Health Book Collective 1973) had people thinking and talking about their bodies and sexualities in ways that would have shocked earlier generations. Men and women were encouraged to explore their own physical bodies on their own and in partnerships. Couples put their own sexual relationships under the microscope for inspection, comparison and experimentation.

While homosexuality appears in anecdotes throughout history, Michel Foucault, a French social historian and theorist, suggests that the construction of an identity or a category of people who are identified as "homosexual" is a recent phenomenon constituted through Westphal's 1870 article on "contrary sexual sensations" (Foucault 1976/1978 p. 43). Kinsey's work also contributed to a growing knowledge of the

commonality of homosexual encounters, as well as range of other marital sexual practices including oral sex, anal sex and masturbation.

While social science and science critique continues to make the case for the social shaping and social constructedness of sexuality (Fausto-Sterling 2000; Stacey and Biblarz 2001), biological and genetic research has tried to assert linkages between sexual orientation and biology (Gladue, Green, and Hellman 1984; Jensen 1998; LeVay 1991; Puterbaugh 1990). Framing sexual orientation as biological has been part of the political framework for the gay rights movement (Rubenstein 1993; Shilts 1987). A 1989 study found that societies that believe gays "were born that way" are less homophobic (Rubenstein 1993). Yet gay rights activists and others are aware of a sordid history where biological arguments have been the source of genocide. Nazi Germany used biological rationale to support the extermination of gays and other groups of undesirables. Yet science headlines that have suggested a biological basis for sexuality, whether founded or not, have been a part of changing attitudes about gays and gay families. As science impinges on public opinion regarding gay families, it also affects a myriad of other family issues and laws including domestic partner rights for same-sex couples, and rights to fertility treatment, adoption and child custody.

Reproductive Control

Reproductive science and technologies have been central to our ability to structure and plan for the inclusion or exclusion of children in the family. Family size, timing of children, and the options for gay couples and singles to have children have greatly expanded in the last century.

The history of the practice and science of birth control in and out of family arrangements is woven through the archives of many societies. The *Petrie Papyrus* is an Egyptian medical guide dated to 1850 B.C. and contains references to birth control methods. Some methods handed down through the ages were effective. Some were not and others caused complications.

Tone (2001) documents early correspondence between newlywed couples and their friends indicating a joint endeavor by married men and women to control conception. In 1858 we see early descriptions of rubber caps and in 1869 of rubber condoms, years after Charles Goodyears 1839 discovery of the vulcanization of rubber and its many uses. While many women knew otherwise, physicians until the 1920s continued to insist that women ovulated during their periods – as other mammals – and instructed them on a "safe period" during the middle of their cycle (Tone 2001).

Poor families and families of color have a dark history with reproductive control. While eugenics began to be discredited as bad science in the 1940s, it is estimated that more than 70,000 sterilizations were performed under U.S. state sterilization statutes that were implemented using deceit and force (Roberts 1997 p. 89). These statutes served as models for Nazi Germany sterilization law and practice. More recent social policy that funded the insertion of Norplant birth control devices under the skin, but did not funded their removal, indicates an ongoing social dilemma of the application of science to control select American families.

On the other end of the spectrum, science provides more options for conceiving children, particularly for those American families with the resources to pay. While artificial insemination dates back to the early centuries (Foote 2002), in 1978 Dr.

Edwards (an embryologist) and Dr. Steptoe (a gynecologist) in England performed a successful in vitro fertilization pre-embryo transfer. More than 20,000 babies have been born worldwide using this practice (Georgia Reproductive Specialists 2003). Fertility science has been a godsend for many couples with difficulties conceiving. Some show up on the doorstep of fertility specialists as early as 3 months after first trying to conceive. Yet the drugs and procedures come with their own physical, psychological and emotional costs. Women submit themselves to months of often costly and sometimes debilitating treatments to fulfill a dream of family that privileges biological connection to children.

Child Birth and Family

Birth used to be a family event that took place in the home. In 1900 midwives still "caught" 50 percent of babies born in the United States (Ehrenreich and English 1978 p. 93). Yet this period also marked the rise of medicine and the practice of hospital-based obstetrics. With newly found knowledge of germs and sanitary techniques including simple hand washing, England trained its midwives on the new advances. Yet in the United States, midwives were constructed as dirty and ignorant and a new cadre of white, male and inexperienced medical practitioners maneuvered birth into the institution of the hospital.

The new obstetricians introduced more "civilized" techniques such as laying down laboring women. Of course this made birthing more difficult for mothers but easier to "manage" for physicians. This position and other drug interventions created opportunities for greater intervention through instruments such as forceps and procedures

such as episiotomies. Such practices sped up the birth process, but often caused other complications (Rothman 1982).

The Natural Childbirth Movement began in the late 1940s and obstetricians like Grantly Dick-Read of England wrote *Childbirth Without Fear* (1944). Other prominent names that later entered the movement included Ferdinand Lamaze of France, and Robert Bradley of Colorado. Each helped to re-normalize pregnancy, return greater control to women, and bring attention back to pregnancy and birth as family events. Bradley's *Husband-Coached Childbirth* (1965) moved fathers off the waiting room pace and put them in a central role for birthing. This move was symbolic of the larger role that men would later come to play in the raising of children.

At the close of the 20th Century, family planning moved to the genetic level. Surveillance of pregnancy and birth with an expanding list of tests and monitoring procedures became popularized. Techniques like "embryo selection" allow an anticipating family to select and implant only those embryos without a particular genetic disease providing greater assurance of the creation of "healthier" families.

Yet today women and their partners no longer simply hope to deliver a "healthy" baby, they are experiencing an increased pressure "not" to deliver a "disabled" baby (Rapp 1997). While some women feel better about gathering as much information about their developing baby, the process is magnifying anxiety experienced by many others. These windows into the developing life have also speeded up the bonding process for familial partners as they witness in detail the development of a growing child. In-utero treatment of a human fetus with all its controversy is within the near future of science (cross reference germline genetic treatment). Until this leap, women and their partners

who discover fetal abnormalities must choose between delivering a "disabled" baby and aborting a fetus. These kinds of decisions have many legal, ethical and social implications for our changing families.

The Raising of Children

In the child we see the future. In the family, we see the future of the child. For better or worse, in science that we trust the future of both. During the last century we saw a shift from a focus on family and immediate needs, to a focus on the needs and interests of the child. On the heels of psychology's own efforts to be recognized as a science, it played an important role in transforming the field of child raising itself into science. The early American child was perceived in many ways as a miniature savage adult. Yet at the turn of the 19th Century early psychologists, mother's movement leaders, and even the leaders of domestic science began to frame childhood as serious business that must not be left to the untrained.

In the early part of the 20th century, research institutes and government conferences became centerpieces for studying and doing something about the child. The early tone was one of restraint and regularity. Women's magazines and child raising books and manuals became central mechanisms for spreading the new behaviorist theories on the subject.

The tide changed when Dr. Benjamin Spock popularized a brewing child-centered approach with the publication of *The Common Sense Book of Baby and Child Care* (1946). Against the backdrop of behaviorism, Spock's ideas were revolutionary. And if sales are an indicator of reception, it appears as if parents around the world were pleased

with the new message from the science of child development. The book went through seven editions, was translated into 39 languages, and sold more than 50 million copies making it second in sales only to the Bible (The Dr. Spock Company 2002). Earlier parents had been told that holding a crying child only spoils him or her. Spock encouraged parents to go with their instincts, cuddle the crying child, be flexible and more focused on the individual needs of each child and have fun parenting.

The struggle between child-centered permissive parenting and more restrictive parenting did not end with Spock. In fact, parents today often find themselves caught between the experts. Parents might shelve "attachment" based books like *The Baby Book* by Martha and William Sears (2003) based on non-Western child-rearing practices that emphasize parents/child physical (sleeping together) and emotional closeness. At the same time, they may reference Richard Ferber's *Solve Your Child's Sleep Problems* (1986) that emphasizes child independence and self-comfort. The formula provides for progressively increased lengths of letting the child cry in order to train her to fall asleep on her own.

The fields of pharmacology and nutrition science have had a tremendous impact on improving childhood health and all but eradicating diseases such as polio and measles. Babies are more likely to be carried to term, are born healthier, and are much less likely to die. Yet within the overall wave of medicalization, we see boundaries extended to include an increasing array of behaviors and symptoms for medical treatment and drug treatments.

As just one example, the psychiatric profession developed Attention Deficit Hyperactivity Disorder (ADHD) as a diagnostic category in the 1950s (Conrad 1975).

Ritalin (methylphenidate), the drug most prescribed for ADHD, is estimated by the World Health Organization to be given to "10 to 12 percent of boys between the ages of 6 and 14 in the United States …" (Breggin 2000). Breggin, a practicing psychiatrist, parent, and author of *Talking Back to Ritalin* (1998), has been critical of the extensive use of the drug, as well as families and physicians who in too many cases have not examined the context of the child's life for change.

And so, science is never alone in these endeavors. Like other areas in which science and medicine have extended their reach, the culture is ripe for their magic wand. Sometimes the magic eradicates disease and human suffering. Sometimes the magic creates controversy and a need for greater reflection on the context that created the need in the beginning.

Home Sweet Home: The Rise of Domestic Science

More than 90 percent of the population in the early 1800s lived in rural areas (Census Bureau 2002). The pre-industrial home was the center of production for daily life. Family members helped with the production vegetables, bread, clothing, soap, candles and even medicines. The industrial revolution and urbanization shifted many types of production outside the home and created new forms of home production. Some feminists such as Oliver Schreiner and Charlotte Perkins Gilman suggested that the transfer of production out of the home freed women to join men in the public sphere. Yet others such as Ellen Richards struggled to reinvent the home as women's domain and the family as her central project.

The foundations for the field of "domestic science" had been bubbling through the 1800s with a stream of advice manuals and books such as Lydia Maria Child's

American Frugal Housewife (1828) and Catherine Beecher and Harriet Beecher Stowe's *The American Woman's Home (1869) (Leavitt 2002).* Yet it was Ellen Swallow Richards who moved the field to new levels.

In 1871 Ellen Swallow became the first female student and then faculty member to negotiate a place for herself at MIT. Having trained at Vassar in laboratory techniques then in their infancy, Swallow made a place for herself in academy and for science in the home by applying these techniques and others to domestic matters: sanitation, product testing, food science, ventilation, and systematic cleaning arrived on the heels of urbanization that had brought with it all the health issues of human crowding (Clarke 1973).

Domestic Science legitimated higher education for women and professionalized the role of the homemaker. Swallow's focus on the home was more of a concession than a driving vision. She trained secondary education teachers (many of whom were also women) in domestic science to make the presence of women in the sciences palatable in the halls of men. Swallow's own work domesticated earlier work in epidemiology and germ theory. Cleaning and sanitation became a moral responsibility of every good homemaker.

Cleaning and homemaking took on a routinization endemic of modern time. Taylorism or the scientific management of production had similar effects in the home as it did in industry: instead of freeing time for homemakers, the standards of production were just increased. Instead of doing laundry once a month as when done by hand (Ogburn and Nimkoff 1955), "wash day" would become everyday. Ehrenreich and English (1978) argue that despite all the intensity around cleaning, it is not clear that the

intense standards improved family health. Clearly the key scientific contributions to improving the health of family members were water sanitation, waste management, and immunizations, all of which were logical extensions of germ theory. Nonetheless, with new standards of homemaking based on science, the American home was forever changed.

Domestic science home visits became a method for assimilating urban poor families into middle class American desires, if not luxuries of life. A new sense of order for family was conveyed – family schedules, cleanliness standards, food choice and preparation were all conveyed under the auspice of "right living." The movement also paved the way for "time saving" appliances that have ironically increase the amount of time that American families spend on household labor (Wajcman 1991).

Test kitchens such as the "Good Housekeeping Experiment Station" established in 1900 put the science of food chemistry into corporate practice. Yet the influence of these kitchens was as much about marketing and sales, with the "Good Housekeeping Seal of Approval" as it was about science. Photos of female home economists dressed in lab coats in kitchens gave scientific credibility to Corning's products and helped convince homemakers to use them in their own kitchens (Leavitt 2002).

The Family in Motion

The institution of medicine and the underlying science rose to glory in the late 19th and 20th centuries with discoveries in germ theory, sanitation, immunization, reproductive technologies and psychology. Its predominantly white male practitioners brought an end many human sufferings, yet created other sufferings as women, people of color, gays and other marginalized groups became victims of practices, experiments, and

related social policies, and traditional methods were prematurely discarded. As this chapter suggests, the field of genetic science is in the current spotlight with both utopian and dystopian promise. "How will science change the family?" is perhaps less the question than "What will tomorrow's family do with the science?"

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