

# A Bit of Logic Goes a Long Way: A Reply to Sanderson\*

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## *Abstract*

*Sanderson's comment (Social Forces 80:1) is marred by logical and factual errors. Most of them stem from its confusion of a polygynous marriage with a polygynous society, misinterpretation of basic principles of evolutionary biology and psychology, and errors in statistical argument.*

I appreciate Sanderson's attempt to critique our original article (Kanazawa & Still 1999). Unfortunately, however, virtually every sentence in Sanderson's comment contains some logical, mathematical or factual error or else reflects flawed statistical procedures or misinterpretation of evolutionary psychology. The space limitation does not allow me to correct all of the mistakes, sentence by sentence, so I will instead concentrate on some of the main ones.

## **The Mathematics of Polygyny**

Many of the erroneous assertions in Sanderson's comment stem from the confusion of a *polygynous marriage* with a *polygynous society* (or a polygynous institution of marriage). A polygynous marriage is a marriage where one man is married to several women. In contrast, a polygynous society decidedly is *not* a society where many or all men are married to several women. A polygynous society instead is a society where a very few men have many wives, most have only one wife (who is not as desirable as one that they could have married in a monogamous society), and many have no wives. Given a 50-50 sex ratio, polygynous marriages are always

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limited to a minority of men in a polygynous society. A society is considered to be extremely polygynous when a quarter of men have more than one wife (Levinson 1991-95).

At one point, Sanderson claims that “between 20 and 49% of males are polygynously married in 32% of the societies and half or more of the male population is involved in polygynous marriages in another 9% of the societies” (330). A moment’s reflection will reveal that *this is mathematically impossible*. In fact, the study that Sanderson cites (White 1988:Table 1, column 12) does not say what Sanderson thinks it does. The numbers in White’s table refer to percentages of *marriages* (or married men), *not* men in general (541). In the most extreme case, if all women are married to one man, 100% of marriages in this society are polygynous, but only one man is involved in a polygynous (or any) marriage. Given a 50-50 sex ratio, it is mathematically impossible for more than 50% of men to be polygynously married. Further, the more men are involved in polygynous marriages, the more men have to remain wifeless.

That is why Sanderson’s comment erroneously asserts that “If men and women were asked to start from scratch in a hypothetical society, I would predict that few women but many men would choose polygyny” (9, n1). Of course, if men were given the choice between being married to one woman and being married to several women, most of them would choose the latter. However, that is not the choice that men would face in this hypothetical society of Sanderson’s construction, because the latter choice is mathematically impossible. The choice men must make behind the Rawlsian veil of ignorance is between a society in which they are almost guaranteed a wife (monogamy) and a society in which there is a significant likelihood that they will remain wifeless (polygyny). Given this choice, most men will choose the former. In other words, *while men prefer polygynous marriage to monogamous marriage, they prefer monogamous society to polygynous society*. All of this should be very clear from the ingenious illustration by Wright (1994:96-99), which we discuss extensively in our original article (Kanazawa and Still 1999:27-28). To reiterate, *polygyny benefits most women, while monogamy benefits most men*.

#### FEMALE CHOICE

Contrary to what Sanderson’s comment claims, nature does not reserve a special place for humanity. The basic principle of evolutionary biology and psychology is that *Homo sapiens* is just another species in nature, and all the laws of nature, especially laws of evolution by natural and sexual selection, apply to humans just as much as they do to all other species (Kanazawa 2001:1134-37). When it comes to intersexual selection, the law states that the sex that invests less into the offspring is sexually more aggressive, and the sex that invests more is sexually more choosy and coy (Trivers 1972). This means that, among most mammalian species

(including all primates), the female is more choosy than the male, and thus sex and mating become a female choice (Kirkpatrick 1987; Small 1993).

There have been no exceptions to this rule formulated by Trivers (other than the proverbial “exceptions that prove the rule,” species where the male makes more parental investment into the offspring and as a consequence is more choosy and coy sexually than the female [Williams 1966:171-87]). Sanderson is therefore wrong when he asserts that “it is well known that in humans this pattern has been reversed so that it is the female rather than the male who is the primary object of sexual attraction” (9-10, n 2). Curiously, Sanderson does not cite a single reference to support his claim. No matter how much we may wish otherwise, humans are not an exception in nature; no species is. There is by now a significant amount of evidence to demonstrate that men lek (conspicuously display their genetic quality) and women choose from among the available men (Dunbar, Duncan & Marriott 1997; Kanazawa 2000; Kanazawa & Frerichs 2001; Lycett & Dunbar 2000; Miller 1998, 1999; Townsend & Levy 1990).

The logic of female choice is apparent in the concept of ecologically imposed monogamy, which Sanderson discusses (333). If sex and marriage were a male choice, ecologically imposed monogamy would not exist. What would men care if they are too poor to provide for multiple wives and their offspring? If sex and marriage were a male choice, such poor men would still marry polygynously and produce children with all of their wives, as long as the children have nonzero probability of survival to sexual maturity. Sperm is cheap to produce and limitless in supply, so men, unlike women, can potentially produce an unlimited number of children in their lifetimes. However, such poor men would not marry polygynously and instead practice ecologically imposed monogamy *because women care* whether or not the men have sufficient resources to invest into their offspring. Women would not marry poor men polygynously if the men do not have additional resources to invest into the offspring. The very concept of ecologically imposed monogamy therefore logically implies female choice.

If biological logic is not apparent, I would suggest two simple thought experiments. First, imagine a society where sex and mating indeed is a male choice, as Sanderson imagines; sex happens whenever men want it and men can have sex with any woman they want to. What would happen in such a society? *Absolutely nothing*, because people would never stop having sex! There will be no civilization in such a society, because people will do little besides having sex. This is why gay men have significantly more sex partners and have sex significantly more frequently than straight men, because there are no women in their relationships to say no (Blumstein & Schwartz 1983:195-198; Laumann et al. 1994:313-16, Table 8.4). For instance, among sexually active respondents, straight men on average have had 16.5 sexual partners since age 18; gay men have had 42.8.

In reality, women often do say no to men. That is why men throughout history have had to conquer foreign lands, win battles and wars, compose symphonies,

author books, write sonnets, paint portraits and cathedral ceilings, play in rock bands, become political leaders or industry tycoons, and make scientific discoveries in order to impress women so that they will agree to have sex with them (Kanazawa 2000; Miller 1998, 1999). There would be no human civilization if sex and mating were strictly a male choice.

Here's the second thought experiment. If sex and mating were a male choice, how is a regular copulation different from rape? Why is rape so traumatic and devastating to women if it is no different from a regular copulation (Thornhill & Thornhill 1983)? Rape is so traumatic and devastating to women precisely because that is the *only* time when a sexual copulation is not a female choice. All the other instances of sexual intercourse are treated and perceived differently because they are always a female choice. If sex and mating were a male choice, as Sanderson claims, then women would not make any distinction between rape and regular copulations, and rape would not be traumatic and devastating to women.

#### STATISTICAL ARGUMENT

Sanderson attempts to refute our empirical conclusions, drawn from our multivariate analyses, with bivariate correlation coefficients. Elementary statistics reveals that partial regression coefficients in correctly specified models are much better estimates of the true effects of variables than bivariate correlations with no controls. First, I'm not sure if the bivariate correlation coefficient Sanderson computes ( $r = -.132$ ) is statistically significant, since Sanderson does not provide the significance level for the coefficient. I would not be surprised if the coefficient is not statistically significantly different from zero. Second, if the coefficient is statistically significant, then the negative bivariate correlation between resource inequality and polygyny is obviously spurious on account of one or more control variables that we include in our multiple regression equations, for the partial effect of resource inequality on polygyny is significantly positive.

Thus, Sanderson's comment loses force because of logical and factual errors. It falls short of the mark because it misinterprets or misuses rules of statistical reasoning and basic principles of evolutionary biology and psychology.

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