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Technology for Sex Determination and the Gender Gap in India. 1993[1]

> ... Today Meeta returned home and cried in frustration all morning long. Meeta knows that she has been pregnant for a few months, but has told no one, not even her husband. She and her husband have been hoping to add to their family of three girls with one more child—this time the child must certainly be a boy. They do not have enough resources to raise more than four children, but they are concerned that up to this point they have not been blessed with a baby boy. At a private clinic, a "sex-test" is performed to determine the sex of a fetus three months into the pregnancy. Meeta weeps today because her fourth child, whose heart beat she heard today, is a girl. Although she loves her daughters, she cannot bear to disappoint her husband and their families again. Meeta has made a decision, tomorrow she will go back to another private clinic and abort her baby in hopes that in a few months she will be carrying in her womb the boy she and her loved ones so desperately want...

Background on India

A country of over 1 billion inhabitants and 3,200 square kilometers, India is the world's largest democracy. With a growth rate of 1.8%, the population increased to over I billion inhabitants in the year 2000 and is expected to increase to close to 1.4 billion inhabitants by the year 2025. India ranks as the 18th poorest nation in the world. 410 million people live below the poverty line in India, and mostly in rural areas.[2] In 1991 the average per capita income was $310.[3] 74% of the total population lives in rural areas, while the remaining 26% occupy urban areas, which are growing rapidly.

Only 52 % of India's population is literate. The literacy rate of women (34%) is considerably lower than that of men (62%). Only 71 females enrolled in primary schools for every 100 males, and 55 females enrolled in secondary schools for every 100 males. Life expectancy for women is 62 years of age, while male life expectancy is 61 years of age.

India is a country of great cultural diversity. While 80 % of the population is Hindu, 11% practice Islam, 3% Christianity, and 2% Sikhism, Jainism and Buddhism are each practiced by less than one percent of the population.

In the face of rapid population growth, the Indian government has taken steps to implement a family planning program. In 1971, the right to abortion was passed as one method of family planning.

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[2] The World Bank, World Development Report 1994. 1994

[3] This case uses U.S. dollars in most references to money. In 1993, $1 = 31.5-32 rupees.

India also has a striking gender gap as shown in Table 1. Economist Amartya Sen estimates that 100 million females are "missing" worldwide; 37 million of which are "missing" in India. Sen arrived at this estimate by using the female to male ratio in sub-Saharan Africa (1.02) as a benchmark to determine how many more women there should be in India.[4] In some regions a gender gap of 100 girls to 116 boys exists.

Table I

Sex Ratio in India

(Females per 1000 males)

Year	Sex Ratio
1901	972
1911	964
1921	955
1931	950
1941	945
1951	946
1961	941
1971	930
1981	933
1991	929

*Census of India

The declining sex ratio of females to males (shown in Table 1) and the implications for the future of India's population make-up concerns many people in India ranging from bureaucrats in government agencies to activists in women's organizations. Available technologies which allow couples to determine the sex of their child before its birth (chorionic villi sampling, amniocentesis, and ultrasound) in combination with abortion may allow families to control the size of their families but may also have resulted in the unintended consequence of perpetuating and perhaps expanding the country's gender gap. The new technologies thus raised complex ethical, economic and political questions about the Indian government's role in shaping the size and composition of the nation's population and in affecting individual and family choices about reproduction. At both state and central levels, efforts were made to design appropriate legislation, but with mixed results. In the early 1990's, debates continued on how to regulate sex-determination technology if at all.

Origins of sex-selective abortions

Infanticide, or killing a baby at birth, was first documented by the British during colonial rule. Usually the practice was not violent; infanticide was carried out through basic neglect and food deprivation. Today, in rural areas infanticide continues. Families reportedly use poisons (lethal combinations of opium and sand) to kill unwanted baby girls.[5] Other reports have indicated drowning or desertion as a means to eliminate female children.

During the 1980's, two medical techniques in combination with abortion gained popularity in the urban areas, as a means to help avoid giving birth to a daughter all together. Often referred to as a "sex-test" in India, amniocentesis and chorionic villi sampling (CVS) became commonly used by physicians to aid families in predicting the sex of their child.

[4] Sen, Amartya. “The Economics of Life and Death,” Scientific American. May 1993. p.46.
[5] Emily MacFarquhar, "The Echoes of Sita," LT.S. U.S. News and World Report. March 28, 1994, p. 55.

Amniocentesis and CVS were introduced in India in the late 1970's and were originally developed mainly to detect certain genetic conditions that may have serious developmental consequences. The results may help couples decide whether to continue with the pregnancy or to consider an abortion. Amniocentesis is a procedure performed 16 to 20 weeks after conception. In this procedure 15-20 ml of amniotic fluid is taken from the womb by pricking the fetal membrane with the help of a special needle. After separating a fetus cell from the amniotic fluid, a chromosomal analysis is conducted. This test helps in detecting several genetic disorders and carries some risk of spontaneous abortion (1%), premature delivery[6] and an increased risk of congenital abnormalities. CVS is a similar procedure that can be done earlier than amniocentesis (9 and 12 weeks gestation). CVS involves taking a sample of placental tissue via the cervix and in turn a study of the dividing cells can detect genetic abnormalities. CVS carries a 1% risk of miscarriage. Both tests involve a study of chromosomes which ultimately reveals the sex of the fetus.

Amniocentesis and CVS technologies entered India without any governmental controls or regulation placed on them. In 1983 the *Times of India* reported that between 1978 and 1983, 78,000 female fetuses were aborted nation-wide in connection with sex-determination tests.[7] A United Nation's study in Bombay reported that of 8,000 abortions done in Bombay after amniocentesis, only one had been of a male fetus.[8] In 1988, Bombay alone had over 300 clinics which specialized in "sex-determination." Today, the technology of ultrasound is used as a substitute for amniocentesis, despite ultrasound's questionable accuracy in the early stages of pregnancy.

Originally used by the richer classes in India, "sex-tests" have now spread to the working class and poor populations. In addition, the introduction of portable ultrasound machines has made the "sex-test" accessible to small towns and rural villages. A four-year study prepared by the Population Research Center and sponsored by the Union Ministry of Health and Family Welfare of three states in India surveyed 5,801 women between the ages of 15 and 44 years. In Uttar Pradesh alone, 91 % of those surveyed knew about the tests. And in rural villages 50% of the women aware of the test were illiterate[9].

Clinics publicly advertise their services in various ways. It is not unusual to see a sign announcing "Healthy Boy or Girl" outside a clinic. Or "Better 500 rupees now than 50,000 later," which plays on the fears of dowry to be paid for a baby girl. In addition, newspapers commonly run advertisements for the ultrasound technique as a "sex-test".

Preference for a Male Child

India is a strongly patriarchal society, and males have traditionally been more valued than females. Generally, only the male child carries on the family name. India is a country with a meager social security system mainly covering civil servants, thus leaving male children responsible for the care of parents in their old age. If a family produces only females, there is no one to ensure that the parents are taken care of in their retirement. Sons remain with the family forever, but to many Indians daughters are temporary, because they become the possession of the husband's family after marriage. Also, a male's earning power can often be double that of a female in India. In rural areas, males are seen as

[6] Vibhuti Patel, "Sex Determination and Sex Preselection Test in India," Legal Perspectives. October 10,1990, p. 27.
[7] Ibid. pg. 30
[8] Rhona Mahoney, "On the Trail of the World's Missing Women," Ms. March/April 1992, p. 12.
[9] The Telegraph.Calcutta. September 9, 1993.

physically stronger and more able to contribute to agricultural work. Only a male is seen as suitable to take over a family business or trade. In addition, there are many Hindu rites and rituals that only a male can perform. When parents die, their chance of attaining salvation depends upon a male lighting their funeral pyre at cremation.

Female children in India are discriminated against in various ways. Studies have shown that boys on average are breast-fed longer, taken for medical treatment more promptly, receive better food and are kept at school longer.[10] A CARE team in Rural Punjab found that malnutrition was found in two-thirds of the girls, but in only one-third of the boys. In urban areas of Punjab, malnutrition affected 84 per 1000 girls versus 50 per 1000 boys.[11] A study of hospital records in Bombay showed that women were more seriously ill than men when taken to the hospital.[12]

The desire for a boy has deep cultural roots in India; even phrases in Vedic[13] texts reflect this ideology: “The birth of a girl, grant it elsewhere, here grant a son.”

So entrenched is the desire for a son that a mother hopes and prays for a boy and fears the birth of a daughter.

Girls are perceived as expensive from the time of birth. They must be dressed properly, and as the girl grows up she is subject to other rituals such as an ear piercing ceremony—which can be very expensive for rural families. But the ear piercing expense pales in comparison with what is expected on a girl's wedding day.

The family of the bride typically provides a dowry to the groom's family in order to have their daughter accepted. The tradition of dowry began among the higher castes in India as women were not allowed to work outside the home. Because wives were seen as a burden, the groom's family was offered compensation. Another purpose of dowry was to provide a cushion for the woman, who was property-less because historically she could not inherit land. Dowry was compensation given to her, the jewelry hers to wear or place in safe deposit. Legally it would be hers in the event of divorce, annulment or death.[14] There was no tradition of dowry in the lower castes because women worked and were able to contribute to the family earnings. However, at the present time the custom of dowry is widely practiced by persons belonging to all castes, partly as a result of social pressure to emulate the upper castes and to boast of prosperity.[15] Other religions in South Asia such as Islam and Buddhism have also adopted dowry traditions.

In India, a wedding celebration can cost families ten to fifteen years of income. In the middle and upper classes, dowry can involve presents to the groom of gold coins, silver dishes, a refrigerator and a new car—all estimated in excess of $30,000.[16] India passed an Anti-Dowry Law in 1961, but the custom still persists today. The law was strengthened in 1984 by an amendment stating: "Taking, demanding or giving dowry is a crime punishable by fine or imprisonment." Nonetheless, the law has made little impact on this deep-rooted tradition.

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[10] DasGupta, Monica. Population and DevelopmentReview. March, 1987.
[11] Mitter, Sara S. Dharma’s Daughters. p.116. 1991
[12] Sen, Amartya. Scientific American. May 1993.
[13] Verdic texts are those written by the high priests or Brahmins in India.
[14] Mitter, Sara, Dharma's Daughters. p. 111, 1991
[15] Bumiller, Elisabeth, May You Be the Mother of a Hundred Sons. pp. 48-49, 1990.
[16] BBC documentary, Reported by Emily Buchanan, 1993.

Family Viewpoints

For many in India, the birth of a son is seen as a woman's ultimate achievement. Even though biologically, it is the male contribution that determines the sex of a child, many women blame themselves when they cannot give birth to a son. Her family may also berate her for not being capable of bearing a male child. One women said, "Our society makes you feel so bad if you don't have a son, especially when I go out for parties, people say, 'How many children? and I say 'Two girls' and they say, 'Oh too bad, no boy!'"[17]

In reaction to the use of the "sex-test" one woman quoted in *The Pioneer* of New Delhi said: "A son is absolutely necessary. Why should I produce four or five daughters before producing a son? These tests are available and everyone gets them done, so why not use them and keep our family small and balanced?" Men also have opinions on the matter. One man commented after his wife gave birth to a boy after three daughters and three abortions that he finally felt complete as three daughters were simply "not enough." Now there was a male to take over the family business, carry on the family name, and look after him and his wife once he was too old to earn an income. Another father added that it was "better to suffer one day's pain when you abort the baby, than watch her lifetime of suffering."

Physician Viewpoints

The "sex-test" industry has flourished in India in part due to the economic benefits it provides for physicians. One physician reportedly earned the equivalent of $80,000 in one year compared to the average per capita income of $425 in this area.[18] One radiologist in Sirsa explained in the *Sunday Times*:

"I got an ultrasound machine 5 years back. To begin with, I did not do sex determination tests, but then people started saying that I was not a good doctor, as I could not determine the sex of the baby and I started losing business. I was left with little choice but to start doing these tests."[19]

Some doctors also feel that they are doing humanitarian work by contributing to the country's efforts in population control. Dr. Baldeep Singh stated: "India is one of the most overpopulated countries in the world. This test will help limit the size of the family, by selective choice of the offspring."[20] The performance of the test allows families to have a choice. Dr. Aniruddha Malpani in an editorial to the *Times of India* says:

"Indians are not stupid—they are not going to spend their hard earned money on a procedure such as sex selection, unless they think they are going to benefit from it—and given today's conditions, it is cost-effective for them to select against female fetuses."

Physicians feel that in these economic conditions they can "help out the poor mother who year after year produces a baby until a boy is born."[21]

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[17] Ibid. pg. 112
[18] BBC Documentary, Reported by Emily Buchanan, 1993.
[19] The SundayTimes. July 11, 1993
[20] Ibid. 1993
[21] Bumiller, Elisabeth, May You Be the Mother of a Hundred Sons. p. 118, 1990

Dr. Rekha Barisal, one of forty physicians in the town of Sirsa who performs sex-determination tests and abortions, places this procedure within the concept of family planning:

"Sex-determination tests and abortion facilities should be available at reasonable cost in government hospitals. For those who have one daughter, it makes more sense to have a boy the next time so that the family can be planned. I think Sirsa should act as a model for the rest of the country. It is not only progressive in its thinking, but people are also open about sex determination."[22]

Despite these pressures, some physicians oppose the practice of sex determination. Raj Saia, who campaigns against the practice, stated:

"I agree that India needs to limit the size of the population, but not at any price. You cannot choose how many males and how many females. This type of population control is like Hitler trying to get a pure race by killing all the Jews."[23]

In 1991, the Indian Medical Association had not taken an official position on the issue and even accepted advertisements for sex-testing clinics in its yearbook until members protested in the previous year. Some doctors argue that according to medical ethics, a practitioner should not reveal the sex of the fetus, only whether or not it is developing normally.[24]

In the meantime, sex-determination clinics continue to open up in many areas of India. The ultrasound market is growing in India by 20% a year, reflecting the portability and easy access to these machines, and indicating the growing demand for sex-determination tests. Additional concerns have arisen over ultrasound. The results of ultrasound are not completely accurate because it is difficult to tell the sex of the fetus at eight weeks when these tests are usually conducted. But many doctors continue to claim they can determine the sex and perform abortions for these cases. Some cases have resulted in litigation against physicians. One doctor was sued when the family discovered that he aborted a male fetus, and another physician was sued because the mother carried to term a girl even though she faced potential health risks—after she had been assured that the baby was a male. Many physicians now avoid keeping a written record of the abortions they perform; instead, they just tell the mother what the sex of the fetus is. This practice may protect physicians against some litigation, but it also makes it difficult to track the prevalence and consequences of "sex-test"-related abortions.

Government Policy/ Legal Actions

India approved the right to abortion in 1971 as a method of family planning. The law permits abortion under certain restrictions, such as pregnancy through rape or failure of birth control methods, but is loosely interpreted. As a result, abortions in India have become commonplace. With sex-determination tests, policy makers find themselves in a bind. Is the right of a female fetus more important than family planning in a country of 1 billion with continuing high birth rates? One physician pointed out that the same legislators who pass

[22] Sunday Times. July 7, 1993.
[23] BBC Documentary, Reported by Emily Buchanan, 1993.
[24] Hamish McDonald, "Unwelcome Sex," Far Eastern Economic Review. December, 1991, p. 19.

the laws banning sex-determination technologies break them when it comes to their own daughters.

The state of Maharashtra, in which Bombay is located, was the first state to pass legislation to regulate sex-determination tests in 1988. The bill was introduced in response to pressure from women's groups, whose actions included media coverage, signature campaigns, and petitioning. The government of Maharashtra appointed an expert committee to propose comprehensive legal provisions to restrict the tests. The bill in effect limits the use of sex-determination tests to the detection of "chromosomal abnormalities, genetic metabolic diseases, haemoglobinpathies, sex-linked genetic diseases and congenital anomalies," but does not ban the procedure. Amniocentesis and ultrasound are still available to women who meet one of the following criteria: a women must be over the age of 35 years, have a history of two or more abortions or fetal loss, or have a history of exposure to radiation or hazardous chemicals, family history of mental retardation or physical deformities. Prison sentences were suggested for doctors and patients if the "appropriate authority" deemed it necessary. The "appropriate authority" is represented by an oversight committee composed of the same physicians who are licensed to perform sex-determination tests. All clinics performing the test must register with the "appropriate authority." This conflict of interest has made the law virtually unenforceable.

D.T. Joseph, drafter of the Maharashtra bill, defends the state's legislation in this way: "The bill serves to reinforce the equality of men and women. Even if the law only underlined a commitment to the fact that it makes no distinction between sexes, then to the extent that it reflects the values of society we have achieved a great purpose."[25]

As a result of the legislation in Maharashtra, the sex-determination tests have continued, but not openly in that state. Further, it is still possible for women to get "sex-tests" by traveling to a nearby state where the practice is not restricted. Health activists worry that tests and subsequent abortions are now being performed in unsafe conditions and that there is no way to enforce the law. Dr. Malpani also commented on this legislation in the *Times of India* editorial:

"I feel that rather than waste time trying to pass ineffective laws, we should concentrate our energies and time on the status of women in Indian society—so that boys will no longer be more "economically beneficial" than girls. Till then, I think we need to credit Indians with a little more intelligence in their ability to lead their own lives, and stop interfering with their freedom to do so."[26]

In 1990, national legislation titled "Regulation and Prevention of Misuse Bill of 1991" was introduced into Parliament. However, the legislation was postponed due to more pressing issues such as religious disputes and government transitions. In December of 1992 a parliamentary committee submitted a final report to the government. The proposed law includes the following:

- Genetic clinics will have to register with a government body before they can perform prenatal diagnostic tests.
- The tests will only be allowed to detect fetal abnormalities and can not be used for sex determination.

[25] The Statesman, New Delhi. May 7, 1993.
[26] Times of India. August 8, 1993.

- Physicians are forbidden to tell the sex of the fetus to the pregnant woman or her relatives.
- Doctors who break this law could be fined up to 50,000 rupees ($1,700) and face a jail term of up to five years.
- Couples who seek sex determination services will also face fines and prison sentences.[27]

Many activists are concerned that this bill would have the same effects as in Maharashtra—the practice will simply move underground.

Finally, some opponents argue that national legislation is inconsistent with the Government's 8th Five Year Plan, which seeks to achieve a "Net Reproduction Rate" of one. If this net reproduction rate were achieved, each mother would be replaced by one daughter. The logic is that with fewer women, reproduction will slow and overpopulation decline.

Feminist Response

The Women's Centre in Bombay first focused the public's attention on sex-determination tests in the 1980's by rejecting the argument that a woman's right to control her pregnancy extended to "sex-test" -related abortions. The Centre called sex-determination "large-scale killing of female fetuses." They argued that sex-selective abortion violated articles 14 and 15 of the Indian constitution, which guarantees no discrimination against women. But most importantly, the Women's Centre believed that using abortion as a tool for population control was objectionable as it did not take the health of the mother into consideration.[28] Repeated abortions can have a negative effect on women and may lead to fertility problems. Also many of the abortions performed are done in the second trimester of pregnancy when women must undergo induced labor in order to abort. Unsterile conditions of physicians offices also concerned feminists. Vibhuti Patel, head of the Women's Centre, expressed her concerns:

“For us it's the survival of women that's at stake. The social implications of sex-selection are disastrous. It's a further degradation of the status of women.”

Feminists like Patel argue that the declining ratio of women to men will result in disastrous consequences for India. These activists fear increased violence against women, increased rape of women, and perhaps even a condition of polyandry will result in and contribute to the spread of sexually transmitted diseases including HIV. Social activist Ravindra, R.P. expressed in her editorial in the *Times of India* (August 8, 1993):

“When the majority of women in India have no access to the basic needs of life and no right to decide on matters like education, marriage, the number of children, or even visiting their parents homes, how can one talk of their right to choose the sex of their progeny? And even if a demand for such a right is created by vested interests for an elite section of women, should it be allowed at the overall interest of Indian women?”

[27] Guru Nandan, "India to ban prenatal sex determination", British Medical Journal. Feb. 6, 1993, p. 353.
[28] Bumiller, Elisabeth, May You Be the Mother of a Hundred Sons. p. 119, 1990.

While many families claim to want a "balanced" family, feminists reject this notion by noting that no one with a boy would undergo a "sex-test" to ensure that the next child is a girl. Other women are concerned that the proposed national legislation seeks to punish women for choosing to undergo a sex-determination test. Activists believe that the women should not be punished because her choices are largely determined by family pressures and society - "her choices are not made in a social vacuum" says Patel of the Women's Centre.

Feminists continue to lobby the national government for more legislation, but hope that any bill enacted will be seriously reviewed before passage so that its provisions are effective and enforceable. Feminists also promote other activities, believing that legislation alone cannot solve India's "gender gap" crisis. Programs of the Forum and other women's groups include a rally led by daughters, a children's fair, promotion of the positive image of daughters, and a mobile fair in Bombay called "Women's struggle to survive." Ravindra concludes in a way that encapsulates many feminist views:

"The battle lines are clearly drawn. There is no room for confusion. Those committed to a socially egalitarian system should be prepared to pay a price for swimming against the current. Upholding medical ethics at the cost of monetary benefits or making money by harnessing modem techniques for perpetuating medieval values—the choice is yours."[29]

Even though the Women's Centre has managed to put this issue on the public agenda, feminists are not all in complete agreement with the regulation of sex-determination technologies and subsequent abortion. Some feminists still assert that a woman's freedom of choice should take precedence; others argue that population control is a more important issue than the number of females in India.[30]

Effects of Sex-Selection

The impact of sex-selection procedures on the sex ratio in India is difficult to determine. Because physicians often do not keep records of "sex-test" procedures or the sex of the aborted fetus, it is difficult to estimate how many female fetuses have been aborted as a result of new technology. In addition, women who use the "sex-test" procedure usually want to keep it secret.

One study, conducted in Ludhiana, a large industrial city in Punjab, where it is not uncommon to hear the names 'Akki' (meaning, fed up), 'Kauri' (meaning, bitter) or 'Beant' (meaning, endless) for female children, tried to assess the impact of sex-determination tests by studying secondary sex-ratios (SSR).[31] SSR refers to the number of males for every 100 females at birth per year. The study was directed by Dayanand Medical College and Hospital, and collected data from both hospitals and private clinics during the years 1981-1988, in Ludhiana. In addition, community-based data on sex ratio were collected from some villages in the Ludhiana district. The study found that since 1983, the secondary sex ratio of males to females has significantly increased each year. The researchers concluded that the cutoff point of 1983, when the difference between male and female births became significant, coincides with the years when centers for prenatal sex determination sprang up all over Punjab.[32] (see Table 2) The authors of the study took into account the international

[29] Times of India. August 8, 1993
[30] Burniller, Elisabeth, May You Be the Mother of a Hundred Sons. p. 122, 1990
[31] R.K. Sachar, et al., "Sex Selective Fertility Control- An Outrage," The Journal of Family Welfare. June, 1990 p. 30.
[32] Ibid, (June 1990): 33

standard that at birth the SSR should be 105 males to 100 females in order to determine the significant differences between the proportion of males and females indicated below.

Even in the rural communities sampled (Table 3), while birth rates continued to rise, by 1988 the SSR had begun to show significant differences in the birth of male and female children. This suggests that rural inhabitants may be traveling to sex-determination clinics in urban areas or they may have access to visiting physicians with portable sex-determination techniques.

Table 2: Pooled hospital data on live births, by sex. 1981-1988

Year	Total Births	Males	Females	SSR (Males/Females
1981	6043	51.15	48.85	104.70
1982	6396	51.22	48.78	105.00
1983*	5721	53.12	46.88	113.31
1984*	5844	52.96	47.04	112.59
1985*	6643	52.94	47.06	112.50
1986*	7122	52.81	47.19	111.90
1987*	8033	53.34	46.66	114.33
1988*	7253	54.92	45.08	121.80

*Differences are statistically significant at p<=.05[33]

Table 3: Pooled rural community data on live births, by sex. 1984-1988

Year	Total Births	Males (%)	Females (%)	SSR (Males/Females)
1984	941	53.67	46.33	115.82
1985	885	50.17	49.83	100.68
1986	935	54.01	45.99	117.44
1987	894	53.24	46.76	113.99
1988*	1210	54.38	45.62	119.20

*Differences are statistically significant at p<=.05"

Conclusion

In less than two decades sex-determination technology has proliferated in many forms throughout India. Of India's 22 states, only Maharashtra introduced regulation of sex-determination technologies. However, up to this point, the regulation of sex-determination technologies in this state has had little effect, other than pushing the practice out of the open. National legislation was proposed in 1991, but it is the worry of feminists and policy makers that passing laws is far simpler than the actual enforcement of the law when many interests including those of physicians, women and their families are at stake.

As the developing world gains access to new technology, governments have to carefully consider which technologies are acceptable. One such example of a new genetic

[33] PLK. Sachar, et al., "Sex Selective Fertility Control- An Outrage," The Journal of Family Welfare. June 30, 1990, p. 30.

technology is sex pre-selection. In 1986, Ronald Ericsson, an American biologist, introduced this form of reproductive technology in Bombay, but a high fee generally restricted the procedure to wealthy families. His patented technology allows parents to choose the sex of the child before contraception. The process allows male sperm to be separated on the basis of sex chromosomes. Women are then inseminated with the y-bearing sperm in hopes of delivering a male child.

As India continues to struggle with a growing population it may not wish to restrict free availability of abortions—even if the abortions are used in conjunction with sex-determination technology to eliminate female fetuses. Whether or not a shortage of females is detrimental to the population of India and the country's future remains to be proved. And the economic reality of having female children cannot be ignored. Families fear the bankruptcy a female child may bring, while women alone fear shame brought upon them should they be unable to give birth to a male child.

In the 1980's Mode Research reported that although abortions have increased, the census showed no correlation between fewer women and lower population growth—rather the opposite.[34] If current trends continue, some feel that a scarcity of women would result and could contribute to a higher value for women and perhaps reverence in the long run. Thus, some suggest that "sex-tests" and subsequent abortion may help raise a woman's status and social appreciation for women because they will be scarce in the community. If this situation occurred and women were deemed to be rare and valuable, then the current trend in sex-selection and the gender gap could be reversed.

[34] Hamish McDonald, "Unwelcome Sex" Far Eastem Economic Review. Dec. 6, 1991, p. 18.

References

Balakrishnan, Radhika. "The Social Context of Sex Selection and the Politics of Abortion in India," In Power and Decision: The Social Control of Reproduction. pp. 101-119. Edited by Rachel Snow and Gita Sen. Boston: Harvard University Press, 1994.
BBC Documentary, "Let Her Die," Reported by Emily Buchanan and Produced by Giselle Portenier.
Bumiller, Elisabeth. May You Be the Mother of a Hundred Sons. New York: Random House, 1990.
Das Gupta, Monica. "Selective Discrimination Against Female Children in Rural Punjab," Population and Development Review. (March 1987): 77-78.
Kakar, S. The Inner World: A Psycho-analytic Study of Childhood and Society in India. Delhi: Oxford University Press, 1978.
Kroeber, Arthur R. "India: Boys are Best," Far Eastern Economic Review. (July 13, 1989): 59.
Kroeber, Arthur R."Preventing Women from Being Born," The Progressive. (December 1988): 14-15.
Leo, John. "Baby Boys, To Order," U.S. News & World Report. (January 9, 1989): 59.
Mahony, Rhona. "On the Trail of the World's Missing Women," (April 1992): 12.
MacFarquhar, Emily. "The Echoes of Sita," U.S. News and World Report. (March 28,1994)
McDonald, Hamish. "India: Unwelcome Sex," Far Eastern Economic Review. (December 1991): 18-19.
McGowan, Jo. "In India, They Abort Females," Newsweek. (January 30, 1989): 12.
Mitter, Sara S. Dharma's Daughters. New Brunswick, New Jersey: Rutgers University Press, 1991.
Nandan, Guru. "India to Ban Prenatal Sex Determination," British Medical Journal. (February 6, 1993): 353.
Patel, Vibhuti, "Sex Determination and Sex Preselection test in India: Recent Techniques in Femicide." Legal Perspectives. (October 1, 1990): 27-35.
Sachar, R.K. et al., "An Insight into the Declining Sex Ratio in India: The Ludhiana Case Study," IJPSM.24 (April - June 1993): 47-50. 15
Sachar, R.K. et al., "Sex Selective Fertility Control - An Outrage," The Journal Of Family Welfare. 36 (June 1990): 30-35.
Sachar, et al., "The Female Child - A Picture of Denials and Deprivations," Indian Journal of Maternal and Child Health.(October - December 1990).
Sen, Amartya. "The Economics of Life and Death," Scientific American. (May 1993): 40-47. Srinivas, M.N. "Some Reflections on the Nature of Caste Hierarchy," Contributions to Indian Sociology. (February 1984): 152-167.
The World Bank, World Development Report 1994. New York: Oxford University Press, May 1994.
United Nations Development Programme (UNDP), Human Development Report 1992. New York: Oxford University Press, 1992.
Wertz, Dorothy C. and Fletcher, John C. “Fatal.Knowledge? Prenatal Diagnosis and Sex Selection," Hastings Center Report. (May/June 1989): 21-27.

Newspaper References

"Hunt for a Male Child," The Telegraph, Calcutta. 25 September 1993.
"Women Should Also be Punished for Foeticide," The Pioneer. Delhi. 11 August 1993.
"Whose Choice is it Anyway?," The Times of India. 8 August 1993.
"Murder by Choice," Sundav Times. 11 - 17 July 1993.
"Slaughterhouse of Foetuses," The Tribune. Chandigarh. 30 June 1993.
"One More Method to Avoid Having a Girl," The Pioneer. Delhi.16 May 1993.
"Sex-test Ban Could Punish Women," The Statesman. Delhi. 8 May 1993.
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