

# Social sex selection and the balance of the sexes: Empirical evidence from Germany, the UK, and the US

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**Abstract** Preconception sex selection for nonmedical reasons is one of the most controversial issues in bioethics today. The most powerful objection to social sex selection is based on the assumption that it may severely distort the natural sex ratio and lead to a socially disruptive imbalance of the sexes. Based on representative social surveys conducted in Germany, the United Kingdom, and the United States, this paper argues that the fear of an impending sex ratio distortion is unfounded. Given the predominant preference for a “gender balanced family,” a widely available service for social sex selection is highly unlikely to upset the balance of the sexes in Western societies.

**Keywords** Sex selection · Sex ratio · Gender preferences · Public policy

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## Introduction

For centuries, couples have been trying to influence the sex of their children by myriads of dubious tricks. Italian men were biting their wife’s left ear during intercourse to beget a daughter and their right ear to sire a son. Swedish men were hanging their pants on the left bedpost to father a girl and on the right one to father a boy. German woodcutters were taking an axe to bed and then chanted: “Ruck, ruck, roy, you shall have a boy!” or “Ruck, ruck, raid, you shall have a maid!” [1, 2].

Sex selection is no longer a fantasy. Thanks to flow cytometric sperm separation and to preimplantation genetic diagnosis, parents are now able to choose the sex of their children prior to conception [3–7]. However, the prospect of a safe and effective technology for sex selection has not only raised old hopes, but also new fears. Thus, it has been claimed that choosing one’s offspring’s sex is “unnatural,” is “playing God,” is “sexist,” or is the first step onto a slippery slope that will inevitably lead to the creation of “designer babies” [8–15].

To our mind, none of these objections is conclusive. More importantly, even if they were, they would not justify a legal ban on social sex selection [16–23]. As far as we can see, the only valid justification for state interference would be a clear and present danger to the sex ratio. If a widely available service for sex selection were apt to cause a socially disruptive imbalance of the sexes, the legislature could require fertility centers to set a strict limit on access to sex selection and to impose a precautionary measure such as “family balancing”: If access to sex selection is limited to parents having at least two children of the same sex, then helping them to have a child of the opposite sex will, if at all, only marginally alter the sex ratio [24–29].

Thus, the real question we have to address is whether or not the assumed danger of an impending sex ratio distortion is well-founded. Does a readily available service for social sex selection indeed pose a threat to the balance of the sexes in Western societies? And: Is there any empirical evidence that calls for a precautionary measure such as family balancing? [30–32].

### The sex ratio question

In 1968, the American sociologist Amitai Etzioni prophesied that if a safe and effective preconception method were to become available, sex selection will cause a severe imbalance of the sexes in the United States of America. The practice of social sex selection, he predicted, will condemn millions of men to a life of misery in which they “will not find mates and will have to avail themselves of prostitution, homosexuality, or be condemned to enforced bachelorhood” [33]. Similarly, British embryologist Anne McLaren speculated that sex selection may cause “an increase in polyandry or a rise in the level of male aggression, whether expressed in the form of juvenile delinquency or of military endeavor” [34]. More recently, the *Mirror*’s health expert Miriam Stoppard warned: “Given that most parents opt for boys, we would end up with a society heavily biased towards men and all that comes with that—more crime, more hooligans, more drunken aggression, more wars. There would be more room for tyrants and despots, religious fundamentalists and inciters of hatred. The prospect is so blood chilling, I hope it remains in the realm of science fiction” [35].

As is widely known, heavily skewed sex ratios do indeed pose a serious problem in some Asian countries, most notably in India and China. In India, thousands of girls are aborted, abandoned, neglected or even killed right after birth. The introduction of prenatal testing and selective abortion has apparently skewed the sex ratio of some regions of India to such an extent that there are now only 793 girls for every 1000 boys. According to a recent survey, “prenatal sex determination and selective abortion accounts for half a million missing female births yearly” [36]. Given that the practice of sex selective abortions has been common for most of the past two decades, it seems that about 10 million female babies might have been aborted in India alone. In February 2003, the Indian parliament took action by amending its “Preconception and Prenatal Diagnostic Techniques (Prohibition of Sex Selection) Act of 1994.” Doctors violating the Act now face a prison sentence of up to 5 years or a fine of 10,000 to 50,000 Rupees. Despite increased efforts to enforce the Act, however, the practice of sex selective abortions seems to be continuing [37].

There are religious as well as economic reasons why Indians prefer boys over girls. 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. More importantly, Indian custom has it that the parents of a girl are expected to pay a dowry for her marriage. The dowry payments are considerable. They extend from 3,000 to 125,000 US Dollars. To marry off one or more daughters is therefore a huge financial burden. Since girls are a liability and boys are an asset, Indian couples have a strong incentive for seeking sex selective abortions. Consequently, many medical practitioners offering ultrasound scans for sex determination have taken advantage of the excessive dowry demands by advertising their services with the slogan “Invest 500 Rupees now, save 500,000 Rupees later” [38]!

In China, the problems arising from a severely distorted sex ratio seem to be even worse. In their recently published book “Bare Branches,” political scientists Valerie Hudson and Andrea Den Boer quote a Chinese state official as saying “By 2020, China will have a hoodlum army of 30 million single men,” and, consequently, warn that China’s surplus male population may not only cause national, but even international security problems [39]. Given the social impact of Southeast Asia’s severely distorted sex ratios, Italian fertility specialists Benagiano and Bianchi recently called for a world-wide ban on social sex selection [40]. We do not wish to comment on this far-reaching proposal. Yet four remarks might be in place. First, preventing, German, British and American couples from choosing the sex of their children will not change the sex ratios of India and China. Second, even if it is only meant to “send a message,” it is simply naive to assume that Indian and Chinese families will appreciate our gesture, well-meaning as it may be. As long as there are religious and economical incentives for preferring boys over girls, our moral plea will fall on deaf ears on the Asian continent. Third, legalizing social sex selection in Germany, Great Britain or the United States does not jeopardise our right to criticise the practice of sex selection in India or China. Approving of social sex selection through cytometric sperm separation or preimplantation genetic diagnosis does in no way imply that we have to approve of social sex selection through abortion or infanticide. Fourth, and most importantly, denying German, British and American couples the opportunity to have a daughter because Indian or Chinese couples have killed their girls would amount to punishing the innocent. There is no moral justification whatsoever for punishing the people of one country for actions committed by the people of another [41–43].

### Method and results

Is there any empirical evidence that a reproductive service for preconception sex selection is likely to upset the balance

**Table 1** Questionnaire

Suppose, you did not have any children but would very much want to.

1. If given a choice, would you like your first born child to be
  - a boy
  - a girl
  - do not care
  
2. If you would like to have more than one child, would you prefer to have
  - only boys
  - only girls
  - more boys than girls
  - more girls than boys
  - an equal number of boys and girls
  - do not care
  
3. It may soon be possible for parents to choose the sex of their children. Couples interested in such a service would have to visit a Fertility Center, provide a sperm sample, undergo an average of three up to five cycles of intrauterine insemination, and to pay a fee of approximately \$2.500 per attempt. Would you take advantage of this technology?
  - yes
  - no
  
4. Suppose, the procedure would require just a single cycle of intrauterine insemination, could be performed in any doctor's office, and would be covered by your health insurance. Would you then consider taking advantage of it?
  - yes
  - no
  
5. Suppose, there was a medication enabling parents to choose the sex of their children. Couples simply had to ingest a blue pill to ensure the birth of a boy or a pink pill to ensure the birth of a girl. Would you take advantage of such a medication?
  - yes
  - no

of the sexes in Western societies? For any severe sex ratio distortion to occur, at least two conditions must be met: First, there must be a marked preference for children of a particular sex and, second, there must be a considerable demand for a reproductive service for social sex selection. It is important to note that both conditions need to be met simultaneously. For example, if there was a marked preference for children of a particular sex, but couples were unwilling to use sex selection technology (because it was thought to be too intrusive, too expensive, or simply immoral), then a readily available service for social sex selection would not have any demographic effect whatsoever. Likewise, if there was considerable interest in employing sex selection technology, but couples did not have a marked preference for children of a particular sex (because they like to have an equal number of boys and girls) then, again, a widely available service for preconception sex selection would not alter the sex ratio in any way.

In order to ascertain whether or not the two preconditions for a sex ratio distortion are met, we have conducted representative social surveys in Germany, the United Kingdom, and the United States [44–46]. In all three surveys, a randomised, computer-assisted telephone interview tool was utilised to ask more than 1000 men and women between the age of 18 to 45 about their gender preferences and their interest in employing sex selection through sperm sorting. The demographic characteristics, such as age, sex, ethnicity, education, income, marital status, and region of residence, of the population sampled were weighted where necessary to reflect Census estimates of German, British, and American adults aged 18 to 45. (See Table 1 for questionnaire.)

The first question asked was: “If given a choice would you like your first-born child to be a boy or a girl?” In Germany, 14% of respondents preferred their first-born child to be a boy, 10% preferred it to be a girl, and a vast majority of 76% stated that they do not care about the sex of their first born

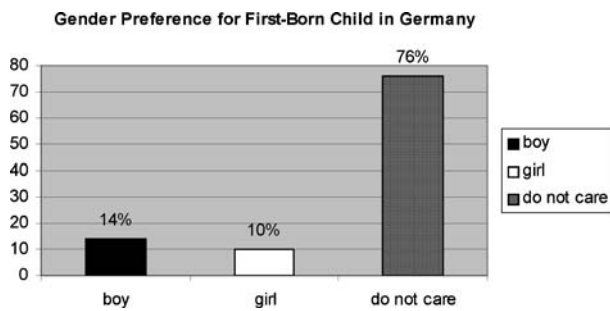


Fig. 1 Gender preference for first-born child in Germany

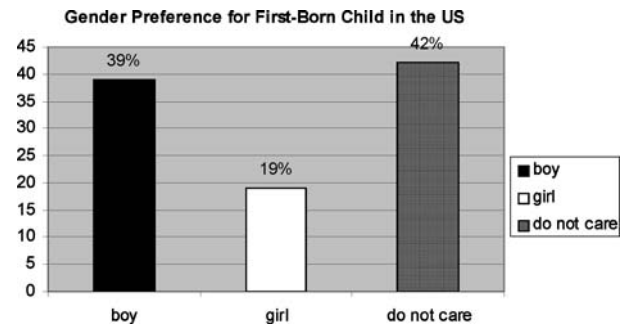


Fig. 3 Gender preference for first-born child in the US

baby (Fig. 1). The UK survey yielded a similar result: 16% of British men and women preferred their first-born child to be a boy, 10% a girl, and 74% said they do not care (Fig. 2). In the US, however, respondents had a much stronger gender preference for their first-born child: 39% preferred it to be a boy, 19% preferred it to be a girl, and only 42% did not mind the sex of their first child (Fig. 3).

The second question was: “If you were to have more than one child, would you prefer to have only boys, only girls, more boys than girls, more girls than boys, an equal number of boys and girls, or does the sex of your children not matter to you?” In Germany, 1% said they would like only boys, 1% only girls, 4% more boys than girls, 3% more girls than boys, 30% an equal number of boys and girls, and 58% stated that they did not care (Fig. 4). In the UK, 3% wanted only boys, 2% only girls, 6% more boys than girls, 4% more girls than boys, 68% an equal number of boys and girls, and 16% did not care about the sex of their offspring (Fig. 5). In the US, 5% stated they would like only boys, 4% only girls, 7% more boys than girls, 6% more girls than boys, 50% an equal number of boys and girls, and 27% said they did not mind their children’s sex (Fig. 6).

The third question inquired about the participants’ interest in using MicroSort. In order to make an informed decision, they were told what this technology actually implies. Thus they were informed that they would have to visit a Fertility Center, to provide a sperm sample for flow cytometric separation, to undergo an average of 3 to 5 cycles of intrauterine insemination, and to pay a fee of approximately US\$ 2,500

per attempt. In Germany, 6% could imagine taking advantage of MicroSort, 2% were undecided and an overwhelming majority of 92% found it simply to be out of the question (Fig. 7). In the US, the response was quite similar to that in Germany: Only 8% could conceive of employing MicroSort, 18% were undecided, and 74% said they would not want to use it (Fig. 8). Interestingly, in the UK, 21% were responsive to the idea of using MicroSort, 7% were undecided, and 71% said they cannot imagine taking advantage of it (Fig. 9).

To establish whether the 92% of Germans and the 74% of Americans who rejected the idea of using MicroSort were in fact not interested in selecting the sex of their prospective offspring or simply found the procedure to be too demanding, they were asked: “Suppose the technology would require just a single cycle of artificial insemination, and would be covered by your health insurance, would you then consider taking advantage of it?” Given these less demanding circumstances, 5% of Germans and 12% of Americans were prepared to reconsider utilising MicroSort, while 94% of Germans and 64% of Americans still rejected the idea of using it; 1% of Germans and 24% of Americans stated they were not sure.

Finally, we asked the participants to imagine that there was a medication to select the sex of their children. Rather than visiting a Fertility Center, they would simply have to ingest a “blue pill” to ensure the birth of a boy or a “pink pill” to ensure the birth of a girl. While 8% of Germans and 18% of Americans were willing to use such a medication, 90%

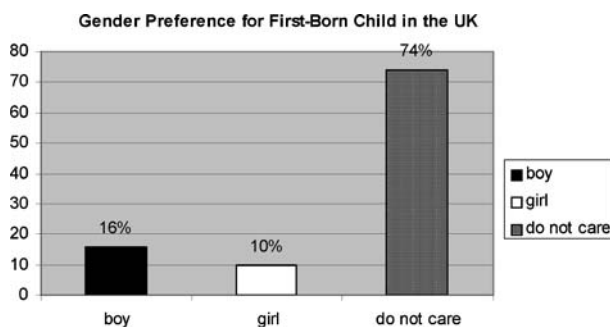


Fig. 2 Gender preference for first-born child in the UK

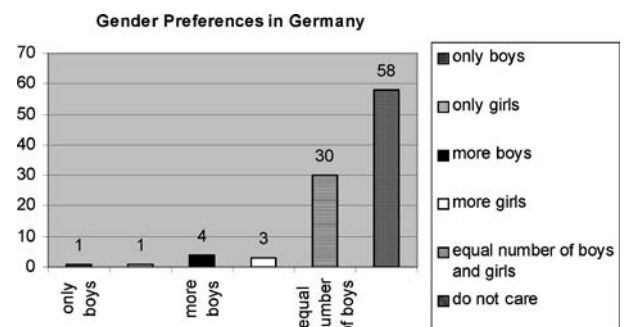


Fig. 4 Gender preferences in Germany

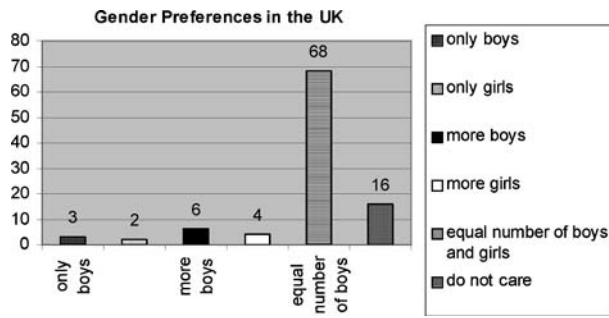


Fig. 5 Gender preferences in the UK

of Germans and 60% of Americans would not want to do so; 2% of Germans and 22% of Americans were undecided. (Data from our UK survey have not yet been analysed.)

Individual answers to all five questions posed did not yield any significant differences by age, sex, ethnicity, education, or income.

**Discussion**

The results of our surveys are consistent with findings from prior social research. For example, based on a cross-cultural survey on parental gender preferences conducted in the 1970s, American sociologist Nancy E. Williamson concluded that “if a reasonably practical, safe and effective method of sex selection were to become available, it will probably be used by relatively few couples and mostly to have at least one child of each sex” [47].

In an extensive social survey of 5,981 American married women under 45 years of age, Westoff and Rindfuss found striking evidence for the desire to have a balanced sex composition of their family: “Despite a strong preference for a first-born boy, the gender preferences for subsequent children were overwhelmingly determined by the sex of existing children: 85% of women with two boys indicated a preference for a girl, and 84% of women with two girls registered a preference for a boy [...]. Overall, 51.1% preferred the next child to be male, and 48.9% preferred the next child to

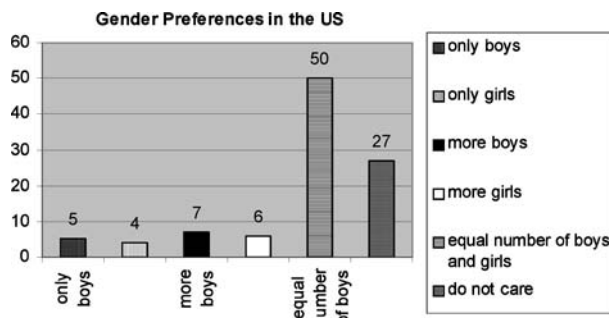


Fig. 6 Gender preferences in the US

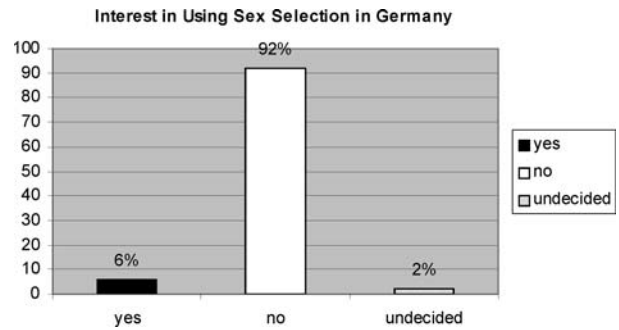


Fig. 7 Interest in using sex selection in Germany

be female, yielding a sex ratio of 104. In terms of sampling error, this is indistinguishable from the current sex ratio of 105. Thus, the implication is that, apart from the transitional period, sex control technology would have very little effect on the sex ratio at birth” [48].

Asking the proverbial “man on the street” whether or not he would like to take advantage of flow cytometric sperm sorting or preimplantation genetic diagnosis might not be the best way to determine the actual interest in using sex selection. After all, for most people it is a rather hypothetical question. Thus, it might be more useful to survey pregnant women before having their first ultrasound. Do pregnant women (who usually spend quite some time wondering whether they are going to have a boy or a girl) have stronger gender preferences than the general public? And are they more interested in employing sex selection technology?

In Germany, pregnant women do indeed differ from the population at large. First, they do have a significantly stronger preference for girls. While 14% of the general population wished their first-born child to be a boy and 10% wished it to be a girl, among our pregnant sample it was quite the reverse. Only 7% wished for a first-born son, but 18% hoped for a first-born daughter. Second, and quite surprisingly, pregnant women are even less interested in employing sex selection technology. Whereas 6% of the general population could imagine using MicroSort, only 3% of pregnant women could [49].

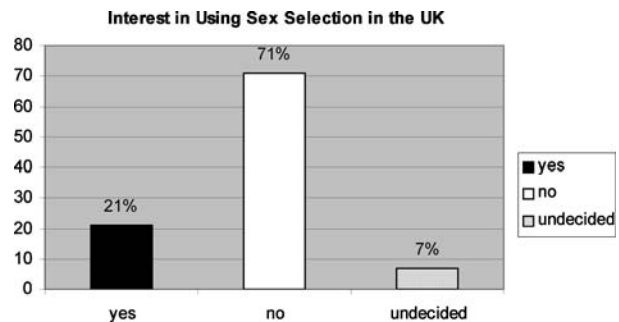
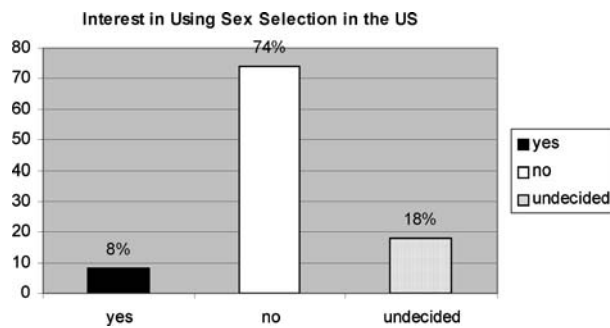


Fig. 8 Interest in using sex selection in the UK





**Fig. 9** Interest in using sex selection in the US

A US survey conducted at Cleveland State University yielded a similar result. Of 140 primiparous women 18% preferred to have a boy, 23% preferred to have a girl, and 59% expressed no preference at all. Asked “If the means were available to you so that you could have selected the sex of your child, would you have done so?,” 18% answered with yes, 53% with no, and 29% were undecided. Of the 26 women who said they would have used sex selection, 13 would have done so to ensure the birth of a boy and 13 would have done so to ensure the birth of a girl [50].

Finally, a UK survey conducted at the Centre for Family Research of the University of Cambridge produced a result akin to that of Germany and the US. Of 2359 pregnant women who had been asked “Do you mind what sex your baby is?,” 6% preferred a boy, 6% preferred a girl, 12% quite liked a boy, 19% quite liked a girl, and 58% said they had no preference for a child of a particular sex [51].

As we know all too well, there is often a yawning gap between what people say and what they actually do. Thus, it is quite reassuring that demographic research that has focused on examining when couples stop having more children does indeed confirm the stated preference for a so-called “gender balanced family.” Couples with two boys and couples with two girls are more likely to have a third child than couples with one boy and one girl – suggesting that parents with children of both sexes are much more content with their family composition. This distinct trend towards a balanced family has not only been observed in Germany, the UK and the US, but also in Canada, Italy, Spain, Sweden, Belgium, Austria, Switzerland and The Netherlands [52–56].

Maybe even more instructive than social surveys are data published by so-called “Gender Clinics.” Worldwide, there are already more than 100 Fertility Centers that offer cytometric sperm sorting or preimplantation genetic diagnosis for family balancing. According to The London Gender Clinic, within its first 18 months it had been consulted by only 809 couples. Of the 809 couples, 468 were of Indian origin, 259 European, 29 Chinese and the remaining 55 of other ethnic origins. The majority of European couples were seeking

sex selection to “balance their family,” i.e. they already had two or three children of the same sex and wanted to have at least one child of the opposite sex: “Our study shows that well over 95% of couples came for this sole purpose. They are predominantly men and women in their mid-30 s nearing the end of their reproductive life and having on average 2–3 children of the same sex” [57]. Similarly, the Gender Clinic of New York City reports that all of the 120 American couples seeking sex selection were doing so for family balancing purposes: “They selected girls when they had boys at home and boys when there were only girls” [58]. Likewise, Gametrics Limited in Alzada, Montana, which detailed the collective experience of 65 Gender Clinics says: “The overwhelming majority had two or more children of the same sex and desired a child of the opposite sex [59]. And finally, a report of the Genetics and IVF Institute in Fairfax, Virginia, which is currently conducting a clinical trial on the safety and efficacy of MicroSort, states: “The majority of couples (90.5%) in our study were seeking gender preselection for family balancing purposes, were in their mid-thirties, had two or three children of the same sex, and desired only one more child” [60].

We are not quite sure why only a minority of the general population seems to be interested in social sex selection through flow cytometric sperm sorting or preimplantation genetic diagnosis. However, an additional German survey suggests a plausible answer. When we asked 1005 men and women about their moral attitudes towards social sex selection and whether or not it should be made available to all couples requesting it, 86% of Germans were strongly opposed to it. In order to identify the concerns underlying the widespread enmity to social sex selection, participants were then asked about the reasons for their opposition. 87% of respondents held that “children are a gift and deserve to be loved for who they are regardless of any characteristics such as beauty, intelligence, or sex”; 79% claimed that sex selection is “playing God”; 76% were opposed because it was seen as “unnatural”; 49% were afraid that it may skew the sex ratio; and 40% considered it to be “sexist” [47]. In light of this survey, it is safe to assume that the lack of interest in preconception sex selection is largely due to the fact that the overwhelming majority of Germans is strongly opposed to it [60–62].

The same explanation might apply to the lack of interest in sex selection observed in the UK and the US. According to a MORI opinion poll commissioned by the Human Fertilisation and Embryology Authority, “69% of Britons do not agree with the liberal proposition that any parent should have the right to choose the sex of their child” [63]. Similarly, according to a nationwide social survey commissioned by the Genetics & Public Policy Center at the Johns Hopkins University, “two thirds of Americans disapprove of sex selection for non-medical reasons” [64].

## Conclusion

According to social surveys, demographic research and data taken from Gender Clinics, the widespread fear of an impending sex ratio distortion seems to be unjustified. Existing empirical evidence suggests that a readily available service for preconception sex selection will have only a negligible societal impact and is highly unlikely to cause a severe imbalance of the sexes in Western societies.

In the absence of any conclusive evidence for a severe sex ratio distortion to occur, it seems that we are committed to adopt a *laissez faire* approach and to grant individual Fertility Centers the freedom to issue its own ethical guidelines on sex selection. Each clinic ought to be at liberty to offer, to restrict, or to refuse a service for social sex selection, as it sees fit. If, and only if, a widely available service for preconception sex selection were to pose a clear and present danger to the sex ratio, we are permitted to impose a precautionary measure such as family balancing.

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