

Chapter 13

Dueling Dualisms

Anne Fausto-Sterling

*Anne Fausto-Sterling is the Nancy Duke Lewis professor of biology and gender studies in the Department of Molecular and Cell Biology and Biochemistry at Brown University. One of the world's leading researchers on the development of sexual identity and the biology of gender, her trail-breaking works on gender and sexuality include *Myths of Gender* and *Sexing the Body: Gender Politics and the Construction of Sexuality* (excerpted below).*

Male or Female?

In the rush and excitement of leaving for the 1988 Olympics, Maria Patiño, Spain's top woman hurdler, forgot the requisite doctor's certificate stating, for the benefit of Olympic officials, what seemed patently obvious to anyone who looked at her: she was female. But the International Olympic Committee (IOC) had anticipated the possibility that some competitors would forget their certificates of femininity. Patiño had only to report to the "femininity control head office,"¹ scrape some cells off the side of her cheek, and all would be in order—or so she thought.

A few hours after the cheek scraping she got a call. Something was wrong. She went for a second examination, but the doctors were mum. Then, as she rode to the Olympic stadium to start her first race, track officials broke the news: she had failed the sex test. She may have looked like a woman, had a woman's strength, and never had reason to suspect that she wasn't a woman, but the examinations revealed that Patiño's cells sported a Y chromosome, and that her labia hid testes within. Furthermore, she had neither ovaries nor a uterus. According to the IOC's definition, Patiño was not a woman. She was barred from competing on Spain's Olympic team.

Spanish athletic officials told Patiño to fake an injury and withdraw without publicizing the embarrassing facts. When she refused, the European press heard about it and the secret was out. Within months after returning to Spain, Patiño's life fell apart. Spanish officials stripped her of past titles and barred her from further competition. Her boyfriend deserted her. She was evicted from the national athletic residence, her scholarship was revoked, and suddenly she had to struggle to make a living. The national press had a field day at her expense. As she later said, "I was erased from the map, as if I had never existed. I gave twelve years to sports."²

Down but not out, Patiño spent thousands of dollars consulting doctors about her situation. They explained that she had been born with a condition called *androgen insensitivity*. This meant that, although she had a Y chromosome and her testes made plenty of testosterone, her cells couldn't detect this masculinizing hormone. As a result, her body had never developed male characteristics. But at puberty her testes produced estrogen (as do the testes of all men), which,

because of her body's inability to respond to its testosterone, caused her breasts to grow, her waist to narrow, and her hips to widen. Despite a Y chromosome and testes, she had grown up as a female and developed a female form.

Patiño resolved to fight the IOC ruling. "I knew I was a woman," she insisted to one reporter, "in the eyes of medicine, God and most of all, in my own eyes."³ [...] After two and a half years the International Amateur Athletic Federation (IAAF) reinstated her, and by 1992 Patiño had rejoined the Spanish Olympic squad, going down in history as the first woman ever to challenge sex testing for female athletes. Despite the IAAF's flexibility, however, the IOC has remained adamant: even if looking for a Y chromosome wasn't the most scientific approach to sex testing, testing *must* be done.

Sex or Gender?

Until 1968 female Olympic competitors were often asked to parade naked in front of a board of examiners. Breasts and a vagina were all one needed to certify one's femininity. But many women complained that this procedure was degrading. Partly because such complaints mounted, the IOC decided to make use of the modern "scientific" chromosome test. The problem, though, is that this test, and the more sophisticated polymerase chain reaction to detect small regions of DNA associated with testes development that the IOC uses today, cannot do the work the IOC wants it to do. A body's sex is simply too complex. There is no either/or. Rather, there are shades of difference. [...] One of the major claims I make [...] is that labeling someone a man or a woman is a social decision. We may use scientific knowledge to help us make the decision, but only our beliefs about gender—not science—can define our sex. Furthermore, our beliefs about gender affect what kinds of knowledge scientists produce about sex in the first place.

Over the last few decades, the relation between *social expression* of masculinity and femininity and their *physical underpinnings* has been hotly debated in scientific and social arenas. In 1972 the sexologists John Money and Anke Ehrhardt popularized the idea that sex and gender are separate categories. *Sex*, they argued, refers to physical attributes and is anatomically and physiologically determined. *Gender* they saw as a psychological transformation of the self—the internal conviction that one is either male or female (gender identity) and the behavioral expressions of that conviction.⁴

Meanwhile, the second-wave feminists of the 1970s also argued that sex is distinct from gender—that social institutions, themselves designed to perpetuate gender inequality, produce most of the differences between men and women.⁵ Feminists argued that although men's and women's bodies serve different reproductive functions, few other sex differences come with the territory, unchangeable by life's vicissitudes. If girls couldn't learn math as easily as boys, the problem wasn't built into their brains. The difficulty resulted from gender norms—different expectations and opportunities for boys and girls. Having a penis rather than a vagina is a sex difference. Boys performing better than girls on math exams is a gender difference. Presumably, the latter could be changed even if the former could not.

Money, Ehrhardt, and feminists set the terms so that *sex* represented the body's anatomy and physiological workings and *gender* represented social forces that molded behavior. Feminists did not question the realm of physical sex; it was the psychological and cultural meanings of these differences—gender—that was at issue. But feminist definitions of sex and gender left open the

possibility that male/female differences in cognitive function and behavior could *result* from sex differences, and thus, in some circles, the matter of sex versus gender became a debate about how “hardwired” intelligence and a variety of behaviors are in the brain, while in others there seemed no choice but to ignore many of the findings of contemporary neurobiology.

In ceding the territory of physical sex, feminists left themselves open to renewed attack on the grounds of biological difference. Indeed, feminism has encountered massive resistance from the domains of biology, medicine, and significant components of social science. Despite many positive social changes, the 1970s optimism that women would achieve full economic and social equality once gender inequity was addressed in the social sphere has faded in the face of a seemingly recalcitrant inequality.⁶ All of which has prompted feminist scholars, on the one hand, to question the notion of sex itself,⁷ while on the other to deepen their inquiry into what we might mean by words such as *gender*, *culture*, and *experience*. The anthropologist Henrietta A. Moore, for example, argues against reducing accounts of gender, culture, and experience to their “linguistic and cognitive elements.” [...] I argue, as does Moore, that “what is at issue is the embodied nature of identities and experience. Experience ... is not individual and fixed, but irredeemably social and processual.”⁸

Our bodies are too complex to provide clear cut answers about sexual difference. The more we look for a simple physical basis for “sex,” the more it becomes clear that “sex” is not a pure physical category. What bodily signals and functions we define as male or female come already entangled in our ideas about gender. Consider the problem facing the International Olympic Committee. Committee members want to decide definitively who is male and female. But how? [...] Could the IOC use muscle strength as some measure of sex? In some cases. But the strength of men and women, especially highly trained athletes, overlap. [...] And although Maria Patiño fit a commonsense definition of femininity in terms of looks and strength, she also had testes and a Y chromosome. But why should these be the deciding factors?

The IOC may use chromosome or DNA tests or inspection of the breasts and genitals to ascertain the sex of a competitor, but doctors faced with uncertainty about a child’s sex use different criteria. They focus primarily on reproductive abilities (in the case of a potential girl) or penis size (in the case of a prospective boy). If a child is born with two X chromosomes, oviducts, ovaries, and a uterus on the inside, but a penis and scrotum on the outside, for instance, is the child a boy or a girl? Most doctors declare the child a girl, despite the penis, because of her potential to give birth, and intervene using surgery and hormones to carry out the decision. Choosing which criteria to use in determining sex, and choosing to make the determination at all, are social decisions for which scientists can offer no absolute guidelines.

Real or Constructed?

I enter the debates about sex and gender as a biologist and a social activist. Daily, my life weaves in and out of a web of conflict over the politics of sexuality and the making and using of knowledge about the biology of human behavior. [...] Truths about human sexuality created by scholars in general and by biologists in particular are one component of political, social, and moral struggles about our cultures and economies. At the same time, components of our political, social, and moral struggles become, quite literally, embodied, incorporated into our very physiological being. My intent is to show how these mutually dependent claims work, in part by addressing such issues as how—through their daily lives, experiments, and medical practices—scientists create truths about sexuality; how our bodies incorporate and confirm these truths; and

how these truths, sculpted by the social milieu in which biologists practice their trade, in turn refashion our cultural environment.

My take on the problem is idiosyncratic, and for good reason. Intellectually, I inhabit three seemingly incompatible worlds. In my home department I interact with molecular biologists, scientists who examine living beings from the perspective of the molecules from which they are built. They describe a microscopic world in which cause and effect remain mostly inside a single cell. Molecular biologists rarely think about interacting organs within an individual body, and even less about how a body bounded by skin interacts with the world on the other side of the skin. Their vision of what makes an organism tick is decidedly bottom up, small to large, inside to outside.

I also interact with a virtual community—a group of scholars drawn together by a common interest in sexuality—and connected by something called a listserv. On a listserv, one can pose questions, think out loud, comment on relevant news items, argue about theories of human sexuality, and report the latest research findings. The comments are read by a group of people hooked together via electronic mail. My listserv (which I call “Loveweb”) consists of a diverse group of scholars—psychologists, animal behaviorists, hormone biologists, sociologists, anthropologists, and philosophers. Although many points of view coexist in this group, the vocal majority favor body-based, biological explanations of human sexual behavior. [...]

Unlike molecular biologists and Loveweb members, feminist theorists view the body not as essence, but as a bare scaffolding on which discourse and performance build a completely acculturated being. Feminist theorists write persuasively and often imaginatively about the processes by which culture molds and effectively creates the body. Furthermore, they have an eye on politics (writ large), which neither molecular biologists nor Loveweb participants have. Most feminist scholars concern themselves with real-world power relationships. They have often come to their theoretical work because they want to understand (and change) social, political, and economic inequality. Unlike the inhabitants of my other two worlds, feminist theorists reject what Donna Haraway, a leading feminist theoretician, calls “the God-trick”—producing knowledge from above, from a place that denies the individual scholar’s location in a real and troubled world. Instead, they understand that all scholarship adds threads to a web that positions racialized bodies, sexes, genders, and preferences in relationship to one another. New or differently spun threads change our relationships, change how we are in the world.

Traveling among these varied intellectual worlds produces more than a little discomfort. When I lurk on Loveweb, I put up with gratuitous feminist-bashing aimed at some mythic feminist who derides biology and seems to have a patently stupid view of how the world works. When I attend feminist conferences, people howl in disbelief at the ideas debated on Loveweb. And the molecular biologists don’t think much of either of the other worlds. The questions asked by feminists and Loveweb participants seem too complicated; studying sex in bacteria or yeast is the only way to go.

To my molecular biology, Loveweb, and feminist colleagues, then, I say the following: as a biologist, I believe in the material world. As a scientist, I believe in building specific knowledge by conducting experiments. But as a feminist Witness (in the Quaker sense of the word) and in recent years as a historian, I also believe that what we call “facts” about the living world are not universal truths. Rather, as Haraway writes, they “are rooted in specific histories, practices, languages and peoples.”⁹ Ever since the field of biology emerged in the United States and Europe at the start of the nineteenth century, it has been bound up in debates over sexual, racial, and national politics. And as our social viewpoints have shifted, so has the science of the body.

Many historians mark the seventeenth and eighteenth centuries as periods of great change in our concepts of sex and sexuality.¹⁰ During this period a notion of legal equality replaced the feudal exercise of arbitrary and violent power given by divine right. As the historian Michel Foucault saw it, society still required some form of discipline. A growing capitalism needed new methods to control the "insertion of bodies into the machinery of production and the adjustment of the phenomena of population to economic processes."¹¹ Foucault divided this power over living bodies (*bio-power*) into two forms. The first centered on the individual body. The role of many science professionals (including the so-called human sciences—psychology, sociology, and economics) became to optimize and standardize the body's function.¹² In Europe and North America, Foucault's standardized body has, traditionally, been male and Caucasian. And although this book focuses on gender, I regularly discuss the ways in which the ideas of both race and gender emerge from underlying assumptions about the body's physical nature. Understanding how race and gender work—together and independently—helps us learn more about how the social becomes embodied.

Foucault's second form of bio-power—"a *biopolitics of the population*"¹³—emerged during the early nineteenth century as pioneer social scientists began to develop the survey and statistical methods needed to supervise and manage "births and mortality, the level of health, life expectancy and longevity."¹⁴ For Foucault, "discipline" had a double meaning. On the one hand, it implied a form of control or punishment; on the other, it referred to an academic body of knowledge—the discipline of history or biology. The disciplinary knowledge developed in the fields of embryology, endocrinology, surgery, psychology, and biochemistry have encouraged physicians to attempt to control the very gender of the body—including "its capacities, gestures, movements, location and behaviors."¹⁵

By helping the normal take precedence over the natural, physicians have also contributed to populational biopolitics. We have become, Foucault writes, "a society of normalization."¹⁶ One important mid-twentieth-century sexologist went so far as to name the male and female models in his anatomy text *Norma and Normman [sic]*.¹⁷ Today we see the notion of pathology applied in many settings—from the sick, diseased, or different body, to the single-parent family in the urban ghetto. But imposing a gender norm is socially, not scientifically, driven. The lack of research into the normal distributions of genital anatomy, as well as many surgeons' lack of interest in using such data when they do exist [...], clearly illustrate this claim. From the viewpoint of medical practitioners, progress in the handling of intersexuality involves maintaining the normal. Accordingly, there *ought* to be only two boxes: male and female. The knowledge developed by the medical disciplines empowers doctors to maintain a mythology of the normal by changing the intersexual body to fit, as nearly as possible, into one or the other cubbyhole.

One person's medical progress, however, can be another's discipline and control. Intersexuals such as Maria Patifio have unruly—even heretical—bodies. They do not fall naturally into a binary classification; only a surgical shoehorn can put them there. But why should we care if a "woman" (defined as having breasts, a vagina, uterus, ovaries, and menstruation) has a "clitoris" large enough to penetrate the vagina of another woman? Why should we care if there are individuals whose "natural biological equipment" enables them to have sex "naturally" with both men and women? Why must we amputate or surgically hide that "offending shaft" found on an especially large clitoris? The answer: to maintain gender divisions, we must control those bodies that are so unruly as to blur the borders. Since intersexuals quite literally embody both sexes, they weaken claims about sexual difference.

[...] Euro-American ways of understanding how the world works depend heavily on the use of dualisms—pairs of opposing concepts, objects, or belief systems.

Why worry about using dualisms to parse the world? I agree with the philosopher Val Plumwood, who argues that their use makes invisible the interdependencies of each pair. This relationship enables sets of pairs to map onto each other. Consider an extract of Plumwood's list:

Reason	Nature
Male	Female
Mind	Body
Master	Slave
Freedom	Necessity (nature)
Human	Nature (nonhuman)
Civilized	Primitive
Production	Reproduction
Self	Other

In everyday use, the sets of associations on each side of the list often run together. "Culture," Plumwood writes, accumulates these dualisms as a store of weapons "which can be mined, refined and redeployed. Old oppressions stored as dualisms facilitate and break the path for new ones."¹⁸ For this reason, even though my focus is on gender, I do not hesitate to point out occasions in which the constructs and ideology of race intersect with those of gender.

Ultimately, the sex/gender dualism limits feminist analysis. The term *gender*, placed in a dichotomy, necessarily excludes biology. As the feminist theorist Elizabeth Wilson writes: "Feminist critiques of the stomach or hormonal structure ... have been rendered unthinkable."¹⁹ [...] Such critiques remain unthinkable because of the real/constructed divide (sometimes formulated as a division between nature and culture), in which many map the knowledge of the real onto the domain of science (equating the constructed with the cultural). Dichotomous formulations from feminists and nonfeminists alike conspire to make a sociocultural analysis of the body seem impossible.

Some feminist theorists, especially during the last decade, have tried—with varying degrees of success—to create a nondualistic account of the body. Judith Butler, for example, tries to reclaim the material body for feminist thought. Why, she wonders, has the idea of materiality come to signify that which is irreducible, that which can support construction but cannot itself be constructed?²⁰ We have, Butler says (and I agree), to talk about the material body. There *are* hormones, genes, prostates, uteri, and other body parts and physiologies that we use to differentiate male from female, that become part of the ground from which varieties of sexual experience and desire emerge. Furthermore, variations in each of these aspects of physiology profoundly affect an individual's experience of gender and sexuality. But every time we try to return to the body as something that exists prior to socialization, prior to discourse about male and female, Butler writes, "we discover that matter is fully sedimented with discourses on sex and sexuality that prefigure and constrain the uses to which that term can be put."²¹

Western notions of matter and bodily materiality, Butler argues, have been constructed through a "gendered matrix." That classical philosophers associated femininity with materiality can be seen in the origins of the word itself. "Matter" [is] derived from *mater* and *matrix*, referring to

the womb and problems of reproduction. In both Greek and Latin, according to Butler, matter was not understood to be a blank slate awaiting the application of external meaning. "The matrix is a ... formative principle which inaugurates and informs a development of some organism or object ... for Aristotle, 'matter is potentiality, form actuality.' ... In reproduction women are said to contribute the matter, men the form."²² As Butler notes, the title of her book, *Bodies That Matter*, is a well thought-out pun. To be material is to speak about the process of materialization. And if viewpoints about sex and sexuality are already embedded in our philosophical concepts of how matter forms into bodies, the matter of bodies cannot form a neutral, pre-existing ground from which to understand the origin of sexual difference.

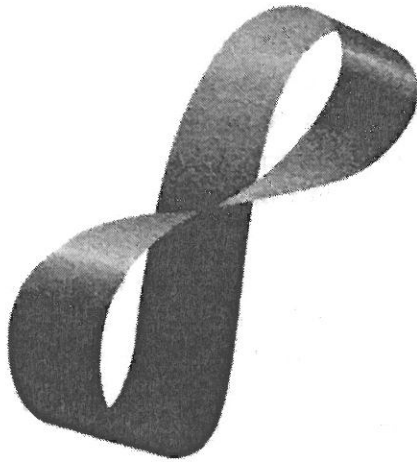
Since matter already contains notions of gender and sexuality, it cannot be a neutral recourse on which to build "scientific" or "objective" theories of sexual development and differentiation. At the same time, we have to acknowledge and use aspects of materiality "that pertain to the body." "The domains of biology, anatomy, physiology, hormonal and chemical composition, illness, age, weight, metabolism, life and death" cannot "be denied."²³ The critical theorist Bernice Hausman concretizes this point in her discussion of surgical technologies available for creating male-to-female versus female-to-male transsexual bodies. "The differences," she writes, "between vagina and penis are not merely ideological. Any attempt to engage and decode the semiotics of sex ... must acknowledge that these physiological signifiers have functions in the real that will escape ... their function in the symbolic system."²⁴

To talk about human sexuality requires a notion of the material. Yet the idea of the material comes to us already tainted, containing within it pre-existing ideas about sexual difference. Butler suggests that we look at the body as a system that simultaneously produces and is produced by social meanings, just as any biological organism always results from the combined and simultaneous actions of nature and nurture.

Unlike Butler, the feminist philosopher Elizabeth Grosz allows some biological processes a status that pre-exists their meaning. She believes that biological instincts or drives provide a kind of raw material for the development of sexuality. But raw materials are never enough. They must be provided with a set of meanings, "a network of desires"²⁵ that organize the meaning and consciousness of the child's bodily functions. This claim becomes clear if one follows the stories of so-called wild children raised without human constraints or the inculcation of meaning. Such children acquire neither language nor sexual drive. While their bodies provided the raw materials, without a human social setting the clay could not be molded into recognizable psychic form. Without human sociality, human sexuality cannot develop. Grosz tries to understand how human sociality and meaning that clearly originate outside the body end up incorporated into its physiological demeanor and both unconscious and conscious behaviors.

Some concrete examples will help illustrate. A tiny gray-haired woman, well into her ninth decade, peers into the mirror at her wrinkled face. "Who is that woman?" she wonders. Her mind's image of her body does not synchronize with the mirror's reflection. Her daughter, now in her mid-fifties, tries to remember that unless she thinks about using her leg muscles instead of her knee joint, going up and down the stairs will be painful. (Eventually she will acquire a new kinesic habit and dispense with conscious thought about the matter.) Both women are readjusting the visual and kinesic components of their body image, formed on the basis of past information, but always a bit out of date with the current physical body. How do such readjustments occur, and how do our earliest body images form in the first place? Here we need the concept of the psyche, a place where two-way translations between the mind and the body take place—a United Nations, as it were, of bodies and experiences.

Figure 13.1: Möbius Strip



Source: Courtesy of John Harrison.

In *Volatile Bodies*, Elizabeth Grosz considers how the body and the mind come into being together. To facilitate her project, she invokes the image of a Möbius strip as a metaphor for the psyche. The Möbius strip is a topological puzzle (Figure 13.1), a flat ribbon twisted once and then attached end to end to form a circular twisted surface. One can trace the surface, for example, by imagining an ant walking along it. At the beginning of the circular journey, the ant is clearly on the outside. But as it traverses the twisted ribbon, without ever lifting its legs from the plane, it ends up on the inside surface. Grosz proposes that we think of the body—the brain, muscles, sex organs, hormones, and more—as composing the inside of the Möbius strip. Culture and experience would constitute the outside sur-

face. But, as the image suggests, the inside and outside are continuous and one can move from one to the other without ever lifting one's feet off the ground.

As Grosz recounts, psychoanalysts and phenomenologists describe the body in terms of feelings.²⁶ The mind translates physiology into an interior sense of self. Oral sexuality, for example, is a physical feeling that a child and later an adult translates into psychosexual meaning. This translation takes place on the inside of the Möbius surface. But as one traces the surface toward the outside, one begins to speak in terms of connections to other bodies and objects—things that are clearly not-self. Grosz writes, "Instead of describing the oral drive in terms of what it feels like ... orality can be understood in terms of what it does: creating linkages. The child's lips, for example, form connections ... with the breast or bottle, possibly accompanied by the hand in conjunction with an ear, each system in perpetual motion and in mutual interrelation."²⁷

Continuing with the Möbius analogy, Grosz envisions that bodies create psyches by using the libido as a marker pen to trace a path from biological processes to an interior structure of desire. It falls to a different arena of scholarship to study the "outside" of the strip, a more obviously social surface marked by "pedagogical, juridical, medical, and economic texts, laws, and practices" in order to "carve out a social subject ... capable of labor, or production and manipulation, a subject capable of acting as a subject."²⁸ Thus Grosz also rejects a nature versus nurture model of human development. While acknowledging that we do not understand the range and limits of the body's pliability, she insists that we cannot merely "subtract the environment, culture, history" and end up with "nature or biology."

Beyond Dualisms

Grosz postulates innate drives that become organized by physical experience into somatic feelings, which translate into what we call emotions. Taking the innate at face value, however, still leaves us with an unexplained residue of nature. Humans are biological and thus in some sense natural beings *and* social and in some sense artificial—or, if you will, constructed entities. Can we devise a way of seeing ourselves, as we develop from fertilization to old age, as simultaneously

natural and unnatural? During the past decade an exciting vision has emerged that I have loosely grouped under the rubric of developmental systems theory, or DST. What do we gain by choosing DST as an analytic framework?

Developmental systems theorists deny that there are fundamentally two kinds of processes: one guided by genes, hormones, and brain cells (that is, nature), the other by the environment, experience, learning, or inchoate social forces (that is, nurture). The pioneer systems theorist, philosopher Susan Oyama, promises that DST "gives more clarity, more coherence, more consistency and a different way to interpret data; in addition it offers the means for synthesizing the concepts and methods ... of groups that have been working at cross-purposes, or at least talking past each other for decades." Nevertheless, developmental systems theory is no magic bullet. Many will resist its insights because, as Oyama explains, "it gives less ... guidance on fundamental truth" and "fewer conclusions about what is inherently desirable, healthy, natural or inevitable."²⁹

How, specifically, can DST help us break away from dualistic thought processes? Consider an example described by systems theorist Peter Taylor: a goat born with no front legs. During its lifetime it managed to hop around on its hind limbs. An anatomist who studied the goat after it died found that it had an S-shaped spine (as do humans), "thickened bones, modified muscle insertions, and other correlates of moving on two legs."³⁰ This (and every goat's) skeletal system developed as part of its manner of walking. Neither its genes nor its environment determined its anatomy. Only the ensemble had such power. Many developmental physiologists recognize this principle. As one biologist writes, "enstructuring occurs during the enactment of individual life histories."³¹

A few years ago, when the neuroscientist Simon LeVay reported that the brain structures of gay and heterosexual men differed (and that this mirrored a more general sex difference between straight men and women), he became the center of a firestorm.³² Although an instant hero among many gay males, he was at odds with a rather mixed group. On the one hand, feminists such as myself disliked his unquestioning use of gender dichotomies, which have in the past never worked to further equality for women. On the other, members of the Christian right hated his work because they believe that homosexuality is a sin that individuals can choose to reject. LeVay's, and later geneticist Dean Hamer's, work suggested to them that homosexuality was inborn or innate.³³ The language of the public debate soon became polarized. Each side contrasted words such as *generic*, *biological*, *inborn*, *innate*, and *unchanging* with *environmental*, *acquired*, *constructed*, and *choice*.

The ease with which such debates evoke the nature/nurture divide is a consequence of the poverty of a nonsystems approach. Politically, the nature/nurture framework holds enormous dangers. Although some hope that a belief in the nature side of things will lead to greater tolerance, past history suggests that the opposite is also possible. Even the scientific architects of the nature argument recognize the dangers. In an extraordinary passage in the pages of *Science*, Dean Hamer and his collaborators indicated their concern: "It would be fundamentally unethical to use such information to try to assess or alter a person's current or future sexual orientation. Rather, scientists, educators, policy-makers and the public should work together to ensure that such research is used to benefit all members of society."³⁴

The feminist psychologist and critical theorist Elisabeth Wilson uses the hubbub over LeVay's work to make some important points about systems theory. Many feminist, queer, and critical theorists work by deliberately displacing biology, hence opening the body to social and cultural shaping. This, however, is the wrong move to make. Wilson writes: "What may be politically and critically contentious in LeVay's hypothesis is not the conjunction neurology-sexuality per se, but the particular manner in which such a conjunction is enacted."³⁵ An effective political response,

she continues, doesn't have to separate the study of sexuality from the neurosciences. Instead, Wilson, who wants us to develop a theory of mind and body—an account of psyche that joins libido to body—suggests that feminists incorporate into their worldview an account of how the brain works that is, broadly speaking, called connectionism.

The old-fashioned approach to understanding the brain was anatomical. Function could be located in particular parts of the brain. Ultimately function and anatomy were one. [...] Many scientists [still] believe that a structural difference represents the brain location for measured behavioral differences. In contrast, connectionist models argue that function emerges from the complexity and strength of many neural connections acting at once. The system has some important characteristics: the responses are often nonlinear, the networks can be "trained" to respond in particular ways, the nature of the response is not easily predictable, and information is not located anywhere—rather, it is the net result of the many different connections and their differing strengths.

The tenets of some connectionist theory provide interesting starting points for understanding human sexual development. Because connectionist networks, for example, are usually nonlinear, small changes can produce large effects. One implication for studying sexuality: we could easily be looking in the wrong places and on the wrong scale for aspects of the environment that shape human development. Furthermore, a single behavior may have many underlying causes, events that happen at different times in development. I suspect that our labels of homosexual, heterosexual, bisexual, and transgender are really not good categories at all, and are best understood only in terms of unique developmental events affecting particular individuals. Thus, I agree with those connectionists who argue that "the developmental process itself lies at the heart of knowledge acquisition. Development is a process of emergence."³⁶

In most public and most scientific discussions, sex and nature are thought to be real, while gender and culture are seen as constructed. But these are false dichotomies.

Notes

We have cut extensively the notes and references, which were lengthy in the original.

1. Hanley 1983.
2. Quoted in Carlson 1991, p. 27.
3. Ibid. The technical name for Patiño's condition is Androgen Insensitivity Syndrome. It is one of a number of conditions that leads to bodies having mixtures of male and female parts. Today we call such bodies *intersexes*.
4. [...] Money and Ehrhardt 1972, p. 4. [...]
5. See, for example, Rubin 1975. Rubin also questions the biological basis of homosexuality and heterosexuality. Note that feminist definitions of gender applied to institutions as well as personal or psychological differences.
6. For a discussion of this recalcitrance in terms of gender schema in adulthood, see Valian 1998a, 1998b.
7. [...] Feinberg 1996; Kessler and McKenna 1978; Haraway 1989, 1997; Hausman 1995; Rothblatt 1995; Burke 1996; and Dreger 1998. [...]