Of sex and gender

The word 'gender' has been used as a synonym for 'sex' since at least the fourteenth century, although this usage was described as "Now only jocular" in the first edition of the Oxford English Dictionary (1899). The nonjocular use of gender, however, has undergone a dramatic revival since the 1960s when feminist scholars introduced a distinction between biologically determined sex and socially constructed gender[1]. A number of commentators[2–5] have noted (with disapproval) a more recent increase in the use of 'gender' as a synonym for 'sex' within the biological sciences. To quantify this trend, I searched the Science Citation Index (SCI) for all titles containing 'sex' and 'gender' for each year from 1988 to 1999. For comparative purposes, similar searches were performed for articles listed in the Social Sciences Citation Index (SSCI) and the Arts & Humanities Citation Index (AHCI). These searches revealed that the sex-to-gender ratio of SCI titles has undergone a dramatic decline from more than 10 to 1 in 1988 to less than 2 to 1 in 1999 (Fig. 1), and that titles containing 'gender' outnumber those containing 'sex' in the AHCI (all years) and the SSCI (all years since 1989).

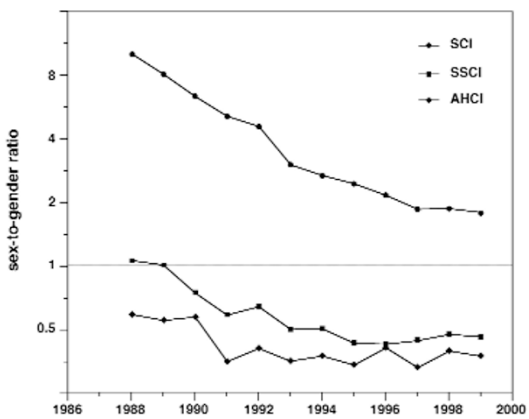

Fig. 1 The sex-to-gender ratio (number of articles with sex in the title divided by the number of articles with gender in the title) for the years 1988 to 1999.

'Sex' is used in some biological contexts where 'gender' is never used as a synonym (for example, sex in the sense of genetic recombination, sex chromosomes). Therefore, it is interesting to restrict the above analysis to contexts in which the two terms are used as synonyms. For example, there were seven SCI titles containing 'sex differences' for each title containing 'gender differences' in 1988, but 'gender differences' have outnumbered 'sex differences' since 1996. Similarly, 'gender-specific' was almost non-existent in SCI titles from 1988, but now approaches parity with 'sex-specific'.

Cursory inspection revealed that the increased use of 'gender' in SCI titles does not reflect an equally dramatic shift in scientific interest from understanding the biological determinants of sex to understanding the cultural determinants of gender. Rather, the rise of 'gender' appears to be the result of well-meaning attempts to signal sympathy with the ideas and goals of feminism. This has had the paradoxical outcome of undercutting and blurring the distinction which feminists sought to emphasize by distinguishing sex from gender.

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Genetic homogeneity of Icelanders: fact or fiction?

Much has been made of the genetic homogeneity of Icelanders[1,2]. "The native genome of Iceland offers a powerful and rare resource in genomic research—a relatively homogeneous population."[3] Fascinated by the promise of genomics, the popular press have joined in: "Iceland is probably the most homogeneous society in the world....Nowhere else has such a pure—and predictable—genetic inheritance"[4] and "...there has been little immigration to muddy the genetic pool over the centuries."[5] As Icelandic population geneticists, we sought evidence for these claims.

Analysis of heterozygosity of blood-groups and allozymes[6] showed Iceland falling among neighbouring countries for mean and rank, and even having the highest heterozygosity for some loci (Table 1). For 300 microsatellite markers, average heterozygosity in Iceland is 0.75 (ref. 2; compared with 0.79 for Europe[2] combined), higher than the 0.70 for 5,264 loci spanning the entire genome in the French population[7]. Thus, protein or microsatellite data do not support claims of Icelandic homogeneity.

To cast further light on this, we also studied D-loop mitochondrial DNA (mtDNA) variation of a 360-bp fragment[8] among 73 randomly selected volunteer Icelandic subjects as described[9]. We detected 44 polymorphic sites, defining 37 haplotypes belonging to the major European haplogroups[10,11]. Haplotype and nucleotide diversities were both high ($\hat{h}$ =0.96±0.008, $\hat{\pi}$ =0.0122±0.007), in agreement with previous results[12] and indicating that Icelanders rank among the most genetically variable Europeans (Table 2). The mismatch distribution[8] compared with expectation of the sudden expansion model[13] is compatible with an expansion 20,000–25,000 years ago, similar to European populations in general[14]. Simulated confidence limits[13] do not support a model of a recent bottleneck and subsequent expansion corresponding to the colonization of Iceland 1,100 years ago, thus indicating nothing unique