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Peeling Away Theories on Gender and the Brain

By KATHERINE BOUTON

"Delusions of Gender" takes on that tricky question, Why exactly are men from Mars and women from Venus?, and eviscerates both the neuroscientists who claim to have found the answers and the popularizers who take their findings and run with them.

The author, Cordelia Fine, who has a Ph.D. in cognitive neuroscience from University College London, is an acerbic critic, mincing no words when it comes to those she disagrees with. But her sharp tongue is tempered with humor and linguistic playfulness, as the title itself suggests. Academics like Simon Baron-Cohen and Dr. Louann Brizendine will want to come to this volume well armed. So would Norman Geschwind if he were still alive. Popular authors like John Gray ("Men are from Mars"), Michael Gurian ("What Could He Be Thinking?") and Dr. Leonard Sax ("Why Gender Matters") may want to read something else.

Sometimes all it takes is their own words, as in this example from Dr. Brizendine's 2007 book "The Female Brain": "Maneuvering like an F-15, Sarah's female brain is a high-performance emotion machine — geared to tracking, moment by moment, the nonverbal signals of the innermost feelings of others." Is Sarah some kind of psychic? Dr. Fine clarifies: "She is simply a woman who enjoys the extraordinary gift of mind reading that, apparently, is bestowed on all owners of a female brain."

Experts used to attribute gender inequality to the "delicacy of the brain fibers" in women ; then to the smaller dimensions of the female brain (the "missing five ounces," the Victorians called it); then to the ratio of skull length to skull breadth. In 1915 the neurologist Dr. Charles L. Dana wrote in this newspaper that because a woman's upper spinal cord is smaller than a man's it affects women's "efficiency" in the evaluation of "political initiative or of judicial authority in a community's organization" — and thus compromises their ability to vote.

These days gender inequality is commonly explained by neurological differences, most popularly the notion that the surge of [testosterone](#) that occurs in the eighth week of fetal development affects the relative size of the right and left hemispheres of the brain, and of the corpus callosum, the bundle of neurons that connects the two. In the 1980s Norman

Geschwind proposed that the surge results in a smaller left hemisphere for males, leaving them with greater potential for right-hemisphere development, which, as he put it, results in “superior right-hemisphere talents, such as artistic, musical, or mathematical talent.” In female brains the hemispheres are more collaborative, explaining women’s superior verbalizing skills.

There are two problems here, Dr. Fine says. First is that several studies have found no difference in hemispheric size in neonates. The supposedly larger female corpus callosum is also in dispute. But even if size difference does exist (as it does in rats), she says, “getting from brain to behavior has proved a challenge.” Given that there may be sex differences in the brain, “what do they actually mean for differences in the mind?”

Dr. Baron-Cohen builds on this theory, suggesting that low levels of testosterone result in a female, “E type” brain (for empathy); medium levels yield a balanced brain; and high levels a male, “S type” brain (for systemizing). Medium levels account for the fact that some girls are systemizers and some boys are empathizers.

Dr. Baron-Cohen’s lab conducted research on infants who averaged a day and a half old, before any unconscious parental gender priming. Jennifer Connellan, one of Dr. Baron-Cohen’s graduate students, who conducted the study, showed mobiles and then her own face to the infants. The results showed that among the newborns the boys tended to look longer at mobiles, the girls at faces.

Dr. Fine dismantles the study, citing, among other design flaws, the fact that Ms. Connellan knew the sex of some of the babies. Because it was her face they were looking at and she was holding up the mobile, Dr. Fine says, she may have “inadvertently moved the mobile more when she held it up for boys, or looked more directly, or with wider eyes, for the girls.”

The study could be redone to eliminate these flaws, of course. And the results might be the same. But, Dr. Fine asks, “Why think that what a newborn prefers to look at provides any kind of window, however grimy, into their future abilities and interests?”

Summarizing the research, she writes, “Nonexistent sex differences in language lateralization, mediated by nonexistent sex differences in corpus callosum structure, are widely believed to explain nonexistent sex differences in language skills.”

What all this adds up to, she says, is neurosexism. It’s all in the brain.

But Dr. Fine persuasively argues that it is, in fact, all in the mind. Jan Morris, the historian, travel writer and male-to-female transsexual, saw this implicit stereotyping firsthand: “The more I was treated as a woman, the more woman I became. ”

Dr. Fine's research is well documented, with 82 pages of footnotes. Surely Dr. Baron-Cohen can marshal a spirited defense of his position, as well might Ms. Connellan. I'd like to hear their response. The closest we get is Dr. Fine's quotation of Dr. Baron-Cohen cautioning that we should be "careful not to overstate what can be concluded" from these studies.

It's too late to tell that to Dr. Sax, a proponent of [single-sex education](#), who cited the Connellan study as evidence that "girls are born prewired to be interested in faces while boys are prewired to be more interested in moving objects."

But it's not too late to read this book and see how complex and fascinating the whole issue is. It's really not just a few steps from looking longer at moving objects to aptitude in math, from gazing at faces to mind reading.