BOOKS

Sex, sin, and why we behave the way we do.

The Genetic Inferno: Inside the Seven Deadly Sins
By John Medina
368 pages, Cambridge University Press, $25

Sex in the Future: The Reproductive Revolution and How It Will Change Us
By Robin Baker
320 pages, Arcade Publishing, $26

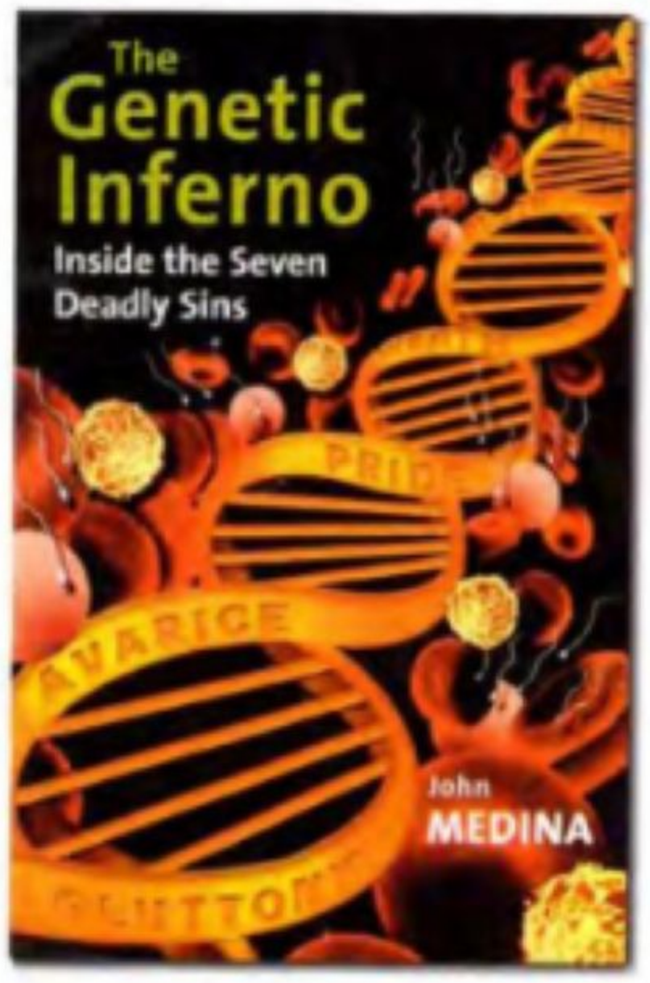
ONCE, BACK IN the '60s, as twin boys were being circumcised, their surgeon's electrocautery needle—which cut and sealed blood vessels—gave off an accidental surge of heat that burned off one baby's penis. The child was taken to an eminent but unorthodox psychiatrist at the John Hopkins Medical Center who persuaded the parents to have their son's genitals accordingly remodeled and to raise him as a girl.

In the following years, feminist theoreticians would seize on the psychiatrist's published reports of the child's adjustment to girlhood as indisputable proof that—as fashionable doctrine then had it—an individual's sense of gender was socially constructed. But in fact, although ignorant that "she" had been born a boy, the child tore off dresses "her" parents made "her" wear, preferred boys' games, and urinated while standing. Later, "her" brother would recall how, while other girls played with dolls, his "sister" bizarrely declared that her ambition was to become a garbage man, and, tellingly, had only the comically guy-ish rationale, "Easy job, good pay." Then, at puberty's onset, the "girl" became suicidal when the psychiatrist insisted "she" undergo surgery that would give "her" a functioning vagina. Finally, the parents told "her" the truth about "her" gender at birth. Their "daughter" immediately began living as a male and today, having been married to a woman for almost a decade, continues to do so. (Yes, a book about this story came out this year—*As Nature Made Him*, by John Colapinto—but I'm not reviewing that.)

This case history, seemingly a postmodern update by David Lynch of one of the Grimms' darker fairy tales, confirms that there are limits to the brain's capacity to change the way it works in response to stimuli. If exposed in the womb to enough testosterone, males will develop sexual characteristics that are deep-seated and different from female traits; indeed, researchers know they can render any mammal's brain and behavior more "masculine" by administering the right amount of the hormone at the right time. It's tempting, therefore, to assume that testosterone must be the determining factor in gender-related behaviors.

Yet that would be simplistic, says John Medina in *The Genetic Inferno: Inside the Seven Deadly Sins*. Taking the medieval list of the seven deadly sins as his template and beginning with Lust, he notes that although men's bodies make considerably more testosterone than women's do, women produce some too, and that the hormone is key to their sexual arousal.

Or consider Wrath: whereas a clear association exists between testosterone and aggression, the hormone doesn't cause aggressive behavior. When researchers injected extra testosterone into male monkeys who were low in their group's dominance hierarchy, those monkeys didn't turn into alpha males; rather, they continued to surrender food or favorite resting spots to higher-ranking monkeys and became nastier to their social inferiors. Mr. Medina reports that scientists have even injected testosterone directly into monkeys' skulls. When aggression occurs, a specific region of neural fibers transmits bursts of electrical impulses from the amygdala to the hypothalamus. Now researchers have learned that increasing testosterone for an individual in a passive state cannot stimulate the necessary pulses of electricity along the *stria terminalis* to create aggression. Testosterone, it turns out, only increases the number of impulses per neural fiber when the *stria terminalis* is already activated.



Mr. Medina, a molecular biologist, has an agenda. He can't recall, he writes, how many times he's thrown down his newspaper after reading things like, "scientists have isolated the genes responsible for adultery" or "there are chromosomes behind the tendency to vote Republican." In other words, where once we got simplistic explanations of human behavior based on cultural construction, nowadays we're given shallow sociobiology. Mr. Medina wants to present the complexities of what scientists have actually succeeded in learning about the human brain.

What we've learned may not amount to much. In the case of sexual arousal, the situation appears particularly complex. The brain is our ultimate sexual organ. For sexual arousal

to occur, most of the brain's major regions must perform in concert with each other and with the endocrine, circulatory, and genitourinary systems. Meanwhile, neural circuits located near the genitals and at the spine's base carry out processing quite independently of the brain. Sexual arousal is even more complex in women than in men because it involves mysterious operations by the hormone estrogen. Finally, human sexuality is strongly affected by long-term memories, like those of first love, cultural expectations, and the fetishist's obsession for high-heel shoes.

In short, although sexual arousal seems straightforward, it turns out to be the result of such a great number of neurological and glandular systems that it can be only a combinatory pattern. All that we feel, Mr. Medina says, may be only "the collateral fallout of the enormous number of biochemical engines that must be started to ensure reproduction into the next generation." In a sense, he suggests, it may be that we never actually experience such a thing as sexual arousal, at least not as we experience fear, pain, or other easily isolated biological mechanisms.

The Genetic Inferno also has interesting things to say about the genetic mechanisms behind Gluttony, Sloth, Envy, Pride, and Avarice (making a convincing case that the biological foundation of greed is fear). Still, the book is a patchy read. Mr. Medina is a research scientist who clearly knows his stuff and can communicate it most of the time. Yet he does drag his readers through tedious elaborations of medieval conceptions of the seven deadly sins, beginning every chapter with the deliberations of a fictional classics seminar on Dante's *Purgatorio,* which he then somehow relates to modern genetics and neurobiology. This is a frustrating book.

As I write this, a wire service has just reported that a British scientist believes male couples could conceive their own children. With a technique called egg nucleus transfer, the scientist says, male chromosomes could be inserted into a woman's egg that has been emptied of its genetic material; the egg could then be fertilized with male sperm and carried to term in the womb of a surrogate mother.

Which brings us to the world of *Sex in the Future: The Reproductive Revolution and How It Will Change Us,* by Robin Baker, a British biologist whose earlier book, *Sperm Wars: The Science of Sex* (Basic, 1996), promoted his theory that only a fraction of a normal male's sperm were the traditional "fertilizing" variety. He said two other kinds existed: "blockers," to keep other men's sperm out of critical regions of the female reproductive tract, and "kamikazes," to attack any foreign sperm they come across. Mr. Baker offered no solid evidence for his specialized spermatozoa and their obscure battles, yet he was on much firmer ground with his evolutionary rationale for why they might exist.

For various reasons, blood testing for paternity is becoming much more widespread, and it has turned up some extraordinary data. Mr. Baker says that in some populations, 30 percent of children are not the offspring of the men who believe themselves to be their fathers. In affluent suburbs, that level of misled males drops to as low as only 2 to 4 percent; still, even among the ultra-straight, one in each couple of dozen kids is calling the wrong man Daddy. As Mr. Baker's "sperm wars" theory could not be substantiated, he has retreated to this firmer factual ground, and in *Sex in the Future* he speculates on how the explosion of paternity-testing, alongside various reproductive technologies, could create a social revolution.

Relentlessly, he outlines scenarios imagining how new technologies will aid one or the other side in the supposed war between the sexes. In Mr. Baker's book, women try to get pregnant by wealthy, supportive men, and men try to have sex with as many women as they can without paying. When efficient paternity-testing becomes ubiquitous, Mr. Baker assumes, society will solve the conflict by legislating a child tax: support paid by a father to a mother on a per-child basis. Simultaneously, he thinks, sperm and egg banks will make many men opt for sterilization, thereby having children only when they choose. Cloning, in vitro fertilization, and an arsenal of technologies for genetic manipulation will render infertility and age no bar to parenthood—in one scenario where Mr. Baker tries to be particularly provocative, a testicular cancer victim goes so far as to store his sperm in the testes of male rats. With widespread acceptance of technological options for selecting reproductive partners and genetic traits, people will no longer make babies—they'll commission them. Love, sex, and reproduction will become ever more distant from one another.

Whereas I wanted to like *The Genetic Inferno* more than I did, I've no compunctions about saying that *Sex in the Future* is a badly written book. Mr. Baker favors the simplistic presumptions about sociobiology that Mr. Medina criticizes. And in fact, these presumptions have the same cartoon resemblance to reality that we find in the predictions of economic zealots who cleave to classic efficient-markets theory: in real life, human beings are rarely as efficiently and unfailingly self-serving as the theories require. However, given all that, today's news of a potential technique for male couples to conceive their own children mirrors almost exactly one scenario in Mr. Baker's book. Others, too, seem equally plausible to me. Mr. Baker—disregarding his crude sociobiology and writing skills—is onto something.

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