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Brain Sex: How the Media Report and Distort Brain Research*

Janet Bing

Testosterone gives men a particular advantage in that it is focusing and galvanizing a brain that is already, by its very structure, more focused than the female. Remember that the male brain is a tidier affair, each function in its special place . . . Biology, then, every bit as much as social conditioning, militates against a strongly feminine role in areas traditionally regarded as male preserves.

In this quote from *Brain Sex: The Real Difference Between Men & Women*, Moir and Jessel (1989, p. 96) explain that women should be excluded from certain "male preserves" because their brains are different. *Brain Sex* illustrates how reports of scientific research first show differences between groups and then, with no explanation, equate *difference* with *deficit* or inferiority, a ready-made explanation for limiting the opportunities of girls and women. This is a successful strategy because when one biological myth about biological essentialism becomes discredited, a new one can be quickly found to replace it. Current arguments for essential differences between the sexes (and, by implication, the inferiority of females) can be found in reports of brain research. What is troubling about current discoveries of differences between male and female brains is not the research itself, but the way this information is reported, distorted, and widely disseminated by the media and then used as a justification for discrimination.

In the late 1990's, newspapers and magazines informed the public that men have four billion more brain cells than women (Beagle, 1997; Vazsonyi, 1997), that men are more intelligent because they have larger brains (Siddiqui, 1996), that women's brains shrink during pregnancy (Abraham, 1997; Reuter, 1997), that women talk more because the areas of the brain that control language are larger in women than in men (Hall, 1997), and that women become depressed because of their brains (Leutwyler, 1995, News Service Reports, 1997). Other articles tell us that because of their brains, the sexes are at war (Beagle, 1997), can't communicate, and are "worlds apart" (Bower, 1995).

In this paper, I explore three closely related issues related to how the media influence public attitudes. I first examine how newspapers, magazines, and trade books simplify, exaggerate, and sometimes misrepresent research findings about the brain in ways that suggest that differences between males and females are inherent, categorical, and unchangeable. I then show how some writers begin by discussing difference, but then quickly redefine any difference as deficiency and as an excuse for limiting vocational, political and educational opportunities for women. Finally, I argue that feminists should avoid the "difference debate" altogether and suggest that the important issue is equal opportunity, not equal ability.

Gender Polarization, Biological Determinism, and Androcentrism

In her book, *The Lenses of Gender*, Sandra Bem (1993) shows how biological essentialism has long been used to explain why women cannot perform certain tasks and activities as well as men. Citing Hippocrates, early scientists accounted for sex differences on the basis of *complexions*, the balance of the qualities hot, cold, moist, and dry. At that time men were granted more rights because they were judged to be superior: men had greater "heat" than women, which allowed them to purify their souls (Cadden, 1993: 171). The science has changed, but the arguments have not. In 1970, in response to a plea by Representative Patsy Mink that women's rights deserved the highest priority at the Democratic party's Committee on National Priorities, physician and committee member Edgar Berman responded that "raging hormonal influences" caused by the menstrual cycle and menopause should exclude women from executive responsibility (Jamieson, 1995:53). Arguments from biological essentialism are apparently still taken seriously (as in Rushton, 1995).

Those who assume biological essentialism often use *gender polarization* to divide humanity into two mutually exclusive classes. As Bem (p.2) defines it, gender polarization establishes "a cultural connection . . . between sex and virtually every other aspect of human experience," including those that have nothing to do with sex. Scott (1988:45) describes how gender polarization works:

In effect, the duality this opposition creates draws one line of difference, invests it with biological explanations, and then treats each side of the opposition as a unitary phenomenon. Everything in each category (male/female) is assumed to be the same; hence, differences within either category are suppressed.

Underlying both biological essentialism and gender polarization, *androcentrism*, stipulates males to be the norm, defining females and female behavior in reference to that norm.

Although the details have differed in different eras, biological determinism, gender polarization and androcentrism have a long history of excluding women and racial minorities from education and positions of public responsibility. For example, in 1873, Edward Clark's *Sex in Education* used the concept of "vital force" to argue against the education of women. Since the human nervous system was believed to have a fixed amount of vital force, any energy spent in the development of a woman's brain would be diverted from her reproductive organs, endangering her primary role as a mother. (Bem, 1993: 10).

The Brain and Biological Essentialism

Most people no longer believe that women's wombs will suffer when they use their brains, but women are still being informed by researchers and the media that men's and women's brains are essentially different. The media continue to seek new ways to ask "How are men and women different?"

Social claims based on brain research have long been used to distance privileged groups from those judged to be less worthy. As Gould (1980:153, 1981: 52-69) shows, nineteenth-century scientists such as Morton and Broca looked for and found "objective" evidence to prove that whites had larger brains than Indians and Blacks. Morton, for example, believed he was being objective and scientific, but his unconscious biases were so powerful that they influenced his results (Gould, 1981:69). Broca accepted the "scientific truth" that "[w]omen, like it or not, had smaller brains than men and therefore, could not equal them in intelligence." (Gould, 1980:153) Not only were women's brains smaller (since smaller people usually have smaller brains), they were assumed to be deficient.

Despite many scientific counterarguments, problematic research about the relative size of male, female, and African-American brains is still being done. In his 1995 book, *Race, Evolution and Behavior*, J. Philippe Rushton, a psychologist at the University of Western Ontario, claims that different races have different brain sizes. On the basis of statistical evidence he concludes (p. 190) that Blacks and women have smaller brains and lower mental abilities than white males. He claims that "there is a small but robust correlation between brain size and intelligence" (p. 260). It is surprising that this research continues to be funded and published, in spite of what Fausto-Sterling (1985:37) calls the "elephant problem":

if size were the determinant of intelligence, then elephants and whales ought to be in command. Attempts to remedy this by claiming special importance for the number obtained by dividing brain size by body weight were abandoned when it was discovered that females came out "ahead" in such measurements.

The brain research by Rushton has gotten little sympathetic notice in the media, possibly because his claims are racist as well as sexist (Siddiqui, 1996). However, other research exploring differences between male and female brains, such as that of Bennett and Sally Shaywitz and their colleagues (1995: 609) at Yale University, was widely reported and discussed in the media. The Yale researchers claimed to have found "clear evidence for a sex difference in the functional organization of the brain for language."

In one of three parts of their study, female and male subjects were asked to perform rhyming tasks. For one task, magnetic resonance imaging scans showed left lateralization of brain activity for all of the men (19

subjects) and 42% of the women (8 subjects), but showed bilateral activity for 58% of the women (11 subjects). The results were based on a limited number of subjects. The task indicating such "remarkable" differences was that of judging whether nonsense syllables rhymed; this task activated areas of the brain believed to be involved in phonological processing.

The other tasks in the experiment, orthographic and semantic processing, revealed **no** differences by sex for the 38 subjects. In other words, claims of "remarkable" and "essential" differences by sex were based on the bilateral processing of 11 women for a single rhyming task. Patterns of 42% of the women and results of the two other tasks, which showed no variation between the sexes, were minimized or ignored, both in the authors' report in *Nature* and in subsequent reports in popular periodicals.

For example, *Science News* announced the results of the Yale experiments with the headline "Brain scan tags sexes as worlds apart" and introduced the story with the lead, "More often than they would like, men and women have trouble talking to one another" (Bower, 1995:101). *Jet's* cover story "Why men and women cannot be like each other" reported that "Researchers at Yale University recently discovered that men and women will never be like each other because they use their brains differently" and concluded, "Many researchers agree that it's no wonder the battle between the sexes rages on." ("Why men and women cannot be like each other" 1995:15-16). *Omni magazine* (Phillips, 1990) reported the results this way: "Male and female brains aren't the same. Does this mean that sexual differences are biologically determined?" Reading these articles, it is easy to forget the basis for the reported differences. One wonders how the processing of a simple rhyming task can possibly be characterized as a "battle between the sexes."

Some of the sex and brain research reported in newspapers and magazines concerns the effects of sex hormones on the brain, primarily on the brains of cats and rats. There is little doubt that sex hormones do affect the brain, just as they do other parts of the body. The majority of researchers who investigate the hormonal effects are careful to note that the human brain is extremely complicated, and most researchers caution that, on the whole, very little is understood about how the brain works.

However, others, such as Doreen Kimura, claim that "the effects of sex hormones on brain organization result in differently wired brains in girls and boys" (1992: 119) and that different hormones result in different potentials in almost every aspect of experience. Kimura (1992:121) says, "The hormonal effects are not limited to sexual or reproductive behaviors: they appear to extend to all known behaviors in which males and females differ." Having discovered differences in the brain, Kimura (1992:125) speculates about social roles:

The finding of consistent and, in some cases, quite substantial sex differences suggests that men and women may have different occupational interests

and capabilities, independent of societal influences. I would not expect, for example, that men and women would necessarily be equally represented in activities or professions that emphasize spatial or math skills, such as engineering or physics.

Kimura reveals her assumptions about biological essentialism both in her choice of the metaphor "differently wired" and in her reservations about societal influences. Kimura looks for and finds differences between males and females, and her work is published for popular as well as scientific audiences (Holloway, 1990; Kimura, 1992; Kimura, 1985).

Research showing difference is generally published because academic books and journals have a bias towards reporting differences and against reporting negative results (Crawford, 1995, chapter 1). In discussing differences in brain laterality, Springer and Deutsch (1993:211-12) note:

Investigators are much more willing to report differences between groups (and journal editors are much more eager to accept such studies) than they are to publish negative or "no-difference" results. Critics have suggested that journals contain only the tip of the sex-differences-in-laterality-research iceberg and that the majority of studies with negative results are never published.

As Kimura (1992: 121) admits, "We strain to look for differences and, of course, tend to emphasize the few we find."

However, to her credit, Kimura, like most researchers, acknowledges both the complexity of the problems she investigates, the emphasis on differences, and the enormous overlap found within groups:

First, biological sex itself has turned out to be much more variable and dynamic than we ever imagined. And brain-organization patterns are even more variable from person to person, and probably even within the same person at different times. Further, on most tests of cognitive ability there is enormous overlap of men and women. (Kimura, 1992: 121)

What is this "enormous overlap"? Many researchers have claimed that, on average, males have better spatial skills and females have better verbal skills. In discussing the data from Maccoby and Jacklin (1974) about male and female spatial and verbal skills, Fausto-Sterling (1985:33) explains:

Maccoby and Jacklin point out that, as with differences in verbal skills, differences in spatial skills are quite small--accounting for no more than 5 percent of the variance. Expressed another way, if one looks at the variation (from lowest to

highest performance) of spatial ability in a mixed population of males and females, 5 percent of it at most can be accounted for on the basis of sex. **The other 95 percent of the variation is due to individual differences that have nothing to do with being male or female** (emphasis added).

Effect sizes below 5 percent are not statistically significant and are rarely emphasized in either scientific reports or news articles. In contrast to the widely reported results found by Shaywitz and his Yale colleagues, Kimura's (1992:120) findings were not considered news:

Effect sizes below 0.5 are generally considered small. Based on my data, for instance, there are typically no differences between the sexes on tests of vocabulary (effect size 0.02), nonverbal reasoning (0.03) and verbal reasoning (0.17).

Unfortunately, books for general audiences, such as those of Moir and Jessel (1991) and Goldberg (1977, 1993) generally ignore any similarities and the extent of overlap. For example, Moir and Jessel (1989:55) claim:

The world, in one sense, means different things to each sex. This phenomenon can be observed at such an early stage and is sometimes so obvious--that it further undermines the argument that society, rather than sexuality, conditions these inherent biases.

This is exactly the emphasis on differences that Cynthia Epstein (1988:37) cautions against:

Reports of sex differences tend to gloss over the size of difference. The titles of articles that report findings convey the impression of mutually exclusive categories rather than overlap. Thus, results tend to be perceived as based on attributes that are innate or set early in life.

Authors such as Moir and Jessel (1991:162) and Goldberg (1993, 1997) cite the research of scientists like Kimura and Shaywitz *et al.*, distort their results, and then use them to argue that men consistently end up in more powerful positions and have higher salaries because of their biological makeup. They conclude that women, unlike men, don't have a biological need to pursue power (Moir and Jessel, pp. 156-157). Goldberg (1993:68) summarizes:

Whatever the terminology used, the important point, and the central argument presented in this book, is that differences in the male and female neuro-endocrinological systems are such that the environmental stimulus of hierarchy, status, or a member of the other sex elicits from the male a stronger tendency to give up whatever must be

given up--time, pleasure, health, physical safety, affection, relaxation--for the attainment of a higher hierarchical position, for a social role which is rewarded by greater status, and for dominance in male-female relationships.

A number of the claims that Goldberg, Moir, and Jessel make about brain difference are clearly questionable. For example, Moir and Jessel claim (p. 150) that women are biologically more suited than men to do housework because men's brains do not do not predispose them to notice dirt. They also claim (p. 105) that because of their brains, "men are born to be more promiscuous."

What is wrong with emphasizing biological difference?

Although some readers have no difficulty recognizing the biases in books such as *Brain Sex* (Moir and Jessel, 1992), *The Inevitability of Patriarchy* (Goldberg, 1977), and *Why Men Rule* (Goldberg, 1993), others seem eager to accept "scientific" arguments that males and females are essentially different.¹ Subsequently, it is a small step to the conclusion that males and females should have different responsibilities and opportunities, as writers such as Kimura, Joseph, Goldberg, and Moir and Jessel all propose. The strategy is usually to note average differences between large groups of males and females, ignore large areas of overlap, assume that all members of each category are the same, find biological or evolutionary explanations, and then generalize to social issues, urging women to avoid traditional male preserves and privileges.

Ritchie (1975) reports how biological essentialism and gender polarization have historically been used to exclude women from voting rights and public office. For example, she discusses the *Towns Improvement (Ireland) Act (1854)*, in which the question was whether to allow women to vote. In overturning a decision that would have allowed women to hold public office, the judge based his negative decision partly on biology. He admitted that there had been cases in which women had been capable of holding office, but stated:

Having regard to every one of the reasons of the Common Law, the subordination of sex, the inferiority of bodily ability, and the mental inferiority, in the sense explained [less education and mental training], as well as to decency and decorum, I am not sorry that I am able, on the best consideration I have been able to give the case, to come to the conclusion that this judgement ought to be reversed (Ritchie, 1975: 693).

Reasoning based on biological essentialism and fundamental differences is apparently still an issue for some judges. In 1966, Mississippi's Supreme Court justified the exclusion of women from juries "so that they may continue their service as mothers, wives, and homemakers, and also to protect them . . . from the filth,

obscenity and noxious atmosphere that so often pervades a courtroom during a jury trial" (*State v. Hall* 187 So. 2nd 861,863, Miss., quoted in Jamieson, 1995:101).

More recent lawsuits in which male and female differences have been issues include the 1973 *EEOC v. Sears Roebuck & Co.* (Jamieson, 1995:112), a 1992 class action lawsuit against Lucky Stores (Jamieson, 1995:114), and the 1993 *Harris v. Forklift Systems Inc.* lawsuit (Jamieson, 1995:119). The issue of "fundamental differences" is still being debated in court cases in the U.S.

Presumably, new studies showing how the brains of males and females differ could be used as evidence of fundamental differences for future court cases. The emergence of new "facts" has historically signaled new approaches to gender polarization. As Hess (1990: 81) reminds us,

For two millennia, 'impartial experts' have given us such trenchant insights as the fact that women lack sufficient heat to boil the blood and purify the soul, that their heads are too small, their wombs too big, their hormones too debilitating, that they think with their hearts or the wrong side of the brain.

How is the distortion of research in the media related to what happens in the courts, board rooms, or educational institutions? Most of the population hear about research findings only when the results are reported in newspapers and magazines and if judges, juries, legislators, and policy-makers read articles reporting scientific "proofs" of biological differences, such information is likely to influence their judgments. Good science is, after all, based on facts.

The Perception of Facts

The "facts" that the media present on any subject, however, are often those that reinforce prevailing ideologies. Romero (1986:72) discusses how journalists chose and present certain facts in news stories, but ignore others:

Regardless of the events he attends, his flexibility in characterizing them remains. From the exercise of this freedom, and from such influences on his decisions as habit, ideology, and his understanding of what readers want, come the "facts" that we conventionally accept as such in the press.

In addition, even when facts contradictory to general beliefs are reported, readers may ignore them. People often ignore any information that conflicts with their beliefs or preconceived ideas. Schaff (1984) calls this tendency to disregard any facts and opinions that conflict with prevailing beliefs *cognitive dissonance* (Festinger, 1957) and offers a summary of some of the research about it. Schaff (1984:96) explains that:

in conflict situations, if the opinions and attitudes (in the sense of readiness to act) of a human being concerning certain issues, primarily social ones, are at variance with the realities of life and if neither those realities can be brought into agreement with the said opinions nor those opinions modified without ruining the ideology of their carrier, then a psychological defense mechanism is put into operation to make one's mind immune against inconvenient information.

Schaff claims that facts inconsistent with previous beliefs and biases can be intellectually acknowledged, but "emotionally blocked," overlooked, and not assimilated. According to Schaff (p. 94):

[s]uch situations are in a sense schizophrenic because a given person at the same time knows something and does not know it, which, while it must appear strange, often does occur in practice. This in turn breeds specific forms of dogmatism and the phenomenon of 'closed mind,' deaf to all arguments.

If the media repeatedly tell the public that males and females are essentially different because they have different types of brains, and if the public seems eager to hear this message, how is it possible to introduce ideas that would encourage people to reexamine their beliefs that males and females are essentially different? Even if a large amount of data can be collected to show that the claims of books such as *Brain Sex* are not accurate, how does one effectively get this message across?

Reframing the Issues

Nobody denies that there are biological differences between the majority of males and the majority of females. Given the obvious differences, why should feminists be concerned with the question of whether or not male and female brains are essentially different? How does one admit some differences, yet challenge the questionable and exaggerated claims of books and articles with titles such as *The Inevitability of Patriarchy* (Goldberg, 1977) and "Why men and women cannot be like each other"? If many people accept biological essentialism, and if they also believe that women's opportunities should be limited because of biological differences, how can these issues be reframed so that reasonable people will actually listen?

A scholarly approach to challenging books such as *Brain Sex* is to cite researchers who remind us of the wide range of variability (Kimura 1992) and caution that "we do not at present understand the cognitive function of any brain area" (Efron, 1990:27). Even a cursory view of the scientific literature makes it clear that the types of social claims made by Moir and Jessel (1992) are unjustified and not supported by the evidence they cite.

Strong counterarguments against biological essentialism have been made by a number of well-known writers, including Fausto-Sterling (1985, 1993) and Gould (1980, 1981). These scholarly arguments are well-reasoned and supported by extensive factual evidence. Unfortunately, those who find such facts convincing are probably those already biased to share the authors' viewpoints. Advocates of separate spheres for males and females will probably not find them compelling.

Another scholarly approach for questioning popular beliefs about essential differences between male and female brains is a consideration of the many variables and explanations for reported brain differences other than sex. The fact that left-handed and right-handed people process information in different parts of the brain (Bryden, 1982a, 1982b) is widely accepted, although as Harshman and Hampson (1987:83) note, even these differences have been "surprisingly difficult to demonstrate" and "previous findings have been inconsistent and often contradictory."²

Some researchers have associated different types of cognitive functions with different brain hemispheres and have identified left brain activity with linear analytic thinking and right brain activity with the unconscious and with creativity (Corballis 1983, Ehrenwald 1984, Springer and Deutsch 1993). Other researchers have shown that different temperaments --- extroverts and introverts or optimists and pessimists ---- have different patterns of brain activity (Robinson, 1996, Chapter 6).

The list can be extended. Ehrenwald (1984:10) discusses research on professional groups predicted to have different cognitive styles and reports that "alpha measurements show that the people from business, law, and accounting professions differ from individuals in creative professions in the way their hemispheres process cognitive tasks." Gannett (n.d.), explores cognitive distinctions for writers finding significant differences between the lateralization of critics and writers of fiction and poetry. Obler (1981) reports different hemisphere participation and dominance for second-language learners of languages, depending on whether they read from left to right (as with English) or right to left (as with Hebrew). Tadanobu Tsunoda discovered that Japanese speakers and Westerners usually process vowels differently (Merrill, 1981: 74).

To summarize, differences in hemisphere processing have been discovered in response to the following questions, all of which presuppose (as well as seek) differences:

- How do the patterns of brain activity of creative and analytical thinkers differ?
- How do the patterns of brain activity of left-handed and right handed people differ?
- How do the patterns of brain activity of optimistic and pessimistic people differ?
- How do the patterns of brain activity of people from different countries differ?
- How do the patterns of brain activity of

people who speak and read different languages differ?

- How do the patterns of brain activity of males and females differ?

Not surprisingly, when researchers ask these questions, they discover answers showing differences. When those answers reinforce popular ideas in a culture, they are widely reported and discussed in the media. However, when experimenters find few or no differences, the results are rarely published, and variation within groups tends to be ignored or minimized.

For example, when originally reported, Tsunoda's studies showing differences between the ways that Americans and Japanese process vowels were far more interesting to the Japanese than to Americans. Tsunoda's research was reported in *Science Digest* by Merrill (1981), who skeptically observed, "Intriguing as Tsunoda's findings are, they have not yet been replicated. . . . Some scientists find his theories astonishingly elegant, while others are waiting for more data to come in" (Merrill 1981: 75). Tsunoda's work was of such interest to many Japanese, however, that "[d]espite its highly technical language, the book became a best-seller in Japan" (Merrill 1981: 74), possibly because it reinforced the belief of many Japanese that they are a unique people.

In the U.S., there is a widespread belief that males and females are essentially different, and the current use of the mind as a "computer" reveals how widespread that belief is. This metaphor, particularly the use of references to "hard wired" and "hardware/software", also reinforces the belief that physical differences in the brain are the result of genetic rather than environmental influences, despite proven environmental factors on brain development such as touch, nutrition, and stimulation (Levine, 1973; Merzenich, 1990; Blakeslee, 1995; Perry *et al.*, 1995; Shore, 1997). The computer metaphor of hardware/software is misleading because it conceals the importance of socialization on brain development. Unlike computers, brains are organic, and, like other organic entities, brains interact with and respond to their environments.

Stephen Pinker (1998: Weekend Page T022) is only one of many linguists who use the metaphor of the mind as computer. He writes, "The computational theory of mind--expressed by the mathematician Alan Turing, among others, is one of the great ideas in intellectual history." Recently I heard a radio talk show in which a scientist doing brain research repeatedly used the term "hard wired." This particular scholar, like Pinker and Kimura, seems to assume that male-female differences are biologically determined because they are part of the "hardware" rather than part of the "software."

However, many studies have established a clear link between environmental enrichment or impoverishment and brain development, including the work on monkeys (Greenough, 1984), rats (Diamond, 1984) and traumatized children (Perry, 1995; Perry *et al.*, 1995; Perry and Pollard,

1997). Orphans who are deprived of human touch later have alarmingly smaller brains and lower intelligence than comparable infants who had been given "normal" nurturing (Blakeslee, 1995). As researchers such as Perry and his colleagues have noted, the effect of the environment on young children is profound, both in the emotional and cognitive domains.

These findings strongly suggest that when early life neglect is characterized by decreased sensory input (e.g., relative poverty of words, touch and social interactions) it will have a similar effect on humans as it does in other mammalian species. Sensory deprivation has been demonstrated to alter the physical growth and organization of the brain in animals (Perry and Pollard, 1997).

Well-documented studies of orphans and violent children establishes a clear relationship between early childhood abuse and atypical brain development. (See research at http://www.bcm.tmc.edu/civitas/new_research.htm). It is impossible to attribute the atypical characteristics of the brains of neglected and abused children to "hard wiring." Therefore, why are the environmental effects of proven differences in behaviors towards male and female children not acknowledged?

Many people are unaware of the fact that sex differences in the brain believed to be "hard wired" vary from culture to culture. For example, there are no sex-related differences in spatial abilities in Eskimo males and females, possibly because Eskimo girls are allowed considerable autonomy. In contrast, there are marked differences between Temne males and females in a culture where the roles of females are circumscribed (Fausto-Sterling, 35). However, in spite of the evidence demonstrating that males and females are treated differently from birth in most cultures, and in spite of extensive evidence that information processing differs from culture to culture, the belief in essential "hard-wired" male-female differences persists.

An awareness that the metaphor "the brain as computer" can encourage biological essentialism may make some people more cautious about using brain research as a basis for social policy, but a more serious problem is the original flawed question, "What is the difference between males and females (and their brains)?" The question, "How do male and female brains differ?" presupposes that they do, and it is important not to automatically accept this presupposition. The question itself is part of the problem.

An even more serious problem is the rhetorical strategy used by those who advocate limiting opportunities for girls and women. This strategy is simply to show difference, redefine difference as deficit or inferiority, and then argue that females should be excluded because of their biological makeup.

The best strategy for feminists, in my opinion, is simply to ignore the question, "How do male and female

brains differ," and to insist on a clear distinction between *equal ability* (absence of difference) and *equal opportunity* (absence of discrimination). Those who argue for biological essentialism often conflate the two.

For example, Nicholas Wade (1994:32) notes that in higher math, "the topmost ranks are thronged with male minds." He says, "Some feminist ideologues assert that all minds are created equal and women would be just as good at math if they weren't discouraged in school." He discounts the effect of social bias and cites an expert who "concludes that boys' superiority at math is mostly innate." On the basis of statistical differences, Wade proposes that boys and girls should be educated differently; specifically, girls should be discouraged from entering fields for which they are not biologically suited such as physics and engineering.

Androcentric books like *Brain Sex* also confuse equal opportunity and identical ability. Moir and Jessel (1991:6) also urge women to accept their "biological limits":

If women have reason to rage, it is not because science has set at naught their hard-won struggle towards equality; their wrath should rather be directed at those who have sought to misdirect and deny them **their very essence**. Many women in the last thirty or forty years have been brought up to believe **that they are, or should be, "as good as the next man,"** and in the process they have endured acute and unnecessary pain, frustration, and disappointment. They were led to believe that once they had shaken off the shackles of male prejudice and oppression--the supposed source of their second-class status--the gates of the promised land of equal achievement would be thrown open. [emphasis added]

It is important to note that Moir and Jessel do not simply claim that males and females are different. They claim difference but assume inferiority; to them, women are **not** "as good as the next man."

By replacing the issue of *equal ability* ("How are man and women different") with the issue of *equal opportunity* ("Why shouldn't every individual have the same opportunity?"), it is possible for feminists to change the discourse about essential differences. Fortunately, a belief in equal opportunity is fundamental to the value system of the United States, as are beliefs in fair play and individual autonomy. Because of this, it is possible to acknowledge differences between *groups*, but still insist on equal opportunities for *individuals*. When the central question is, "Should everyone have an opportunity regardless of background?" arguments from biology or questions of how males and females are different become irrelevant. When we ignore the issue of difference, it is possible to say, "Perhaps male and female brains are, on average, different. So what?" Even when one group does **on average** show a statistical biological superiority in some skills, there is no justification for exclusion as long as every individual has

equal access to education, employment and political power.

When pundits such as Wade (1994) argue "that boys' superiority at math is mostly innate," this argument is problematic only when used as an excuse for biased behavior in the classroom. As long as equality of opportunity remains the central issue, schools still have the responsibility of educating "atypical" people, such as girls who just happen to excel at math and women who wish to become scientists.

There are always potential risks when insisting on equal opportunity and individual autonomy. Equal opportunity has been used as an argument against affirmative action. However, when this argument arises, new issues can be raised, issues such as the historical lack of opportunity and the unearned privileges of particular groups (McIntosh, 1988). Anyone who succeeds in moving the discourse from questions of whether males and females are different to issues of equal opportunity has a better chance of being heard. Changing the issue from "How are men's and women's brains different?" to "Why shouldn't every individual have equal opportunity?" switches the focus from an irrelevant issue to one to one that has important social consequences, and not just for women.

The strongest barriers to opportunities for traditionally excluded groups are often not official policies, but social pressures and the constant messages that the excluded group is "different," and, by implication, inferior. Although educational opportunities for females are expanding, the latest AAUW report shows (1998:91) that high school boys and girls still self-select into fields conventional for their gender; males continue to disproportionately enter fields dominated by technology. It is difficult to show a causal relationship between media messages about difference and the achievement of particular groups, since socialization is a result of so many different influences. Just as no single drop of water nor even a large river can create a canyon overnight, an occasional remark or news article will not discourage a young woman. Just as no single chocolate chip cookie or even an occasional indulgence cannot make someone fat, so no single teacher or advisor can steer a female away from a lucrative career in science or technology. No single media message that men's brains are different from women's brains will convince women that they are not biologically suited for certain roles. However, repeated messages from the media, parents, teachers, and friends can eventually convince women to limit their options, just as months of overeating can result in obesity and centuries of running water can create changes in a landscape.

Issues of biological essentialism will probably continue to be raised. However, feminists should avoid public debates about the differences between males and females (and their brains). A more relevant issue is: "How can a society that values individual achievement deny equal opportunity to any individual?" It is hard to fault Gould (1985:197) who says, "I can only view equality of

opportunity as inalienable, universal, and unrelated to the biological status of individuals."

Notes

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¹ The web site for Amazon (<http://www.amazon.com>) allows anyone to rate a book (from a low of one star to a high of five stars) and review it on-line. Eight of the nine reader comments on *Brain Sex*, praised the book, giving it 5 stars. A single reader disliked it, giving it one star.

² Harshman and Hampson (1987:85) report the following: "Yen (1975) tested almost 25000 high school students and individuals, and Sanders, Wilson, & Vandenberg (1982) analyzed data on almost 900 individuals, yet these two studies obtained opposite patterns of sex and handedness effects for performance on spatial tasks."

Yen's studies show left-handed females performing better than left-handed males on spatial tasks, but the study by Sanders *et al.* shows the opposite.

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