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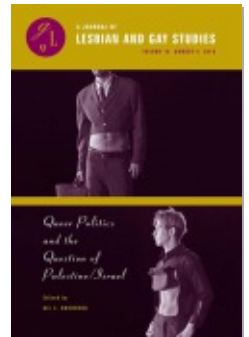
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## The Biology of Gender and the Construction of Sex?

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crete political struggles in a situation where discrimination is still the legal and social norm. They should invite curiosity and incite action, but they often do the opposite. While anger about discrimination in the United States may still energize sexual and gender studies, in the Netherlands complacency is sucking the blood from them.

One way to invigorate the field internationally is to spark the interest of the curious who float beyond gender and sexual double binds, that is, to create transversal connections between the excluded and marginalized and to bypass centers and norms. Gender and sexuality issues became more intertwined and complicated with the rise of multiple gender positions. Civil society in the Netherlands does not take note of such developments. A major task for Anglo-Saxon academe seems to be to bring abstract theories and concrete practices together.

The stakes are too high to remain enclosed in the philosophies of the ivory tower or the concrete struggles of the streets. Queer studies need activism, just as queer movements need theorizing turned to practical applications. It is nice to link queer and gender on campus, but they should also intermingle beyond novels and movies, in streets and dark rooms.

### **The Biology of Gender and the Construction of Sex?**

**Vernon A. Rosario**

Biomedicine has long had a contentious place in homosexual politics and queer studies. Paeans to the liberating role of science go back to the Victorian origins of the term *homosexuality* itself, when “sexual inverts” such as Karl Heinrich Ulrichs and Magnus Hirschfeld argued for biological models of the hereditary and hormonal basis of “innate” homosexuality.<sup>1</sup> Homophile groups of the 1950s and 1960s were also accommodating to doctors in the hope that these figures of authority could liberalize public opinion. The argument that science was irrelevant to homosexual emancipation was made most astutely in the mid-1950s by Franklin Kameny, a leader of gay liberation.<sup>2</sup> He pointed out how societal homophobia repeatedly tainted researchers’ methodology. His critique helped instigate the assault that forced the American Psychiatric Association in 1973 to remove the diagnosis of homosexuality from the psychiatric nosology.<sup>3</sup>

Nevertheless, interest in the biological determinants of sexual orientation continued to be central to the essentialism-versus-constructionism wars that riled us all in gay and lesbian studies in the 1980s. By the early 1990s the debate had grown tiresome and was ably dissected and put in formaldehyde by Edward Stein’s anthology on the topic.<sup>4</sup> The debate built on the feminist legacy of suspicion (if not

hostility) toward sexual science, which often reified male chauvinist constructions of biologically essential female inferiority.<sup>5</sup> Similar critiques of biological essentialism have been waged around issues of race and a long history of scientific “proof” of the inferiority of non-European races.<sup>6</sup>

Yet biology soon came back to haunt us. The gay twin studies, the “gay hypothalamus,” and the “gay gene” study of the early 1990s were front-page news and were fairly uncritically accepted by the gay press as well.<sup>7</sup> Genetic explanations of homosexuality have been enthusiastically embraced by many gays and lesbians.<sup>8</sup> In my psychiatric practice I regularly hear these explanations from gay and lesbian clients of all ages.<sup>9</sup> Elsewhere I have analyzed why the American gay community (middle-class men in particular) have embraced the notion of a gay gene, and I have argued that molecular genetics is itself a social construct.<sup>10</sup> Meanwhile, transgendered and intersexed people were forging new political movements that forced me to reconsider the place of the body and biology.

Sandy Stone’s 1991 essay, “The ‘Empire’ Strikes Back: A Posttranssexual Manifesto,” was a rallying cry for a new generation of transgender activists and theorists. She called on transgenders to tell their full stories and not the stereotyped clinical narrative required by the gender reassignment gatekeepers in the medical profession.<sup>11</sup> This meant proclaiming an identity as transgendered rather than following the medical expectation to discard a past gendered history and pass as either male or female. A new generation of transgendered theorists deployed antiessentialist, feminist, and queer theory to further flesh out the “post” in fin de siècle transgender ontology. Susan Stryker, in the introduction to the groundbreaking transgender issue of *GLQ*, fully embraced a performative/discursive model of queer, transgender identity. For Stryker, queer transgenderism was a radical, antiheteronormative praxis of self-transformation through performance—not only of gender but of sexuality and anatomy.<sup>12</sup>

Other theorists have been critical of the aleatory quality of transgender identity in these performative models and have returned to a certain ineluctable materiality of the body and sex, as well as an irreducibility of gender. Even at the risk of falling into a somatic determinism and gender essentialism, Jay Prosser examines the gender experience of transsexuals and the real, poignant ways in which gender identity maps onto anatomy. Prosser aggressively wrestles with the discursive theory of Judith Butler and, more broadly, with the queer theory appropriations of trans identity. Prosser is particularly critical of Butler’s reluctance to grapple with the materiality of the body and with her repeated “deliteralization of sex.” Prosser points out that transgenderism is exploited in this queer analysis of sex/gender as a subversive denaturalization of sex; however, the actual embodied

gender experience of many transsexuals is delegitimized if we collapse sex into gender. As Prosser succinctly puts it, “*Gender Trouble* uses transsexuality to exemplify not the constitutive significance of somatic feeling but the reverse, the phantasmatic status of sex.”<sup>13</sup>

The transgendered sociologist Henry Rubin is similarly critical of many queer theorists’ appropriations of transgender identity. Rubin tries to find a new avenue for understanding the transgender experience that takes account of his informants’ sense of their essential and embodied gender identity rather than discount it as false consciousness or sex/gender reactionism.<sup>14</sup> Many of his informants experience gender as deeply and permanently embedded in their bodies, and they demand that it be further materialized through hormonal and surgical interventions. Their struggle is not an arbitrary, ludic performance of gender masquerade but a hard-fought pursuit of an essential identity experienced as grounded in matter and constructed through biology.

Joanne Meyerowitz’s sociomedical history of transsexualism points out the long-standing popularity of biological models of transsexualism among transsexuals. Christine Jorgensen, who brought transsexualism to worldwide attention in 1952, explained her condition as the result of a “glandular imbalance” that was “deep-rooted in all the cells of [her] body.”<sup>15</sup> Mid-1990s Dutch findings of neuroanatomical differences between transsexuals and nontranssexuals received much coverage in the transgendered press. The transsexual gynecologist Sheila Kirk argued that this research pointed to the role of intrauterine hormones in shaping the developing brain and determining gender identity.<sup>16</sup> This hormonal model is similar to the one suggested by Victorian sexologists such as Hirschfeld and repopularized in the early 1990s by Simon LeVay.<sup>17</sup> A genetic model for transgenderism helped the endearing boy in the Belgian film *Ma vie en rose* (dir. Alain Berliner; 1998) justify his female identity and cross-dressing.

The place of biology in shaping somatic sex, gender identity, and sexuality has most forcefully come to popular and academic attention with the emergence of a newly politicized intersex movement. *Intersex* is the umbrella medical term to describe the presence of ambiguous or unusual genitalia at birth (conditions also classified as hermaphroditism and pseudohermaphroditism). In 1993 Cheryl Chase launched the Intersex Society of North America (ISNA) to challenge the surgical “normalization” of intersex genitalia.<sup>18</sup> While several support groups for specific intersex syndromes (such as Turner’s, androgen insensitivity, and Klinefelter’s) had formed in the late 1980s and early 1990s, they had sought to collaborate with doctors to improve medical diagnosis, treatment, and prevention of the diverse intersex conditions. By contrast, the ISNA questioned the ethics of

nonessential surgery and the medical enforcement of a two-sex system that such intervention implies.<sup>19</sup>

The “John/Joan” scandal, followed by John Colapinto’s book-length exposé of it, catapulted intersex issues to popular consciousness in 1997.<sup>20</sup> Ironically, David Reimer—the person involved—was not intersexed but was subjected to sex reassignment after accidental penile ablation during circumcision at the age of eight months. Nevertheless, the case was exploited for opposing arguments. On the one hand, Reimer’s history was used to show that gender was innate and could not be molded arbitrarily through surgery and rearing, as the psychologist John Money had claimed since the 1950s.<sup>21</sup> Thus the media used the case to discredit Money’s distinction between sex and gender, as well as feminism and social constructionism in general.<sup>22</sup> On the other hand, feminist and queer academics turned intersex into the next great hope for deconstructing sex/gender.<sup>23</sup> Butler has used the case to undermine any anatomical or chromosomal determinism of gender and to demonstrate “the arbitrariness and falsity of gender dimorphism.”<sup>24</sup>

The distinction that Money had drawn was an a priori, theoretical one.<sup>25</sup> Though battered over time, it was a building block of feminist theory from the 1960s on.<sup>26</sup> Even if the biological, historical, and social qualities of the sexes could not be neatly divided into material and sociocultural aspects—that is, sex and gender—the dichotomy was productive and politically expedient. Indeed, the trend in gender and queer studies in the 1990s, following Butler’s lead in *Gender Trouble*, was to give precedence to gender by interpreting sex as just another incarnation of gender.

On the contrary, transsexual and intersex activists have increasingly wanted to reverse the polarities of the sex/gender distinction, arguing that the material forces that shape sex also determine gender. For example, Lynn Conway, an engineering professor who transitioned in 1968, relies on recent intersex data to conclude that gender is not socially constructed but determined by the effects of hormones on the embryonic brain.<sup>27</sup>

The ISNA has criticized feminist appropriations of intersex to deconstruct sex/gender, often to the exclusion of the real-world challenges faced by intersexed people.<sup>28</sup> Intersexuality epitomizes the distinctness yet imbrication of biology and identity. Neonatal intersex conditions are characterized by fairly rare anatomical and hormonal conditions (present in one to two live births per thousand) that lead to unusual genital and gonadal anatomy. The more common intersex conditions are congenital adrenal hyperplasia, androgen insensitivity syndrome, Turner’s syndrome, Klinefelter’s syndrome, and severe forms of hypospadias. As the ISNA insists, these are objective, material conditions, not indications of an elective gen-

der identity: “[Intersex] is different from, for example, having a feeling that your identity is different from [that of] most women (or men). People with intersex conditions generally don’t have to search for evidence that they are intersexed; the evidence is in their own bodies.”<sup>29</sup>

Intersex, however, *is* an elective identity for this diverse subset of people. Indeed, it is a controversial one that many affected individuals repudiate. Despite discordant sex chromosomes, genitals, and/or gonads, the vast majority of intersexed people have a definite gender identity as male or female; they are not intergendered. Therefore they dislike the “intersex” label, which they perceive as inaccurate, stigmatizing, and too political. In fact, the politically radical and catchy claim that everyone is intersexed trivializes the unique medical and psychological challenges faced by people with intersex conditions. The ISNA insists that its current mission is not to end the sexing of intersexed children or to eliminate the sex/gender system but to advocate for patient agency in medical interventions.<sup>30</sup>

Finally, research in the molecular genetics of sex determination is doing more to deconstruct our understanding of the biology of sex than the work of Money or gender studies.<sup>31</sup> The notion that the Y chromosome determines male sex now appears to be grossly simplistic. The identification of the SRY gene (i.e., the sex-determining region of Y) in the 1990s was quickly followed by the discovery of six other genes critical to male sex determination that are on the X chromosome as well as the autosomes (nonsex chromosomes).<sup>32</sup> The genetic and molecular triggers for the complex steps in the embryonic development and differentiation of the reproductive system are emerging as multifactorial and highly interdependent. At multiple critical moments, various genes trigger other genes with an array of nonsexual functions in a dynamic play of shifting molecular signifiers.

While intersex suggests the biology and fixity of gender, transsexualism suggests the material (re)construction of sex. Yet both states demonstrate that sex and gender are not distinct entities but are intimately intertwined, even when they appear to be at odds. Anatomy is not destiny, yet it cannot be simply reimaged by a discursive mantra. Anatomy and physiology impose certain limits to discursive or hermeneutic possibilities quite beyond the forces of culture and society. However, the molecular genetics of sex highlights the complexity and fragility of the biological elements of sex, to say nothing of gender or sexuality. Transgendered and intersexed individuals poignantly remind us that confronting, understanding, and managing these material limits of the body are tremendous challenges. It is perhaps our great fortune that, despite the numerous biological and psychological determinants of human sex/gender/sexuality, they are still largely *underdeter-*

mined; hence our enormous diversity. This complex irreducibility allows for the myriad personal and cultural narratives of sex/gender/sexuality that permit such varied pleasures and such endless scholarship.

## Notes

1. Karl Heinrich Ulrichs, *Forschungen über das Räthsel der mann männlichen Liebe*, ed. Hubert Kennedy, 4 vols. (Berlin: Winkel, 1994); Magnus Hirschfeld, *Die Homosexualität des Mannes und des Weibes* (Berlin: Marcus, 1914).
2. Franklin Kameny, "Does Research into Homosexuality Matter?" *Ladder*, May 1965, 14–20.
3. See Ronald Bayer, *Homosexuality and American Psychiatry: The Politics of Diagnosis* (Princeton: Princeton University Press, 1987).
4. Edward Stein, ed., *Forms of Desire: Sexual Orientation and the Social Constructionist Controversy* (New York: Routledge, 1992).
5. See, e.g., Londa Schiebinger, *The Mind Has No Sex? Women in the Origins of Modern Science* (Cambridge, MA: Harvard University Press, 1989); Ruth Hubbard, *The Politics of Women's Biology* (New Brunswick, NJ: Rutgers University Press, 1990); and Anne Fausto-Sterling, *Myths of Gender: Biological Theories about Women and Men* (New York: Basic, 1985). Some feminist scholars could also deconstruct science and envision new methodologies that embraced feminist and progressive politics, e.g., Donna J. Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991); and Sandra Harding, *The Science Question in Feminism* (Ithaca: Cornell University Press, 1986).
6. One recent controversy in this area was instigated by Richard J. Herrnstein and Charles Murray, *The Bell Curve: Intelligence and Class Structure in American Life* (New York: Free, 1994), which provoked vocal criticism, e.g., Steven Fraser, ed., *The Bell Curve Wars: Race, Intelligence, and the Future of America* (New York: Basic, 1995).
7. J. Michael Bailey and Richard C. Pillard, "A Genetic Study of Male Sexual Orientation," *Archives of General Psychiatry* 48 (1991): 1089–96; Simon LeVay, "A Difference in Hypothalamic Structure between Heterosexual and Homosexual Men," *Science*, no. 253 (1991): 1034–37; Dean Hamer et al., "A Linkage between DNA Markers on the X Chromosome and Male Sexual Orientation," *Science*, no. 261 (1993): 321–27. Mark Schoofs indicted the media's uncritical reception of these studies in "Geneocide: Can Scientists 'Cure' Homosexuality by Altering DNA?" *Village Voice*, 1997.
8. Chandler Burr, *A Separate Creation: The Search for the Biological Origins of Sexual Orientation* (New York: Hyperion, 1996); Vera Whisman, *Queer by Choice: Lesbians, Gay Men, and the Politics of Identity* (New York: Routledge, 1996).

9. On the psychodynamic function of biological explanations of homosexuality see Jack Drescher, *Psychoanalytic Therapy and the Gay Man* (Hillsdale, NJ: Analytic, 1998).
10. Vernon A. Rosario, "Homosexual Bio-Histories: Genetic Nostalgias and the Quest for Paternity," in *Science and Homosexualities*, ed. Vernon A. Rosario (New York: Routledge, 1997), 1–25.
11. Sandy Stone, "The 'Empire' Strikes Back: A Posttranssexual Manifesto," in *Body Guards: The Cultural Politics of Gender Ambiguity*, ed. Julia Epstein and Kristina Straub (New York: Routledge, 1991), 280–304.
12. Susan Stryker, "The Transgender Issue: An Introduction," *GLQ* 4 (1998): 145–58.
13. Jay Prosser, *Second Skins: The Body Narratives of Transsexuality* (New York: Columbia University Press, 1998), 44, 43. See Judith Butler, *Gender Trouble: Feminism and the Subversion of Identity* (New York: Routledge, 1990).
14. Henry Rubin, *Self-Made Men: Identity and Embodiment among Transsexual Men* (Nashville, TN: Vanderbilt University Press, 2003).
15. Quoted in Joanne Meyerowitz, *How Sex Changed: A History of Transsexuality in the United States* (Cambridge, MA: Harvard University Press, 2002), 66.
16. J.-N. Zhou et al., "A Sex Difference in the Human Brain and Its Relation to Transsexuality," *Nature*, no. 378 (1995): 68–70; Sheila Kirk, "The Brain: A Brief Look at Our Nervous System," *Transgender Community News*, September 1999, 16–17.
17. Magnus Hirschfeld [T. Ramien, pseud.], *Sappho und Sokrates, oder Wie erklärt sich die Liebe der Männer und Frauen zu Personen des eigenen Geschlechts?* (Leipzig: Spohr, 1896); Simon LeVay, *The Sexual Brain* (Cambridge, MA: MIT Press, 1993).
18. See Cheryl Chase, "Hermaphrodites with Attitude: Mapping the Emergence of Intersex Political Activism," *GLQ* 4 (1998): 189–211.
19. On the medical enforcement of a binary sex system see Suzanne J. Kessler, *Lessons from the Intersexed* (New Brunswick, NJ: Rutgers University Press, 1998).
20. Natalie Angier, "Sexual Identity Not Pliable after All, Report Says," *New York Times*, March 14, 1997; John Colapinto, *As Nature Made Him: The Boy Who Was Raised as a Girl* (New York: HarperCollins, 2000).
21. See Colapinto, *As Nature Made Him*; and Milton Diamond, "Prenatal Predisposition and the Clinical Management of Some Pediatric Conditions," *Journal of Sex and Marital Therapy* 22 (1996): 139–47.
22. "Anatomy Is Destiny," *New York Post*, March 17, 1997.
23. See Kessler, *Lessons*.
24. Judith Butler, "Doing Justice to Someone: Sex Reassignment and Allegories of Transsexuality," *GLQ* 7 (2001): 627.
25. John Money, John G. Hampson, and Joan L. Hampson, "Imprinting and the Establishment of Gender Role," *Archives of Neurology and Psychiatry* 77 (1957): 333–36.
26. John Money, "The Concept of Gender Identity Disorder in Childhood and Adolescence after Thirty-nine Years," *Journal of Sex and Marital Therapy* 20 (1994): 163–77.



27. Lynn Conway, "Basic TG/TS/IS Information," 2000–2003, [ai.eecs.umich.edu/people/conway/TS/TS.html](http://ai.eecs.umich.edu/people/conway/TS/TS.html).
28. Emi Koyama and Lisa Weasel with the Intersex Society of North America, "Teaching Intersex Issues: A Guide for Teachers in Women's, Gender, and Queer Studies," 2001, [isna.org/pdf/teaching-intersex-web.pdf](http://isna.org/pdf/teaching-intersex-web.pdf).
29. Intersex Society of North America, "Medical Questions about Intersexuality," [www.isna.org/faq/faq-medical.html](http://www.isna.org/faq/faq-medical.html) (accessed November 10, 2003).
30. The ISNA's home page notes: "Intersexuality is basically a problem of stigma and trauma, not gender. . . . All children should be assigned as boy or girl, without early surgery" ("What Is ISNA?" [www.isna.org/index.html](http://www.isna.org/index.html) [accessed November 10, 2003]).
31. Vernon A. Rosario, "Intersexes: The Molecular Deconstruction of Sex" (paper presented at the Feminist Research Seminar, Center for the Study of Women, University of California, Los Angeles, October 15, 2002).
32. Eric Vilain, "The Genetics of Intersexuality," *Journal of Gay and Lesbian Psychotherapy* (in press).

## Evolution and the Embodiment of Gender

### *Joan Roughgarden*

As transgendered people come out of the closet and cease living in stealth, a new voice in queer scholarship may emerge. Transgendered people speak of the centrality of body morphing, not merely as decoration but as definitional: the Cybelean scythe, the *hijra nirvan*, and the Western sex reassignment surgery. Extending queer theory to encompass transgender experience will probably draw attention to the materiality of gender and away from gender solely as performance.

Moreover, transgendered people bring new disciplines to the table of queer theory. Transgendered women, having been raised as boys and men, are likely to enter the male-typical careers of science and engineering, and transgendered men are likely to seek employment in such spheres. These technically educated people then wish to contribute to queer and gender theory, but they arrive on strange shores, ignorant of local customs and language, striving to be good citizens, and hoping not to tread on the bones of long-dead elders.

Here, then, is what I make of the distinction between sexuality and gender as seen from my position as a scientist specializing in ecology and evolutionary biology and as a transgendered woman.

Biologists distinguish themselves from MDs. Biologists, of course, think of themselves as enlightened, whereas MDs are ignorant troglodytes. Biologists teach MDs when the latter are still premeds, not yet community leaders, when they seem to be grade-grubbing memorizers incapable of independent thought. Biologists are