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BELIEVING IS SEEING: Biology as Ideology

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Western ideology takes biology as the cause, and behavior and social statuses as the effects, and then proceeds to construct biological dichotomies to justify the "naturalness" of gendered behavior and gendered social statuses. What we believe is what we see—two sexes producing two genders. The process, however, goes the other way: gender constructs social bodies to be different and unequal. The content of the two sets of constructed social categories, "females and males" and "women and men," is so varied that their use in research without further specification renders the results spurious.

Until the eighteenth century, Western philosophers and scientists thought that there was one sex and that women's internal genitalia were the inverse of men's external genitalia: the womb and vagina were the penis and scrotum turned inside out (Laqueur 1990). Current Western thinking sees women and men as so different physically as to sometimes seem two species. The bodies, which have been mapped inside and out for hundreds of years, have not changed. What has changed are the justifications for gender inequality. When the social position of all human beings was believed to be set by natural law or was considered God-given, biology was irrelevant; women and men of different classes all had their assigned places. When scientists began to question the divine basis of social order and replaced faith with empirical

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knowledge, what they saw was that women were very different from men in that they had wombs and menstruated. Such anatomical differences destined them for an entirely different social life from men.

In actuality, the basic bodily material *is* the same for females and males, and except for procreative hormones and organs, female and male human beings have similar bodies (Naftolin and Butz 1981). Furthermore, as has been known since the middle of the nineteenth century, male and female genitalia develop from the same fetal tissue, and so infants can be born with ambiguous genitalia (Money and Ehrhardt 1972). When they are, biology is used quite arbitrarily in sex assignment. Suzanne Kessler (1990) interviewed six medical specialists in pediatric intersexuality and found that whether an infant with XY chromosomes and anomalous genitalia was categorized as a boy or a girl depended on the size of the penis—if a penis was very small, the child was categorized as a girl, and sex-change surgery was used to make an artificial vagina. In the late nineteenth century, the presence or absence of ovaries was the determining criterion of gender assignment for hermaphrodites because a woman who could not procreate was not a complete woman (Kessler 1990, 20).

Yet in Western societies, we see two discrete sexes and two distinguishable genders because our society is built on two classes of people, “women” and “men.” Once the gender category is given, the attributes of the person are also gendered: Whatever a “woman” is has to be “female”; whatever a “man” is has to be “male.” Analyzing the social processes that construct the categories we call “female and male,” “women and men,” and “homosexual and heterosexual” uncovers the ideology and power differentials congealed in these categories (Foucault 1978). This article will use two familiar areas of social life—sports and technological competence—to show how myriad physiological differences are transformed into similar-appearing, gendered social bodies. My perspective goes beyond accepted feminist views that gender is a cultural overlay that modifies physiological sex differences. That perspective assumes either that there are two fairly similar sexes distorted by social practices into two genders with purposefully different characteristics or that there are two sexes whose essential differences are rendered unequal by social practices. I am arguing that bodies differ in many ways physiologically, but they are completely transformed by social practices to fit into the salient categories of a society, the most pervasive of which are “female” and “male” and “women” and “men.”

Neither sex nor gender are pure categories. Combinations of incongruous genes, genitalia, and hormonal input are ignored in sex categorization, just as combinations of incongruous physiology, identity, sexuality, appearance,

and behavior are ignored in the social construction of gender statuses. Menstruation, lactation, and gestation do not demarcate women from men. Only some women are pregnant and then only some of the time; some women do not have a uterus or ovaries. Some women have stopped menstruating temporarily, others have reached menopause, and some have had hysterectomies. Some women breastfeed some of the time, but some men lactate (Jaggar 1983, 165fn). Menstruation, lactation, and gestation are individual experiences of womanhood (Levesque-Lopman 1988), but not determinants of the social category "woman," or even "female." Similarly, "men are not always sperm-producers, and in fact, not all sperm producers are men. A male-to-female transsexual, prior to surgery, can be socially a woman, though still potentially (or actually) capable of spermatogenesis" (Kessler and McKenna [1978] 1985, 2).

When gender assignment is contested in sports, where the categories of competitors are rigidly divided into women and men, chromosomes are now used to determine in which category the athlete is to compete. However, an anomaly common enough to be found in several women at every major international sports competition are XY chromosomes that have not produced male anatomy or physiology because of a genetic defect. Because these women are women in every way significant for sports competition, the prestigious International Amateur Athletic Federation has urged that sex be determined by simple genital inspection (Kolata 1992). Transsexuals would pass this test, but it took a lawsuit for Renée Richards, a male-to-female transsexual, to be able to play tournament tennis as a woman, despite his male sex chromosomes (Richards 1983). Oddly, neither basis for gender categorization—chromosomes nor genitalia—has anything to do with sports prowess (Birrell and Cole 1990).

In the Olympics, in cases of chromosomal ambiguity, women must undergo "a battery of gynecological and physical exams to see if she is 'female enough' to compete. Men are not tested" (Carlson 1991, 26). The purpose is not to categorize women and men accurately, but to make sure men don't enter women's competitions, where, it is felt, they will have the advantage of size and strength. This practice sounds fair only because it is assumed that all men are similar in size and strength and different from all women. Yet in Olympics boxing and wrestling matches, men are matched within weight classes. Some women might similarly successfully compete with some men in many sports. Women did not run in marathons until about twenty years ago. In twenty years of marathon competition, women have reduced their finish times by more than one-and-one-half hours; they are expected to run as fast as men in that race by 1998 and might catch up with men's running

times in races of other lengths within the next 50 years because they are increasing their fastest speeds more rapidly than are men (Fausto-Sterling 1985, 213-18).

The reliance on only two sex and gender categories in the biological and social sciences is as epistemologically spurious as the reliance on chromosomal or genital tests to group athletes. Most research designs do not investigate whether physical skills or physical abilities are really more or less common in women and men (Epstein 1988). They start out with two social categories ("women," "men"), assume they are biologically different ("female," "male"), look for similarities among them and differences between them, and attribute what they have found for the social categories to sex differences (Gelman, Collman, and Maccoby 1986). These designs rarely question the categorization of their subjects into two and only two groups, even though they often find more significant within-group differences than between-group differences (Hyde 1990). The social construction perspective on sex and gender suggests that instead of starting with the two presumed dichotomies in each category—female, male; woman, man—it might be more useful in gender studies to group patterns of behavior and only then look for identifying markers of the people likely to enact such behaviors.

WHAT SPORTS ILLUSTRATE

Competitive sports have become, for boys and men, as players and as spectators, a way of constructing a masculine identity, a legitimated outlet for violence and aggression, and an avenue for upward mobility (Dunning 1986; Kemper 1990, 167-206; Messner 1992). For men in Western societies, physical competence is an important marker of masculinity (Fine 1987; Glassner 1992; Majors 1990). In professional and collegiate sports, physiological differences are invoked to justify women's secondary status, despite the clear evidence that gender status overrides physiological capabilities. Assumptions about women's physiology have influenced rules of competition; subsequent sports performances then validate how women and men are treated in sports competitions.

Gymnastic equipment is geared to slim, wiry, prepubescent girls and not to mature women; conversely, men's gymnastic equipment is tailored for muscular, mature men, not slim, wiry prepubescent boys. Boys could compete with girls, but are not allowed to; women gymnasts are left out entirely. Girl gymnasts are just that—little girls who will be disqualified as soon as they grow up (Vecsey 1990). Men gymnasts have men's status. In women's

basketball, the size of the ball and rules for handling the ball change the style of play to "a slower, less intense, and less exciting modification of the 'regular' or men's game" (Watson 1987, 441). In the 1992 Winter Olympics, men figure skaters were required to complete three triple jumps in their required program; women figure skaters were forbidden to do more than *one*. These rules penalized artistic men skaters and athletic women skaters (Janofsky 1992). For the most part, Western sports are built on physically trained men's bodies:

Speed, size, and strength seem to be the essence of sports. Women *are* naturally inferior at "sports" so conceived.

But if women had been the historically dominant sex, our concept of sport would no doubt have evolved differently. Competitions emphasizing flexibility, balance, strength, timing, and small size might dominate Sunday afternoon television and offer salaries in six figures. (English 1982, 266, emphasis in original)

Organized sports are big businesses and, thus, who has access and at what level is a distributive or equity issue. The overall status of women and men athletes is an economic, political, and ideological issue that has less to do with individual physiological capabilities than with their cultural and social meaning and who defines and profits from them (Messner and Sabo 1990; Slatton and Birrell 1984). Twenty years after the passage of Title IX of the U.S. Civil Rights Act, which forbade gender inequality in any school receiving federal funds, the *goal* for collegiate sports in the next five years is 60 percent men, 40 percent women in sports participation, scholarships, and funding (Moran 1992).

How access and distribution of rewards (prestigious and financial) are justified is an ideological, even moral, issue (Birrell 1988, 473-76; Hargreaves 1982). One way is that men athletes are glorified and women athletes ignored in the mass media. Messner and his colleagues found that in 1989, in TV sports news in the United States, men's sports got 92 percent of the coverage and women's sports 5 percent, with the rest mixed or gender-neutral (Messner, Duncan, and Jensen 1993). In 1990, in four of the top-selling newspapers in the United States, stories on men's sports outnumbered those on women's sports 23 to 1. Messner and his colleagues also found an implicit hierarchy in naming, with women athletes most likely to be called by first names, followed by Black men athletes, and only white men athletes routinely referred to by their last names. Similarly, women's collegiate sports teams are named or marked in ways that symbolically feminize and trivialize them—the men's team is called Tigers, the women's Kittens (Eitzen and Baca Zinn 1989).

Assumptions about men's and women's bodies and their capacities are crafted in ways that make unequal access and distribution of rewards acceptable (Hudson 1978; Messner 1988). Media images of modern men athletes glorify their strength and power, even their violence (Hargreaves 1986). Media images of modern women athletes tend to focus on feminine beauty and grace (so they are not really athletes) or on their thin, small, wiry androgynous bodies (so they are not really women). In coverage of the Olympics,

loving and detailed attention is paid to pixie-like gymnasts; special and extended coverage is given to graceful and dazzling figure skaters; the camera painstakingly records the fluid movements of swimmers and divers. And then, in a blinding flash of fragmented images, viewers see a few minutes of volleyball, basketball, speed skating, track and field, and alpine skiing, as television gives its nod to the mere existence of these events. (Boutilier and SanGiovanni 1983, 190)

Extraordinary feats by women athletes who were presented as mature adults might force sports organizers and audiences to rethink their stereotypes of women's capabilities, the way elves, mermaids, and ice queens do not. Sports, therefore, construct men's bodies to be powerful; women's bodies to be sexual. As Connell says,

The meanings in the bodily sense of masculinity concern, above all else, the superiority of men to women, and the exaltation of hegemonic masculinity over other groups of men which is essential for the domination of women. (1987, 85)

In the late 1970s, as women entered more and more athletic competitions, supposedly good scientific studies showed that women who exercised intensely would cease menstruating because they would not have enough body fat to sustain ovulation (Brozan 1978). When one set of researchers did a yearlong study that compared 66 women—21 who were training for a marathon, 22 who ran more than an hour a week, and 23 who did less than an hour of aerobic exercise a week—they discovered that only 20 percent of the women in any of these groups had "normal" menstrual cycles every month (Prior et al. 1990). The dangers of intensive training for women's fertility therefore were exaggerated as women began to compete successfully in arenas formerly closed to them.

Given the association of sports with masculinity in the United States, women athletes have to manage a contradictory status. One study of women college basketball players found that although they "did athlete" on the court—"pushing, shoving, fouling, hard running, fast breaks, defense, obscenities and sweat" (Watson 1987, 441), they "did woman" off the court, using the locker room as their staging area:

While it typically took fifteen minutes to prepare for the game, it took approximately fifteen minutes after the game to shower and remove the sweat of an athlete, *and* it took another thirty minutes to dress, apply make-up and style hair. It did not seem to matter whether the players were going out into the public or getting on a van for a long ride home. Average dressing time and rituals did not change. (Watson 1987, 443)

Another way women manage these status dilemmas is to redefine the activity or its result as feminine or womanly (Mangan and Park 1987). Thus women bodybuilders claim that "flex appeal is sex appeal" (Duff and Hong 1984, 378).

Such a redefinition of women's physicality affirms the ideological subtext of sports that physical strength is men's prerogative and justifies men's physical and sexual domination of women (Hargreaves 1986; Messner 1992, 164-72; Olson 1990; Theberge 1987; Willis 1982). When women demonstrate physical strength, they are labeled unfeminine:

It's threatening to one's takeability, one's rapeability, one's femininity, to be strong and physically self-possessed. To be able to resist rape, not to communicate rapeability with one's body, to hold one's body for uses and meanings other than that can transform what *being a woman means*. (MacKinnon 1987, 122, emphasis in original)

Resistance to that transformation, ironically, was evident in the policies of American women physical education professionals throughout most of the twentieth century. They minimized exertion, maximized a feminine appearance and manner, and left organized sports competition to men (Birrell 1988, 461-62; Mangan and Park 1987).

DIRTY LITTLE SECRETS

As sports construct gendered bodies, technology constructs gendered skills. Meta-analysis of studies of gender differences in spatial and mathematical ability have found that men have a large advantage in ability to mentally rotate an image, a moderate advantage in a visual perception of horizontality and verticality and in mathematical performance, and a small advantage in ability to pick a figure out of a field (Hyde 1990). It could be argued that these advantages explain why, within the short space of time that computers have become ubiquitous in offices, schools, and homes, work on them and with them has become gendered: Men create, program, and market computers, make war and produce science and art with them; women microwire them in computer factories and enter data in computerized offices;

boys play games, socialize, and commit crimes with computers; girls are rarely seen in computer clubs, camps, and classrooms. But women were hired as computer programmers in the 1940s because

the work seemed to resemble simple clerical tasks. In fact, however, programming demanded complex skills in abstract logic, mathematics, electrical circuitry, and machinery, all of which . . . women used to perform in their work. Once programming was recognized as "intellectually demanding," it became attractive to men. (Donato 1990, 170)

A woman mathematician and pioneer in data processing, Grace M. Hopper, was famous for her work on programming language (Perry and Greber 1990, 86). By the 1960s, programming was split into more and less skilled specialties, and the entry of women into the computer field in the 1970s and 1980s was confined to the lower-paid specialties. At each stage, employers invoked women's and men's purportedly natural capabilities for the jobs for which they were hired (Cockburn 1983, 1985; Donato 1990; Hartmann 1987; Hartmann, Kraut, and Tilly 1986; Kramer and Lehman 1990; Wright et al. 1987; Zimmerman 1983).

It is the taken-for-grantedness of such everyday gendered behavior that gives credence to the belief that the widespread differences in what women and men do must come from biology. To take one ordinarily unremarked scenario: In modern societies, if a man and woman who are a couple are in a car together, he is much more likely to take the wheel than she is, even if she is the more competent driver. Molly Haskell calls this taken-for-granted phenomenon "the dirty little secret of marriage: the husband-lousy-driver syndrome" (1989, 26). Men drive cars whether they are good drivers or not because men and machines are a "natural" combination (Scharff 1991). But the ability to drive gives one mobility; it is a form of social power.

In the early days of the automobile, feminists co-opted the symbolism of mobility as emancipation: "Donning goggles and dusters, wielding tire irons and tool kits, taking the wheel, they announced their intention to move beyond the bounds of women's place" (Scharff 1991, 68). Driving enabled them to campaign for women's suffrage in parts of the United States not served by public transportation, and they effectively used motorcades and speaking from cars as campaign tactics (Scharff 1991, 67-88). Sandra Gilbert also notes that during World War I, women's ability to drive was physically, mentally, and even sensually liberating:

For nurses and ambulance drivers, women doctors and women messengers, the phenomenon of modern battle was very different from that experienced by entrenched combatants. Finally given a chance to take the wheel, these post-Victorian girls raced motorcars along foreign roads like adventurers exploring

new lands, while their brothers dug deeper into the mud of France. . . . Retrieving the wounded and the dead from deadly positions, these once-decorous daughters had at last been allowed to prove their valor, and they swooped over the wastelands of the war with the energetic love of Wagnerian Valkyries, their mobility alone transporting countless immobilized heroes to safe havens. (1983, 438-39)

Not incidentally, women in the United States and England got the vote for their war efforts in World War I.

SOCIAL BODIES AND THE BATHROOM PROBLEM

People of the same racial ethnic group and social class are roughly the same size and shape—but there are many varieties of bodies. People have different genitalia, different secondary sex characteristics, different contributions to procreation, different orgasmic experiences, different patterns of illness and aging. Each of us experiences our bodies differently, and these experiences change as we grow, age, sicken, and die. The bodies of pregnant and nonpregnant women, short and tall people, those with intact and functioning limbs and those whose bodies are physically challenged are all different. But the salient categories of a society group these attributes in ways that ride roughshod over individual experiences and more meaningful clusters of people.

I am not saying that physical differences between male and female bodies don't exist, but that these differences are socially meaningless until social practices transform them into social facts. West Point Military Academy's curriculum is designed to produce leaders, and physical competence is used as a significant measure of leadership ability (Yoder 1989). When women were accepted as West Point cadets, it became clear that the tests of physical competence, such as rapidly scaling an eight-foot wall, had been constructed for male physiques—pulling oneself up and over using upper-body strength. Rather than devise tests of physical competence for women, West Point provided boosters that mostly women used—but that lost them test points—in the case of the wall, a platform. Finally, the women themselves figured out how to use their bodies successfully. Janice Yoder describes this situation:

I was observing this obstacle one day, when a woman approached the wall in the old prescribed way, got her fingertips grip, and did an unusual thing: she walked her dangling legs up the wall until she was in a position where both her hands and feet were atop the wall. She then simply pulled up her sagging

bottom and went over. She solved the problem by capitalizing on one of women's physical assets: lower-body strength. (1989, 530)

In short, if West Point is going to measure leadership capability by physical strength, women's pelvises will do just as well as men's shoulders.

The social transformation of female and male physiology into a condition of inequality is well illustrated by the bathroom problem. Most buildings that have gender-segregated bathrooms have an equal number for women and for men. Where there are crowds, there are always long lines in front of women's bathrooms but rarely in front of men's bathrooms. The cultural, physiological, and demographic combinations of clothing, frequency of urination, menstruation, and child care add up to generally greater bathroom use by women than men. Thus, although an equal number of bathrooms seems fair, equity would mean more women's bathrooms or allowing women to use men's bathrooms for a certain amount of time (Molotch 1988).

The bathroom problem is the outcome of the way gendered bodies are differentially evaluated in Western cultures: Men's social bodies are the measure of what is "human." Gray's *Anatomy*, in use for 100 years, well into the twentieth century, presented the human body as male. The female body was shown only where it differed from the male (Laqueur 1990, 166-67). Denise Riley says that if we envisage women's bodies, men's bodies, and human bodies "as a triangle of identifications, then it is rarely an equilateral triangle in which both sexes are pitched at matching distances from the apex of the human" (1988, 197). Catharine MacKinnon also contends that in Western society, universal "humanness" is male because

virtually every quality that distinguishes men from women is already affirmatively compensated in this society. Men's physiology defines most sports, their needs define auto and health insurance coverage, their socially defined biographies define workplace expectations and successful career patterns, their perspectives and concerns define quality in scholarship, their experiences and obsessions define merit, their objectification of life defines art, their military service defines citizenship, their presence defines family, their inability to get along with each other—their wars and rulerships—define history, their image defines god, and their genitals define sex. For each of their differences from women, what amounts to an affirmative action plan is in effect, otherwise known as the structure and values of American society. (1987, 36)

THE PARADOX OF HUMAN NATURE

Gendered people do not emerge from physiology or hormones but from the exigencies of the social order, mostly, from the need for a reliable division

of the work of food production and the social (not physical) reproduction of new members. The moral imperatives of religion and cultural representations reinforce the boundary lines among genders and ensure that what is demanded, what is permitted, and what is tabooed for the people in each gender is well-known and followed by most. Political power, control of scarce resources, and, if necessary, violence uphold the gendered social order in the face of resistance and rebellion. Most people, however, voluntarily go along with their society's prescriptions for those of their gender status because the norms and expectations get built into their sense of worth and identity as a certain kind of human being and because they believe their society's way is the natural way. These beliefs emerge from the imagery that pervades the way we think, the way we see and hear and speak, the way we fantasize, and the way we feel. There is no core or bedrock human nature below these endlessly looping processes of the social production of sex and gender, self and other, identity and psyche, each of which is a "complex cultural construction" (Butler 1990, 36). The paradox of "human nature" is that it is *always* a manifestation of cultural meanings, social relationships, and power politics—"not biology, but culture, becomes destiny" (Butler 1990, 8).

Feminist inquiry has long questioned the conventional categories of social science, but much of the current work in feminist sociology has not gone beyond adding the universal category "women" to the universal category "men." Our current debates over the global assumptions of only two categories and the insistence that they must be nuanced to include race and class are steps in the direction I would like to see feminist research go, but race and class are *also* global categories (Collins 1990; Spelman 1988). Deconstructing sex, sexuality, and gender reveals many possible categories embedded in the social experiences and social practices of what Dorothy Smith calls the "everyday/everynight world" (1990, 31-57). These emergent categories group some people together for comparison with other people without prior assumptions about who is like whom. Categories can be broken up and people regrouped differently into new categories for comparison. This process of discovering categories from similarities and differences in people's behavior or responses can be more meaningful for feminist research than discovering similarities and differences between "females" and "males" or "women" and "men" because the social construction of the conventional sex and gender categories already assumes differences between them and similarities among them. When we rely only on the conventional categories of sex and gender, we end up finding what we looked for—we see what we believe, whether it is that "females" and "males" are essentially different or that "women" and "men" are essentially the same.

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