

Preconception sex selection is one of the most controversial issues in bioethics today. There is a widespread fear that a technology that allows parents to choose the sex of their children will have disastrous social effects. In its article “Gendercide: The Worldwide War on Baby Girls,” *The Economist* claimed that the advent of preconception sex selection will lead to a socially disruptive imbalance of the sexes in Asian and Arab countries. While it is true that prenatal diagnosis and selective abortions have led to a distorted sex ratio in countries such as India and China, it is unjustified to blame science for Asia’s social problems. It is religion not science that is responsible for the problems arising from new reproductive technologies, such as preimplantation genetic diagnosis or preconception sex selection.

There is an old Indian proverb according to which “eighteen goddess-like daughters are not equal to one son with a hump.” In its recent article “Gendercide: The Worldwide War on Baby Girls,” *The Economist* reported about the gruesome fate of daughters in countries like China, Korea and India. As is well-known, girls are still ruthlessly discriminated against in large parts of the Asian continent and the Arab world. The most outrageous crime against daughters is infanticide – the killing of newborn babies for no other reason than being of the “wrong” sex.

Although I welcome *The Economist’s* effort to keep us aware of the discrimination against baby girls, its article is highly misleading. First, it seems to imply that the advent of science and technology has made things worse in Asia. However, as everyone familiar with India’s history knows, female infanticide has a long tradition. For example, in the nineteenth century the Jhareja Rajputs killed virtually all their girls at birth. They were even known as the “kuri mar,” the “daughter killers.” One of the most important reasons for preferring sons over daughters is religion. According to Hinduism, a man who has failed to sire a son cannot achieve salvation. Only a male descendant can light the funeral pyre and ensure the redemption of the departed soul. Thus, the fault does not lie with science but with religion.

Second, the article suggests that Asia's sex ratio is at an unprecedented high. This is clearly wrong. In the eighteenth and nineteenth centuries, China's sex ratio were as high as 154:100. As famous biologist Sarah Blaffer Hrdy writes in her brilliant book *Mother Nature*: "In large cities like Beijing, wagons made scheduled rounds in the early morning to collect corpses of unwanted daughters that had been soundlessly drowned in a bucket of milk while the mother looked away."

Third, it underestimates the economic logic behind the son preference. In India, it is clearly the tradition of dowry that makes daughters unwanted. The dowry payments are considerable. They extend from US\$3,000 to US\$125,000. To marry off one or more daughters is therefore a huge financial burden. Since girls are a liability and boys are an asset, it should not come as a surprise that Indian couples prefer sons over daughters. In other countries, it is a son's labor value that makes parents long for a boy. Or, as an old Tibetan proverb has it "Daughters are no better than crows. Their parents feed them and when they get their wings, they fly away."

Fourth, it exaggerates the social implications of sex ratio distortions. It is far from obvious that "bare branches" will turn out to be a political hazard. An overabundance of men is anything but new. In his excellent book *Violent Land: Single Men and Social Disorder from the Frontier to the Inner City*, historian David T. Courtwright has shown that societies in which men outnumber women do not necessarily wreak havoc. For example, in the Wild West of America unmarried men "were put to doing hard, dangerous work, such as building railroads and canals."

Fifth, that sexual disparities rise with income is anything but a "puzzle." This is exactly what evolutionary theory predicts. As biologist Robert Trivers and mathematician Dan Willard pointed out some 30 years ago, rich parents are more likely to invest in sons and poor families are more likely to invest in daughters. The reason is simple enough. Given that all living beings are designed by natural selection, we are programmed to spread our genes. If it is all about successful reproduction, rich parents are clearly better off investing in boys than in girls. No matter how much money a girl has, she will only give birth to a handful of children, while a wealthy boy can sire literally hundreds of children. Apart from biology, even economy can account for the fact that wealthy Indians are more inclined to have boys than girls. The richer they are the more expensive it gets to marry off a daughter.

Sixth, the quoted Nick Eberstadt of the American Enterprise Institute may be right in saying that Asia's high sex ratios are the result of a "fateful collision between overweening son preference, the use of rapidly spreading prenatal sex-determination technology and declining fertility." However, he is surely wrong in claiming that discrimination against girls is a "global trend." Just look at Americans. If there is a preference at all, it is a growing preference for girls. Similarly, more than 70 per cent of Japanese women prefer daughters over sons.

Seventh, and finally, technology might not be the problem but the solution to high sex ratios and sex discrimination. As pointed out in the article, the sex ratios of first born children in China are "within the bounds of normality." The same applies to India. It is only the sex ratio for the second, third or fourth child that is severely distorted. This means that first-born daughters are not discriminated against. Or, as Monica Das Gupta put it: they are "treated the same as their brothers." Consequently, the article goes on to say: "The rule seems to be that parents will joyfully embrace a daughter as their first child. But they will go to extraordinary lengths to ensure that subsequent children are sons." Given that Indian and Chinese parents have strong religious and economic incentives for having boys, their preferences are entirely rational.

So how about helping Indian and Chinese parents to ensure the birth of a son? Instead of criminalizing sex selection we could regulate sex selection. For instance, we could restrict the use of sex selection

technology to couples already having at least one daughter. This way the parents of daughters do not have to worry. Using MicroSort, a safe and reliable technology that allows to separate X-bearing from Y-bearing sperm, they could trust they will get the son they need. Isn't better to eliminate X-bearing sperm than to kill daughters?

Who is supposed to pay for this kind of high-tech sex selection? I am sure if the Indian government were to invest their money on technology rather than on enforcing their unenforceable *Prohibition of Sex Selection Act*, there would be enough for everyone.

References

Colls P, Silver L, Olivera G, Weier J, Goodall N, Munné S. 2009. Preimplantation Genetic Diagnosis for Gender Selection in the USA. *Reproductive BioMedicine Online* 19 (Suppl. 2): 16-22.

Courtwright D. T. 1998. *Violent land: Single men and social disorder from the frontier to the inner city*. Harvard University Press, Cambridge 1998.

Courtwright D.T. 2007. Gender imbalances in history: Causes, consequences and social adjustments. *Reproductive BioMedicine Online* 16 (Suppl. 1): 32-40.

Cronk L. 2007. Boy or girl: Gender preferences from a Darwinian point of view. *Reproductive BioMedicine Online* 15 (Suppl. 2): 23-32.

Dahl E. 2005. No country is an island: A comment on the House of Common's report Human Reproductive Technologies and the Law. *Reproductive BioMedicine Online* 11: 10-11.

Dahl E. 2007. The ten most common objections to sex Selection and why they fail to be conclusive. *Reproductive BioMedicine Online* 14 (Suppl. 1): 158-161.

Hrdy S. B. 2000. *Mother nature: A history of mothers, infants and natural selection*. Vintage, London, UK.

Schulman JD, Karabinus DS. 2005 MicroSort: Scientific aspects of preconception sex selection. *Reproductive BioMedicine Online* 10 (Suppl. 1): 111-115.

The Economist. 2010. *Gendercide: The worldwide war on baby girls*. 4 March.
http://www.economist.com/world/international/displaystory.cfm?story_id=15636231

Trivers RL, Willard DE. 1973. Natural selection of parental ability to vary the sex ratio of off-spring. *Science* 179: 90-92.