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## **Delusions of Gender: The Real Science Behind Sex Differences**

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The twenty one chapters of this extremely well researched book, dispel many long held and newly emerging myths about sex group difference, in three parts: 'Half changed world, half-changed minds', 'Neurosexism' and 'Recycling gender'. If you know the field of sex group difference well, you will be most interested in Part II where Fine provides an excellent up-to-date review of the field of neuroscience, which is extremely helpful in counteracting claims such as boys and girls need separate pedagogies because they are hard-wired differently. The research reviewed in Parts I and III, although also up-to-date, spans a broad range of literatures that feminist scholars may already be fairly familiar with.

In my field of education, concerns about boys' underachievement in comparison to girls remain strong. Teachers look for explanations of the gender gap. Within the UK, schools and educational authorities are increasingly using consultants to help teachers to develop pedagogic practice aimed at boys.



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Many of these consultants rely on accessible accounts of gender difference and increasingly cite examples from neuroscience to tell teachers that boys and girls are 'hard wired' differently. My anxiety is that this leads teachers to dilute their pedagogic practice to 'suit' boys instead of challenging the cultural legacies of inequality that reinforce narrow gender roles.

Fine has written a powerful, clear and rigorous rebuke of the growing genre of 'popular' pseudoscientific accounts of sex difference. This is where the book's strength lies. Her scathing and very well informed attack is conducted with wit and humour, making what ought to be a heavy read into a veritable page-turner. She has met the genre on its own terms and produced a book that can be read by the very people who have enjoyed *Men are From Mars Women Are From Venus*. However, Fine delivers the exact opposite message: that fallible human beings are neither from Mars nor Venus, but rather attached to earth where a long legacy of social rules and customs continue to reproduce power relations that maintain rather archaic divisions between men and women. To our shame, some human beings bend, distort and exploit science in their attempts to justify such divisions.

Fine has carefully followed up research cited by authors to support their interpretations of sex difference. In so doing she claims to reveal the inaccuracies and exaggerated interpretations that slip into popular books about gender difference. Again and again she names the researchers and writers who she believes fall into these erroneous ways, such as Simon Baron-Cohen, Steven Pinker and Susan Pinker, and pseudoscientific writers such as Allan and Barbara Pease for *Why Men Don't Listen and Women Can't Read Maps*; John Gray, for *Why Venus and Mars Collide*; Ruben Gur and Raquel Gur, for *Why Aren't More Women in Science?*; Michael Gurian, for *What Could he be Thinking; a Guide to the Mysteries of Men's Minds*, and the same author with colleagues *Boys and Girls Learn Differently!*. I want to add Geoffrey Hannon to this list because he operates in the UK while the others operate mainly in the US. One of the worst offenders, Louann Brizendine, director of the Women's Mood and Hormone Clinic, alumnus of Harvard Medical School, the University of California-Berkley and Yale School of Medicine, had her book discredited in *Nature*, with comments such as, '[D]espite the author's extensive academic credentials, *The Female Brain* disappointingly fails to meet even the most basic standards of scientific accuracy and balance' (p. 157-8).

In a chapter titled *Brain Scams* Fine focused on pp 162-164 of Brizendine's book in which she claimed that the female brain is wired to empathise. The first study used to support this claim was based on a study of psychoanalysts who were said to develop good rapport with their patients by mirroring their actions (Fine, p. 158). The phone directories used to recruit participants to the study happened only to include women, yet Brizendine omits to say that all participants in the study were women. The next claim, that girls have an advantage in understanding other's feelings, cited work by McClure and Hall. Fine found that McClure and Hall's meta analysis showed that 54 per cent of

girls perform above average in facial emotional processing compared with 46 per cent of boys (Fine, p. 159). Brizendine interpreted this as '[g]irls are years ahead of boys in these abilities', providing a rather hyped interpretation. Next Brizendine speculated that 'mirror neurones might be behind these skills'. However, none of the work so far on mirror neurones has found that intuiting other's mental states is an effect specific to girls, indeed most of the research in this field has been around autism where participants are mainly boys. Brizendine moved next to brain imaging studies that supposedly demonstrate that a participant can activate similar brain patterns in the observer, and that females are especially good at emotional mirroring. When Fine looked at the study by Tania Singer and colleagues cited to support this claim - guess what - only women had been scanned.

Exploring further, Fine read studies Brizendine had cited by Dr Lindsay Oberman, a Harvard based neuroscientist. Fine emailed Oberman to ask her if she could corroborate the phrase in Brizendine's book supposedly based on personal communication that 'there may be differences in male and female mirror neuron functioning' (Fine, p. 161). Oberman replied that she had found no evidence for better female than male mirror neurone function and had never been in communication with Brizendine. This kind of work exposes how sleight of hand in the way scientific research is presented slides into grave inaccuracy. Fine is equally scathing about other writers of popular, pseudoscientific books about sex difference.

Fine has done the hard work of researching the scientific papers that have often been misused by authors to underpin the growing number of consultancies and institutions that peddle physiological, neurological or genetic sex difference as scientific facts. These unscrupulous entrepreneurs create the pseudoscience of sex group difference for personal economic advancement. Fine exposes them while making the science understandable to all of us. Let's say it again loud and clear, neuroscience is in its infancy and so we do not yet know enough about neuron activity to be able to claim any sex group differences in brain functioning.

It has to be said that Fine respects legitimate research into neuroscience. For anyone thinking about creating single sex classes to accommodate boys' or girls' ways of learning, however, this book warns against falling into the trap of believing the pseudoscientific misinformation peddled by popular writers. Learning is complex, and disentangling historical, cultural, social, physiological and neurological strands in the process is at present a pipe dream. Fine asks if people will look back and laugh at the claims that are being made now in popular pseudoscientific books as we look back at the Victorian penchant for basing supposed sex difference on measurements of skulls, shoulder bones and cranial verticality.

For me the weakness of the book is also its strength: it works very well as an antidote to popular pseudoscientific writing about gender and aims to have a popular appeal. The book is not aimed at academics and does not to pretend

to take a position on scholarly work in gender fields except to be respectful of rigorous research and scholarship.

It was refreshing and uplifting to have Fine cutting through the humbug of the imagined innate, neural wired, evolutionary inferiority of girls and women. Neurosexism, as Fine coins it, is rife. This is a most welcome and important book in times when feminism is being all but erased from some political agendas.