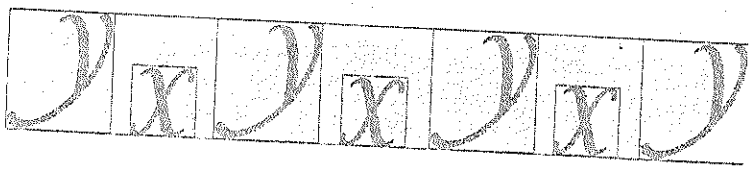
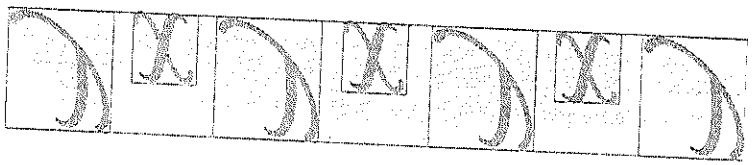


SEXING THE BODY

GENDER POLITICS *and the* CONSTRUCTION *of* SEXUALITY

ANNE FAUSTO-STERLING



BASIC BOOKS

A MEMBER OF THE PERSEUS BOOKS GROUP

Although less judgmental and controlling of patients and their parents than his successors, he nevertheless supplied the next generation of physicians with the scientific and technical bedrock on which they based their practices.

As was true in the nineteenth century, increased knowledge of the biological origins of sexual complexity facilitated the elimination of their signs. Deepening understandings of the physiological bases of intersexuality combined with improvements in surgical technology, especially since 1950, began to enable physicians to catch most intersexuals at the moment of birth.[45] The motive for their conversion was genuinely humanitarian: a wish to enable individuals to fit in and to function both physically and psychologically as healthy human beings. But behind the wish lay unexamined assumptions: first, that there should be only two sexes; second, that only heterosexuality was normal; and third, that particular gender roles defined the psychologically healthy man and woman.[46] These same assumptions continue to provide the rationale for the modern "medical management" of intersexual births.

3

OF GENDER AND GENITALS:

THE USE AND ABUSE OF THE MODERN INTERSEXUAL

Confronting the Intersex Newborn

THE DOCTORS

A CHILD IS BORN IN A LARGE METROPOLITAN HOSPITAL IN THE UNITED States or Western Europe. The attending physician, realizing that the newborn's genitalia are either/or, neither/both, consults a pediatric endocrinologist (children's hormone specialist) and a surgeon. They declare a state of medical emergency.[1] According to-current treatment standards, there is no time to waste in quiet reflection or open-ended consultations with the parents. No time for the new parents to consult those who have previously given birth to mixed-sex babies or to talk with adult intersexuals. Before twenty-four hours pass, the child must leave the hospital "as a sex," and the parents must feel certain of the decision.

Why this rush to judgment? How can we feel so certain within just twenty-four hours that we have made the right assignment of sex to a newborn?[2] Once such decisions are made, how are they carried out and how do they affect the child's future?

Since the 1950s, psychologists, sexologists, and other researchers have battled over theories about the origins of sexual difference, especially gender identity, gender roles, and sexual orientation. Much is at stake in these debates. Our conceptions of the nature of gender difference shape, even as they reflect, the ways we structure our social system and polity; they also shape and reflect our understanding of our physical bodies. Nowhere is this clearer than in the debates over the structure (and restructuring) of bodies that exhibit sexual ambiguity.

Oddly, the contemporary practice of "fixing" intersex babies immediately after birth emerged from some surprisingly flexible theories of gender. In the 1940s, Albert Ellis studied eighty-four cases of mixed births and concluded

that "while the *power* of the human sex drive may possibly be largely dependent on physiological factors . . . the *direction* of this drive does not seem to be directly dependent on constitutional elements."[3] In other words, in the development of masculinity, femininity, and inclinations toward homo- or heterosexuality, nurture matters a great deal more than nature. A decade later, the Johns Hopkins psychologist John Money and his colleagues, the psychiatrists John and Joan Hampson, took up the study of intersexuals, whom, Money realized, would "provide invaluable material for the comparative study of bodily form and physiology, rearing, and psychosexual orientation."[4] Agreeing with Ellis's earlier assessment, Money and his colleagues used their own studies to state in the extreme what these days seems extraordinary for its complete denial of the notion of natural inclination. They concluded that gonads, hormones, and chromosomes did not automatically determine a child's gender role: "From the sum total of hermaphroditic evidence, the conclusion that emerges is that sexual behavior and orientation as male or female does not have an innate, instinctive basis."[5]

Did they then conclude that the categories "male" and "female" had no biological basis or necessity? Absolutely not. These scientists studied hermaphrodites to prove that nature mattered hardly at all. But they never questioned the fundamental assumption that there are only two sexes, because their goal in studying intersexuals was to find out more about "normal" development.[6] Intersexuality, in Money's view, resulted from fundamentally abnormal processes. Their patients required medical treatment because they *ought* to have become either a male or a female. The goal of treatment was to assure proper psychosexual development by assigning the young mixed-sex child to the proper gender and then doing whatever was necessary to assure that the child and h/her parents believed in the sex assignment.[7]

By 1969, when Christopher Dewhurst (Professor of Obstetrics and Gynecology in London at the Queen Charlotte Maternity Hospital and the Chelsea Hospital for Women) and Ronald R. Gordon (Consultant Pediatrician and Lecturer in Child Health at Sheffield University) wrote their treatise on *The Intersexual Disorders*, medical and surgical approaches to intersexuality neared a state of hitherto unattained uniformity. It seems hardly surprising that this coalescence of medical views occurred during the era that witnessed what Betty Friedan dubbed "the feminine mystique"—the post–World War II ideal of the suburban family structured around strictly divided gender roles. That people failed to conform fully to this ideal can be gleaned from the near hysterical tone of Dewhurst and Gordon's book, which contrasts markedly with the calm and reason of Young's founding treatise.

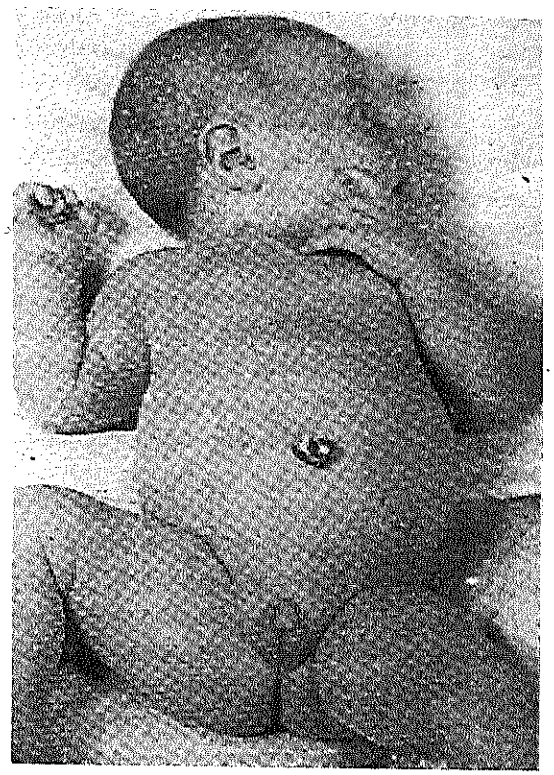


FIGURE 3.1: A six-day old XX child with masculinized external genitalia. (Original photo by Lawson Wilkins in Young 1961 [figure 23.1, p. 1405]; reprinted with permission, Williams and Wilkins)

Dewhurst and Gordon open their book with a description of a newborn intersexual child, accompanied by a close-up photograph of the baby's genitals. They employ the rhetoric of tragedy: "One can only attempt to imagine the anguish of the parents. That a newborn should have a deformity . . . (affecting) so fundamental an issue as the very sex of the child . . . is a tragic event which immediately conjures up visions of a hopeless psychological misfit doomed to live always as a sexual freak in loneliness and frustration."

They warn that freakhood will, indeed, be the baby's fate should the case be improperly managed, "but fortunately, with correct management the outlook is infinitely better than the poor parents—emotionally stunned by the event—or indeed anyone without special knowledge could ever imagine."

Luckily for the child, whose sweet little genitalia we are invited to examine intimately (figure 3.1), "the problem was faced promptly and efficiently by the local pediatrician." Ultimately, readers learn, the parents received assurance that despite appearances, the baby was "really" a female whose external genitalia had become masculinized by unusually high levels of androgen present during fetal life. She could, they were told, have normal sexual relations (after surgery to open the vaginal passageway and shorten the clitoris) and even be able to bear children.[8]

Dewhurst and Gordon contrast this happy outcome with that of incorrect treatment or neglect through medical ignorance. They describe a fifty-year-old who had lived h/her life as a woman, again treating the reader to an intimate close-up of the patient's genitalia,[9] which shows a large phallic-like clitoris, no scrotum, and separate urethral and vaginal openings. S/he had worried as a teenager about her genitals and lack of breasts and menstruation, the doctors report, but had adjusted to "her unfortunate state." Nevertheless, at age fifty-two the doubts returned to "torment" h/her. After diagnosing h/her as a male pseudo-hermaphrodite, doomed to the female sex assignment in which she had lived unhappily, Dewhurst and Gordon noted that the case illustrated "the kind of tragedy which can result from incorrect management."[10] Their book, in contrast, is meant to provide the reader (presumably other medical personnel) with lessons in correct management.

Today, despite the general consensus that intersexual children must be corrected immediately, medical practice in these cases varies enormously. No national or international standards govern the types of intervention that may be used. Many medical schools teach the specific procedures discussed in this book, but individual surgeons make decisions based on their own beliefs and what was current practice when they were in training—which may or may not concur with the approaches published in cutting-edge medical journals. Whatever treatment they choose, however, physicians who decide how to manage intersexuality act out of, and perpetuate, deeply held beliefs about male and female sexuality, gender roles, and the (im)proper place of homosexuality in normal development.

THE PARENTS

When a mixed-sex child is born, somebody (sometimes the surgeon, sometimes a pediatric endocrinologist, more rarely a trained sex education counselor) explains the situation to the parents.[11] A "normal" boy, they say, may be born with a penis (defined as a phallus that has a urethral tube [through which urine flows] running lengthwise through its center and opening at the tip). This boy also has one X and one Y chromosome (XY), two testes

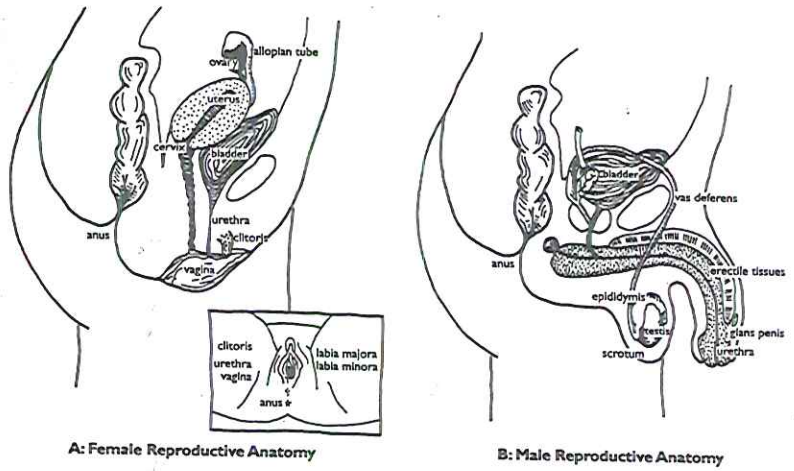


FIGURE 3.2: *A*: Female reproductive anatomy. *B*: Male reproductive anatomy. (Source: Alyce Santoro, for the author)

descended into scrotal sacs, and a variety of tubing, which in the sexually mature male transports sperm and other components of the seminal fluid to the outside world (figure 3.2B).

Just as often, the child has a clitoris (a phallus that does not have a urethra) which, like a penis, contains ample supplies of blood and nerves. Physical stimulation can cause both to become erect and to undergo a series of contractions that we call orgasm.[12] In a "normal" girl the urethra opens near the vagina, a large canal surrounded at its opening by two sets of fleshy lips. The canal walls connect on the inside to the cervix, which in turn opens up into the uterus. Attached to the uterus are oviducts, which, after puberty, transport egg cells from the nearby pair of ovaries toward the uterus and beyond (figure 3.2A). If this child also has two X chromosomes (XX), we say she is female.

The doctors will also explain to the parents that male and female embryos develop by progressive divergence from a common starting point (figure 3.3). The embryonic gonad makes a choice early in development to follow a male or female pathway, and later in development the phallus ends up as either a clitoris or a penis. Similarly, the embryonic urogenital swellings either remain open to become vaginal labia or fuse to become a scrotum. Finally, all embryos contain structures destined to become the uterus and fallopian tubes and ones with the potential to become the epididymis and vas deferens (both are tubular structures involved with transporting sperm from the testes to the body's

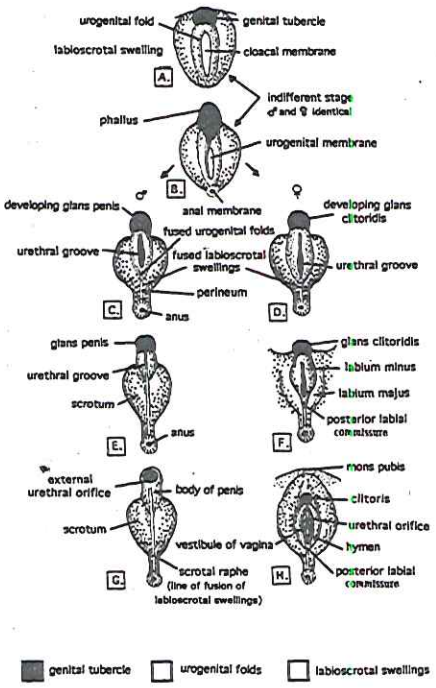


FIGURE 3.3: The development of external genitalia from the embryonic period through birth. (Source: Redrawn by Alyce Santoro from Moore 1977, p. 241, with permission from W. B. Saunders)

exterior). When the sex is chosen, the appropriate structures develop and the rest degenerate.

So far, so good. The doctors have simply recounted some basics of embryology. Now comes the tricky part: what to tell the parents of a child whose development has not proceeded along the classic path. Generally doctors inform parents that the infant has a "birth defect of unfinished genitalia," and that it may take a little time before they'll know whether the child is a boy or a girl.[13] The doctors can and will, they assure the parents, identify the "true" sex that lies underneath the surface confusion. Once they do, their hormonal and surgical treatments can complete nature's intention.[14]

Modern medical practitioners still use the nineteenth-century categories of "true" and "male pseudo" or "female pseudo" hermaphrodites.[15] Since most intersexuals fall into the pseudo category, doctors believe that an intersexual child is "really" a boy or a girl. Money, and others trained in his approach, specifically ban the word *hermaphrodite* from use in conversation with

the parents. Instead, doctors use more specific medical terminology—such as "sex chromosome anomalies," "gonadal anomalies," and "external organ anomalies"[16] —that indicate that intersex children are just unusual in some aspect of their physiology, *not* that they constitute a category other than male or female.

The most common types of intersexuality are congenital adrenal hyperplasia (CAH), androgen insensitivity syndrome (AIS), gonadal dysgenesis, hypospadias, and unusual chromosome compositions such as XXY (Klinefelter Syndrome) or XO (Turner Syndrome) (see table 3.1). So-called true hermaphrodites have a combination of ovaries and testes. Sometimes an individual has a male side and a female side. In other cases the ovary and testis grow together in the same organ, forming what biologists call an ovo-testis.[17] Not infrequently, at least one of the gonads functions quite well (the ovary more often than the testis),[18] producing either sperm or eggs and functional levels of the so-called sex hormones—androgens or estrogens. In theory, it might be possible for a hermaphrodite to give birth to h/her own child, but there is no recorded case of that occurring. In practice, the external genitalia and accompanying genital ducts are so mixed that only after exploratory surgery is it possible to know what parts are present and what is attached to what.[19]

Parents of intersexuals often ask how frequently children like theirs are born and whether there are any parents of similar children with whom they might confer. Doctors, because they generally view intersex births as urgent cases, are unaware of available resources themselves, and because the medical research is scanty, often simply tell parents that the condition is extremely rare and therefore there is nobody in similar circumstances with whom they can consult. Both answers are far from the truth. I will return to the question of support groups for intersexuals and their parents in the next chapter. Here I address the question of frequency.

How often are intersex babies born? Together with a group of Brown University undergraduates, I scoured the medical literature for frequency estimates of various categories of intersexuality.[20] For some categories, usually the rarest, we found only anecdotal evidence. But for most, numbers exist. The figure we ended up with—1.7 percent of all births (see table 3.2) —should be taken as an order-of-magnitude estimate rather than a precise count.[21]

Even if we've overestimated by a factor of two, that still means a lot of intersexual children are born each year. At the rate of 1.7 percent, for example, a city of 300,000 would have 5,100 people with varying degrees of intersexual development. Compare this with albinism, another relatively uncommon human trait but one that most readers can probably recall having seen.

TABLE 3.1 *Some Common Types of Intersexuality*

NAME	CAUSE	BASIC CLINICAL FEATURES
Congenital Adrenal Hyperplasia (CAH)	Genetically inherited malfunction of one or more of six enzymes involved in making steroid hormones	In XX children, can cause mild to severe masculinization of genitalia at birth or later; if untreated, can cause masculinization at puberty and early puberty. Some forms drastically disrupt salt metabolism and are life-threatening if not treated with cortisone.
Androgen Insensitivity Syndrome (AIS)	Genetically inherited change in the cell surface receptor for testosterone	XY children born with highly feminized genitalia. The body is "blind" to the presence of testosterone, since cells cannot capture it and use it to move development in a male direction. At puberty these children develop breasts and a feminine body shape.
Gonadal Dysgenesis	Various causes, not all genetic; a catch-all category	Refers to individuals (mostly XY) whose gonads do not develop properly. Clinical features are heterogeneous.
Hypospadias	Various causes, including alterations in testosterone metabolism[a]	The urethra does not run to the tip of the penis. In mild forms, the opening is just shy of the tip; in moderate forms, it is along the shaft; and in severe forms, it may open at the base of the penis.
Turner Syndrome	Females lacking a second X chromosome. (XO)[b]	A form of gonadal dysgenesis in females. Ovaries do not develop; stature is short; lack of secondary sex characteristics; treatment includes estrogen and growth hormone.
Klinefelter Syndrome	Males with an extra X chromosome (XXY)[c]	A form of gonadal dysgenesis causing infertility; after puberty there is often breast enlargement; treatments include testosterone therapy.

a. Aaronson et al. 1997.

b. The story is, of course, more complicated. For some recent studies, see Jacobs, Dalton, et al. 1997; Boman et al. 1998.

c. There are a great many chromosomal variations classified as Klinefelter (Conte and Grumbach 1989).

TABLE 3.2 *Frequencies of Various Causes of Nondimorphic Sexual Development*

CAUSE	ESTIMATED FREQUENCY/ 100 LIVE BIRTHS
Non-XX or non-XY (except Turner's or Klinefelter's)	0.0639
Turner Syndrome	0.0369
Klinefelter Syndrome	0.0922
Androgen Insensitivity Syndrome	0.0076
Partial Androgen Insensitivity Syndrome	0.00076
Classic CAH (omitting very high-frequency population)	0.00779
Late-onset CAH	1.5
Vaginal agenesis	0.0169
True hermaphrodites	0.0012
Idiopathic	0.0009
TOTAL	1.728

Albino births occur much less frequently than intersexual births—in only about 1 in 20,000 babies.[22]

The figure of 1.7 percent is an average from a wide variety of populations; the number is not uniform throughout the world. Many forms of intersexuality result from an altered genetic state, and in some populations, the genes involved with intersexuality are very frequent. Consider, for example, the gene for congenital adrenal hyperplasia (CAH). When present in two doses (that is, when an individual is homozygous for the gene), it causes XX females to be born with masculinized external genitalia (although their internal reproductive organs are those of a potentially fertile woman) (see table 3.1). The frequency of the gene for CAH varies widely around the world. One study found that 3.5 per thousand Yupik Eskimos born had a double dose of the CAH gene. In contrast, only 0.005/1,000 New Zealanders express the trait. The frequency of a related genetic change that leaves the genitalia unaffected but can cause premature pubic hair growth in children and symptoms such as unusual hair growth and male pattern baldness in young women, also

varies widely around the world. These altered genes result in symptoms in 3/1,000 Italians. Among Ashkenazic Jews, the number rises to 37/1,000.[23]

Furthermore, the incidence of intersexuality may be on the rise. There has already been one medical report of the birth of a child with both an ovary and testes to a mother who conceived via in vitro fertilization. It seems that two embryos, one XX and one XY, fused after three were implanted into her uterus. Save for the ovary, the resulting fetus was a normal, healthy boy, formed from the fusion of an XX and an XY embryo![24] There is also concern that the presence of environmental pollutants that mimic estrogen have begun to cause widespread increases in the incidence of intersex forms such as hypospadias.[25]

But if our technology has contributed to shifts in our sexual makeup, it nevertheless also provides the tools to negate those changes. Until very recently, the specter of intersexuality has spurred us to police bodies of indeterminate sex. Rather than force us to admit the social nature of our ideas about sexual difference, our ever more sophisticated medical technology has allowed us, by its attempts to render such bodies male or female, to insist that people are either naturally male or female. Such insistence occurs even though intersexual births occur with remarkably high frequency and may be on the increase. The paradoxes inherent in such reasoning, however, continue to haunt mainstream medicine, surfacing over and over in both scholarly debates and grassroots activism around sexual identities.

"Fixing" Intersexuals

THE PRENATAL FIX

To produce gender-normal children, some medical scientists have turned to prenatal therapy. Biotechnology has already changed the human race. We have, for example, used amniocentesis and selective abortion to lower the frequency of Down Syndrome births, and in some parts of the world we have even altered the sex ratio by selectively aborting female fetuses,[26] and now both the sonogram and amniotic testing of pregnant women can detect signs of the baby's gender as well as a wide variety of developmental problems.[27] Most types of intersexuality cannot be changed by prenatal interventions, but one of the most frequent kinds—CAH—can. Is this a good thing? How might the elimination of a major cause of genital ambiguity affect our understanding of "that which qualifies a body for life within the domain of cultural intelligibility"?[28]

The genes that cause CAH are well characterized, and several approaches to detecting their presence in the embryo now exist.[29] A woman who suspects

she may be pregnant with a CAH baby (if she or someone in her family carries CAH) can undergo treatment and then get tested. I put it in that order, because to prevent masculinization of an XX-CAH child's genitalia, treatment (with a steroid called dexamethasone) must begin as early as four weeks after conception.[30] The earliest methods for diagnosis, however, can't be used until the ninth week.[31] For every eight fetuses treated for CAH, only one will actually turn out to be an XX child with masculinized genitals[32]. If it turns out that the fetus is a male (physicians are not worried about male masculinization—you can never, apparently be *too* masculine)[33] or does not have CAH, treatment can be discontinued.[34] If, however, the fetus is XX and is affected by CAH, the mother and fetus continue dexamethasone treatment for the duration of the pregnancy.[35]

It might sound like a good idea, but the data are slim. One study compared seven untreated CAH girls (born with masculinized genitals) with their prenatally treated sisters. Three were born with completely female genitals, while four were only mildly masculinized compared with their siblings.[36] Another study of five CAH girls reported considerably more feminine genital development.[37] In medicine, however, everything has a price. The diagnostic tests[38] stand a 1 to 2 percent chance of inducing miscarriage, and the treatment produces side effects in both mother and child: mothers may retain fluids, gain a lot of extra weight, develop hypertension and diabetes, have increased and permanent scarring along abdominal stretch lines, grow extra facial hair, and become more emotional. "The effect on fetal 'metabolism' is not known,"[39] but one recent study reports negative effects such as failure to thrive and delayed psychomotor development. Another research group found that prenatal dexamethasone treatment may cause a variety of behavioral problems, including increased shyness, less sociability, and greater emotionality.[40]

Today many still do not advocate such treatment because "the safety of this experimental therapy has not been established in rigorously controlled trials."[41] On the other hand, prenatal diagnosis allows physicians to recognize the metabolic alterations and begin treatment at birth. Early and continuous treatment can prevent possible salt-wasting crises (which endanger the child's life) and address other CAH-related problems, such as premature growth stoppage and extremely early puberty. This also benefits XY CAH kids, since they still have the metabolic problems, even if their genitals are fine. Finally, genital surgery on XX CAH children can be eliminated or minimized.

Parents have given prenatal therapy mixed reviews. In one study of 176 pregnancies, 101 parents accepted prenatal treatment after being apprised of the pros and cons, while seventy-five refused the treatment. Fifteen of the

seventy-five had CAH fetuses (eight XX and seven XY), and parents chose to abort three of the untreated XX fetuses.[42] In another study, researchers surveyed 38 mothers' attitudes after experiencing treatment. Although each woman had severe side effects and was concerned about the possible short- and long-term effects of dexamethasone on her child and herself, each said she would do it again to avoid giving birth to a girl with masculine genitals.[43]

Prenatal *diagnosis* seems warranted because it can prepare physicians and parents alike for the birth of a child whose chronic medical problems will demand early hormonal treatment. Whether prenatal *therapy* is ready for prime time is another question. To put it starkly: Are seven unnecessary treatments, with their attendant side effects worth one less virilized girl child? If you believe that virilization requires extensive reconstructive surgery in order to avoid damage to the child's mental health, the answer will probably be yes.[44] If, however, you believe that many of the surgeries on CAH children are unnecessary, then the answer might well be no. Perhaps compromises are possible. If one could lessen the side effects of dexamethasone treatment by limiting it to the period of initial genital formation, this would probably alleviate the most severe genital problems, such as fusion of the labia, but might not halt clitoral enlargement. Surgeries involving fused labia and reconstruction of the urogenital sinus are complex, not always successful, and essential if the affected individual wants to bear children. All other things being equal, it would seem best to avoid such surgery. As I argue in the rest of this chapter and the next, however, downsizing an overgrown clitoris is simply not necessary.

THE SURGICAL FIX

If there has been no prenatal "fix" and an intersex child is born, doctors must decide, as they would put it, nature's intention. Was the newborn infant "supposed" to have been a boy or a girl? Dr. Patricia Donahoe, Professor of Surgery at Harvard Medical School and a highly accomplished researcher in the fields of embryology and surgery, has developed a rapid procedure for choosing an ambiguous newborn's gender assignment. First she ascertains whether the newborn has two X chromosomes (is chromatin-positive) and then whether the child has symmetrically placed gonads. She places a chromatin-positive child with symmetrical gonads in the female pseudo-hermaphrodite box. In contrast, she is likely to classify an XX child with asymmetrical gonads as a true hermaphrodite, since the asymmetry most commonly reflects the presence of a testis on one side and an ovary on the other.

Children with one X chromosome (chromatin-negative) can also be divided into two groups: one with symmetrical and one with asymmetrical

gonads. Babies with gonadal symmetry who are chromatin-negative fall into the male pseudo-hermaphrodite cubbyhole, while gonadally asymmetrical chromatin-negatives receive the label mixed-gonadal dysgenesis, a catchall category containing individuals whose potentially male gonads have some form of abnormal development.[45] This stepwise decision tree, which uses the permutations derived from the symmetry of gonads and the presence or absence of a second X, enables the physician to categorize the intersexual newborn fast. A more thorough and accurate assessment of the individual's specific situation can take weeks or months.

Enough is known about each of the four categories (true, male pseudo, female pseudo, and gonadal dysgenesis) to predict with considerable, although not complete, accuracy how the genitalia will develop as the child grows and whether the child will develop masculine or feminine traits at puberty. Given such knowledge, medical managers employ the following rule: "Genetic females should always be raised as females, preserving reproductive potential, regardless of how severely the patients are virilized. In the genetic male, however, the gender of assignment is based on the infant's anatomy, predominantly the size of the phallus."[46]

Doctors insist on two functional assessments of the adequacy of phallus size. Young boys should be able to pee standing up and thus to "feel normal" during little-boy peeing contests; adult men, meanwhile, need a penis big enough for vaginal penetration during sexual intercourse.[47] How big must the organ be to fulfill these central functions and thus fit the definition of *penis?* In one study of 100 newborn males, penises ranged in length from 2.9 to 4.5 centimeters (1.25 to 1.75 inches).[48] Donahoe and her co-workers express concern about a phallus of 2.0 centimeters, while one less than 1.5 centimeters long and 0.7 centimeters wide results in a female gender assignment.[49]

In fact, doctors are not sure what to count as a normal penis. In an "ideal" penis, for example, the urethra opens at the very tip of the glans. Suburethral openings are often thought of as a pathology designated with the medical term *hypospadias.* In a recent study, however, a group of urologists examined the location of the urethral opening in 500 men hospitalized for problems unrelated to hypospadias. Judged by the ideal penis, only 55 percent of the men were normal.[50] The rest had varying degrees of mild hypospadias, in which the urethra opened near, but not at, the penis tip. Many never knew that they had been urinating from the wrong place their entire lives! The authors of this study conclude:

> Pediatric urologists should be aware of the observed "normal distribution" of meatal [urethral] positions . . . since the aim of reconstructive

surgery should be to restore the individual to normal. However, pure esthetic surgery would try to surpass the normal . . . this is the case in many patients with hypospadias in whom the surgeon attempts to place the meatus in a position where it would not be found in 4.5% of so-called normal men.[51]

The worries in male gender choice are more social than medical.[52] Physical health is usually not an issue, although some intersexed babies might have problems with urinary tract infection, which, if very severe, can lead to kidney damage. Rather, early genital surgery has a set of psychological goals. Can the surgery convince parents, caretakers, and peers—and, through them, the child him/herself—that the intersexual is really a male? Most intersexual males are infertile, so what counts especially is how the penis functions in social interactions—whether it "looks right" to other boys, whether it can "perform satisfactorily" in intercourse. It is not what the sex organ does for the body to which it is attached that defines the body as male. It is what it does vis-à-vis other bodies.[53] Even our ideas about how large a baby's penis needs to be to guarantee maleness are fairly arbitrary. Perhaps unintentionally, Donahoe drove home the social nature of the decision-making process when she commented that "phallus size at birth has not been reliably correlated with size and function at puberty."[54] Thus, doctors may choose to remove a small penis at birth and create a girl child, even though that penis may have grown to "normal" size at puberty.[55]

Deciding whether to call a child a boy or a girl, then, employs social definitions of the essential components of gender. Such definitions, as the social psychologist Suzanne Kessler observes in her book *Lessons from the Intersexed,* are primarily cultural, not biological.[56] Consider, for instance, problems caused by introducing European and American medical approaches into cultures with different systems of gender. A group of physicians from Saudi Arabia recently reported on several cases of XX intersex children with congenital adrenal hyperplasia (CAH), a genetically inherited malfunction of the enzymes that aid in making steroid hormones. Despite having two X chromosomes, some CAH children are born with highly masculinized genitalia and are initially identified as males. In the United States and Europe such children, because they have the potential to bear children later in life, are usually raised as girls. Saudi doctors trained in this European tradition recommended such a course of action to the Saudi parents of CAH XX children. A number of parents, however, refused to accept the recommendation that their child, initially identified as a son, be raised instead as a daughter. Nor would they accept feminizing surgery for their child. As the reporting physicians write, "female

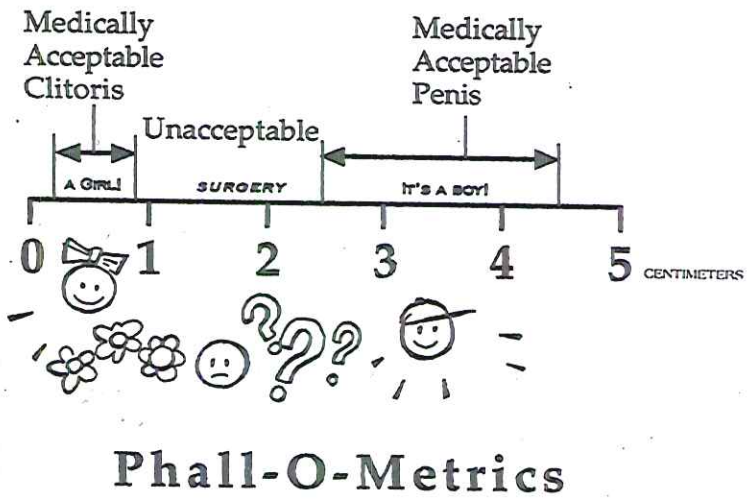


FIGURE 3.4: Phall-o-Metrics. The ruler numbers indicate centimeters (not to scale). (Source: Alyce Santoro, for the author)

upbringing was resisted on social grounds. . . . This was essentially an expression of local community attitudes with . . . the preference for male offspring."[57]

If labeling intersex children as boys is tightly linked to cultural conceptions of the maleness and "proper penile function," labeling such children as girls is a process even more tangled in social definitions of gender. Congenital adrenal hyperplasia (CAH) is one of the most common causes of intersexuality in XX children. CAH kids have the potential to become fertile females in adulthood. Doctors often follow Donahoe's rule that reproductive function be preserved, although Kessler reports one case of a physician choosing to reassign as male a potentially reproductive genetic female infant rather than remove a well-formed penis.[58] In principle, however, the size rule predominates in male assignment. One reason is purely technical. Surgeons aren't very good at creating the big, strong penis they require men to have. If making a boy is hard, making a girl, the medical literature implies, is easy. Females don't need anything built; they just need excess maleness subtracted. As one surgeon well known in this field quipped, "you can make a hole but you can't build a pole."[59]

As a teaching tool in their struggle to change the medical practice of infant genital surgery, members of the Intersexual Rights Movement have designed a "phall-o-meter" (shown in figure 3.4), a small ruler that depicts the permis-

TABLE 3.3 *Recent History of Clitoral Surgery*

TYPE OF SURGERY	# OF PUBLISHED REPORTS	YEARS OF PUBLICATION	TOTAL # OF PATIENTS REPORTED ON
Clitorectomy	7	1955–1974	124
Clitoral Reduction	8	1961–1993	51
Clitoral Recession	7	1974–1992	92
Comparative Papers	2	1974, 1982	93[a]

Source: Extracted from data found in Rosenwald et al. 1958; Money 1961; Randolf and Hung 1970; Randolf et al. 1981; Donahoe and Hendren 1984; Hampson 1955; Hampson and Money 1955; Gross et al. 1966; Lattimer 1961; Mininberg 1982; Rajfer et al. 1982; van der Kamp et al. 1992; Ehrhardt et al. 1968; Allen et al. 1982; Azziz et al. 1986; Newman et al. 1992b; Mulaikal et al. 1987; Kumar et al. 1974; and Hendren and Crawford 1969.

a. May include previously reported data.

sible ranges of phallus size for males and females at birth. It provides a graphic summary of the reasoning behind the decision-making process for assigning gender. If the clitoris is "too big" to belong to a girl, doctors will want to downsize it,[60] but in contrast to the penis, doctors have rarely used precise clitoral measurements in deciding the gender of a newborn child. Such measurements, however, do exist. Since 1980, we have known that the average clitoral size of newborn girls is 0.345 centimeters.[61] More recent studies show that clitoral length at birth ranges from 0.2 to 0.85 centimeters.[62] One surgeon prominent in the field of sex reassignment surgery, when interviewed in 1994, seemed unaware that such information existed. He also thought the measurements irrelevant, arguing that for females "overall appearance" counts rather than size.[63] Thus, despite published medical information showing a range of clitoral size at birth, doctors may use only their personal impressions to decide that a baby's clitoris is "too big" to belong to a girl and must be downsized, even in cases where the child is not intersexual by any definition.[64] Physicians' ideas about the appropriate size and look of female genitals thus sometimes leads to unnecessary and sexually damaging genital surgery.[65]

Consider, for example, infants whose genitalia lie in that phallic limbo: bigger than 0.85 but smaller than 2.0 centimeters long (see figure 3.4). A systematic review of the clinical literature on clitoral surgery from 1950 to the present reveals that although doctors have been consistent over the years in assigning such infants to become female, they have radically shifted their

ideas about female sexuality and, consequently, their notions of appropriate surgical treatment for female-intersex babies (see table 3.3). In the early days of surgical treatment, doctors performed complete clitorectomies on children assigned to be females (the procedure is illustrated in figure 3.5), reasoning that female orgasm was vaginal rather than clitoral.[66]

During the 1960s, physicians slowly began to acknowledge the clitoral basis of female orgasm, although even today some surgeons maintain that the clitoris is unnecessary for female orgasm.[67] In the sixties, then, physicians turned to the procedures still used in some form today. In the operation known as a clitoral reduction, the surgeon cuts the shaft of the elongated phallus and sews the glans plus preserved nerves back onto the stump (figure 3.6). In the less frequently used clitoral recession, the surgeon hides the clitoral shaft (referred to by one group of surgeons as "the offending shaft")[68] under a fold of skin so that only the glans remains visible (figure 3.7). Depending upon their anatomy at birth, some female-assigned children face additional surgery: vaginal construction or expansion and labio-scrotal reduction.

Intersex children assigned to become boys also face extensive surgery. There are over 300 surgical "treatments" described in the medical literature for hypospadias, the opening of the urethra at some point along the shaft of

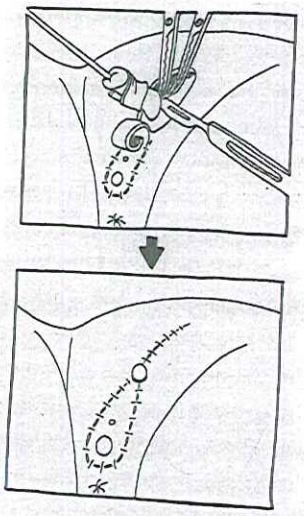


FIGURE 3.5: Removing the clitoris (clitorectomy).
(Source: Alyce Santoro, for the author)

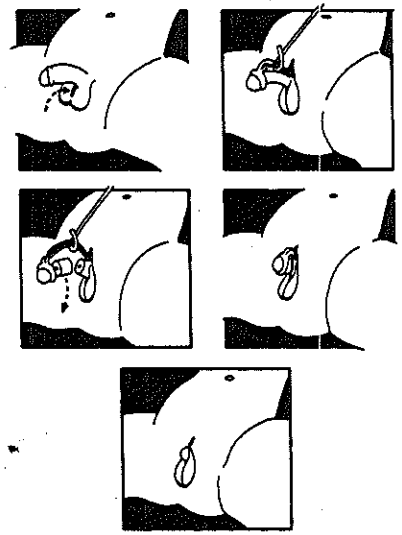


FIGURE 3.6: Reducing the clitoris (clitoral reduction).
(Source: Alyce Santoro, for the author)

the penis rather than at its tip (necessitating that the child urinate sitting down). Some of these operations address penile chordee, the binding of the penis to the body by tissue, which causes it to curve and have difficulty becoming erect—a condition that often results from intersexual development.[69] Except for the most minor forms of hypospadias all involve extensive suturing and, on occasion, skin transplants. A male-assigned child may receive as many as three operations on the penis during the first couple of years of life, and even more by the time puberty hits. In the most severe cases, multiple operations can lead to densely scarred and immobile penises, a situation one physician has dubbed "hypospadias cripple."[70]

No consensus has formed about which technique consistently results in the lowest complication rates and necessitates the fewest operations. The enormous surgical literature on hypospadias is inconclusive. Every year dozens of new papers appear describing new surgical techniques, each supposed to give better results than the dozens of preceding techniques.[71] Many of the surgical reports focus on special techniques for what the surgeons call "secondary operations"—that is, surgery designed to repair previously failed surgeries.[72] There are many reasons for the sprawling literature on hypospadias. The condition *is* highly variable and thus calls for widely varied treatments. But a review of the literature also suggests that surgeons take particular pleasure in pioneering new approaches to penile repair. Even medical professionals have remarked on this obsession with penis-building. As one prominent urologist who has a technique for hypospadias named after himself writes: "Each hypospadias surgeon has his fetishes."[73]

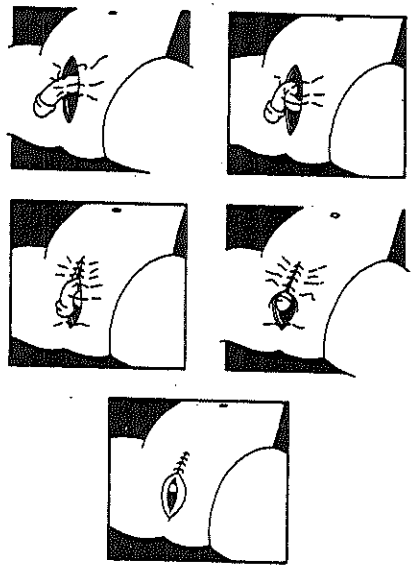


FIGURE 3.7: Hiding the clitoris (clitoral recession).
(Source: Alyce Santoro, for the author)

THE PSYCHOLOGICAL FIX

Although influential researchers such as John Money and John and Joan Hampson believed that gender identity formation during early childhood is extraordinarily malleable, they also thought that gender ambiguity later in life was pathological. How, then, was an intersex infant to make the transition from the open-ended possibilities present at birth to the fixed gender identity the medical establishment deemed necessary for psychological health? Because a child's psychological schema developed in concert with his or her body image, Money and the Hampsons insisted, early genital surgery was imperative. A child's body parts had to match his or her assigned sex. While such anatomical clarity was important for the young child,[74] Money, the Hampsons, and those who followed their lead argued, it was even more important for the child's parents. As Peter Pan might have said, "they had to believe" in

their child's gender identity for that identity to become real. Hampson and Hampson write: "In working with hermaphroditic children and their parents, it has become clear that the establishment of a child's psychosexual orientation begins not so much with the child as with his parents."[75]

Ironically, in their extensive discussions about what *not* to tell parents, medical practitioners reveal the logical bind they face when they try to explain to patients and parents that the gender they have assigned—and often performed surgery to create—is not arbitrarily chosen, rather, it is natural and somehow inherent to the patient's body all along. Thus developed a tradition of gender doublespeak. Medical manuals and original research articles almost unanimously recommend that parents and children not receive a full explanation of an infant's sexual status. Instead of saying that an infant is a mixture of male and female, physicians are to allege that the intersex child is clearly either male or female, but that embryonic development has been incomplete. One physician writes: "every effort should be made to discourage the concept that the child is part male and part female. . . .This is often best handled by explaining that 'the gonads were incompletely developed . . . and therefore required removal.' All efforts should be made to discourage any feeling of sexual ambiguity."[76]

A recent medical publication cautions that in counseling parents of intersexual children, doctors must "prevent contradictory or confusing information from adding to the uncertainty of the parents. . . . If the external genitalia of the child are unclear, the parents are only informed that the cause will be investigated."[77] This group of Dutch physicians and psychologists often treat androgen-insensitive (see table 3.1) children. AIS children have an X and an Y chromosome and active testes, but because their cells are insensitive to testosterone, they cannot develop masculine secondary sex characteristics and often respond at puberty to their own testicular estrogen by developing a voluptuous female figure. Such children are generally raised as girls, both because of their feminine body structure and because past experience has shown that AIS children usually develop a female gender identity. Often the AIS child's testes are removed but, caution the Dutch researchers, "we speak only about gonads, not testicles. If the gonad contains ovarian and testicular tissue we say that the gonad is not entirely developed in a female direction."[78]

Other physicians are aware that they must reckon with their patients' knowledge and curiosity. Because "sex chromatin testing may be done in high school biology courses and the media coverage of sexual medicine is increasingly detailed," writes one group of researchers, "one dare not assume that an adolescent can be spared knowledge about his or her gonadal or chromosomal status." But they also suggest that an XY intersex raised as a girl never be

told that she once had testes that were removed, emphasizing that nuanced scientific understanding of anatomical sex is incompatible with a patient's need for clear-cut gender identity. An intersex child assigned to become a girl, for instance, should understand any surgery she has undergone not as an operation that changed her into a girl, but as a procedure that removed parts that didn't belong to her as a girl. "By convention the gonad is recorded as a testis," these physicians write, "but in the patient's own formulation it is best regarded as an imperfect organ . . . not suited to life as a female, and hence removed."[79]

Others believe that even this limited degree of openness is counterproductive. One surgeon suggests that "accurate patho-physiological explanations are not appropriate and medical honesty at any price is of no benefit to the patient. For instance, there is nothing to be gained by telling genetic males raised as females about the maleness of their chromosomes or gonads."[80] In their suggestions for withholding information about patients' bodies and their own decisions in shaping them, medical practitioners unintentionally reveal their anxieties that a full disclosure of the facts about intersex bodies would threaten individuals'—and by extension society's—adherence to a strict male-female model. I do not suggest a conspiracy; rather, doctors' own deep conviction that all people are either male or female renders them blind to such logical binds.

Being coy about the truth in what doctors consider the interest of psychological health, however, can be at odds with sound medical practice. Consider the controversy over the early removal of testes in AIS children. The reason generally given is that the testes can become cancerous. However, the cancer rates for testes of AIS patients don't increase until after puberty. And although the androgen-insensitive body cannot respond to androgens made by the testes, it can and at puberty does respond to testicular estrogen production. Natural feminization may well be better than artificially induced feminization, especially with regard to the dangers of developing osteoporosis. So why don't doctors delay removal of the testes until just after puberty? One reason is surely that doctors might then have to tell a truer story to the AIS patient, something they are extremely reluctant to do.[81]

Kessler describes just such a case. A child received surgery when s/he was too young to remember or fully understand the import of the changes in h/her anatomy. When s/he reached puberty, doctors told her that she needed to take estrogen pills for some time to come, explaining that her ovaries hadn't been normal "and had been removed." Apparently wishing to convince h/her that her femininity was authentic despite her inability to have children, the doctor explained that her "uterus won't develop but [she] could adopt chil-

dren." Another physician on the treatment team approved of his colleague's explanation. "He's stating the truth, and if you don't state the truth . . . then you're in trouble later." Given that the girl never had a uterus or ovaries, however, this was, as Kessler points out, "a strange version of 'the truth.'"[82]

In recent years patients have had more than a little to say about such half-truths and outright lies, and I will consider their viewpoints in the next chapter. For now, I turn from the treatment protocols developed with an eye toward keeping intersexuality within the bounds of a two-sex gender system, to experimental studies conducted by physicians and psychologists on human intersexuals. In the long tradition established by Saint-Hilaire, such investigations use intersexuality to reflect on the "normal" development of masculinity and femininity.

The Uses of Intersexuality

BECOMING MALE/BECOMING FEMALE

The underlying assumptions of the surgical approach to intersex babies have not gone uncontested. Not everyone believes that sexual identity is fundamentally malleable. By far the most dramatic of these debates has been an almost thirty-year battle between John Money and another psychologist, Milton Diamond. In the 1950s Money, together with his collaborators, the Hampsons, argued that the sex assignment and sex of rearing predicted a hermaphrodite's adult gender role and sexual orientation more accurately than did any aspect of h/her biological sex: "Theoretically, our findings indicate [that] neither a purely hereditary nor a purely environmental doctrine of the origins of gender role . . . is adequate. On the one hand it is evident that gender role and orientation is not determined in some automatic, innate, instinctive fashion by physical agents like chromosomes. On the other hand it is also evident that the sex of assignment and rearing does not automatically and mechanistically determine gender role and orientation."[83]

But were Money's claims applicable to the majority of sexually unambiguous children? Had he and his colleagues—via the study of intersex children—arrived at a general, possibly even universal, theory of psychosexual development? Money believed he had, and to prove it he pointed to the case of an unambiguously male child named John, who lost his penis at about seven months of age after a circumcision accident. Reasoning from his studies on intersexuals, Money counseled that the child be raised as a girl and surgically altered to fit her new status in life. A particularly compelling component of this case was the fact that there was a control: Joan (as she was renamed) had

an identical twin brother. This case, Money hoped, would clinch his argument about the importance of sex of rearing. If Joan developed a female gender identity, while her genetically identical brother continued down the road to adult masculinity, then environmental forces clearly trumped genetic makeup.

The family ultimately agreed to the sex change, and by the time the child reached her second year she had had feminizing surgery and her testicles had been removed. With great delight, Money quoted Joan's mother to the effect that Joan had grown to love wearing dresses, that she hated being dirty, and that "she just loves to have her hair set."[84] Money concluded that his case demonstrated that "gender dimorphic patterns of rearing have an extraordinary influence on shaping a child's psychosexual differentiation and the ultimate outcome of a female or male gender identity." In a particularly enthusiastic moment, he wrote: "To use the Pygmalion allegory, one may begin with the same clay and fashion a god or a goddess."[85]

Money's account of psychosexual development rapidly gained favor as the most progressive, most liberal, most up-to-date point of view around.[86] But not everyone thought it made sense. In 1965 Milton Diamond, at the time a young Ph.D., decided to take on Money and the Hampsons. He did so at the suggestion and with the help of mentors who came from a rather different tradition in the field of psychology.[87] Diamond's advisers proposed a new paradigm for understanding the development of sexual behaviors: hormones, not environment, they argued, were the decisive factor.[88] Early in development, these chemical messengers acted directly to organize the brain; hormones produced at puberty could activate the hormonally organized brain to produce sex-specific behaviors such as mating and mothering.[89] Although these theories were based on studies of rodents, Diamond drew heavily on them to attack Money's work.[90]

Diamond argued that Money and his colleagues, were essentially suggesting that humans are sexually neutral at birth. He challenged their interpretations of their data, arguing "that the very same data may not be inconsistent with more classical notions of inherent sexuality at birth." Diamond agreed that Money and his colleagues had shown that "hermaphroditic individuals . . . find it possible to assume sexual roles opposite to their genetic sex, morphological sex, etc." But he disagreed with their broader conclusions, arguing, "to assume that a sex role is exclusively or even mainly a very elaborate, culturally fostered deception . . . and that it is not also reinforced by taboos and potent defense mechanisms superimposed on a *biological prepotency or prenatal organization and potentiation* seems unjustified and from the present data

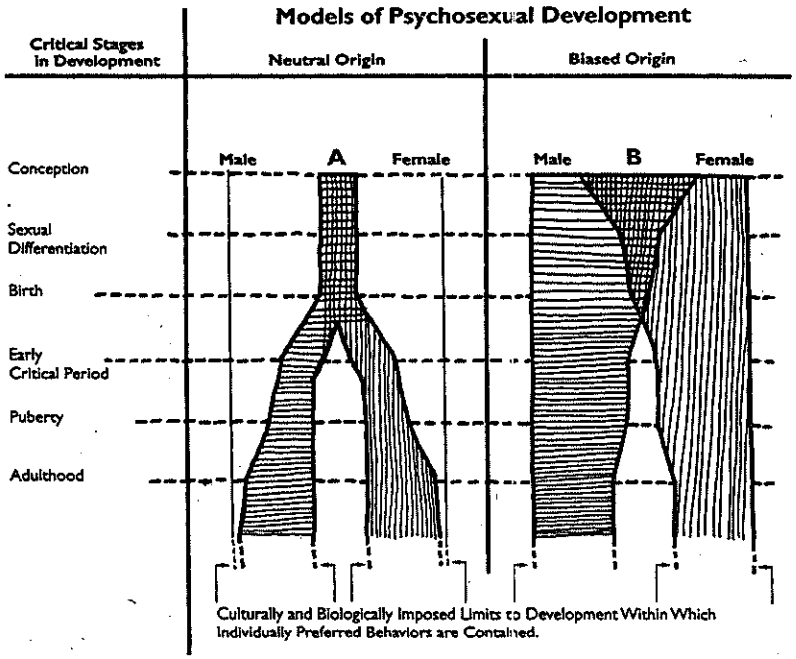


FIGURE 3.8: Models of psychosexual development. (Redrawn and interpreted from Diamond 1965. Source: Alyce Santoro for the author)

unsubstantiated."[91] In other words, Diamond argued that even if Money and his colleagues might be correctly interpreting intersexual development, their work shed no light on what he called "normals."[92]

Diamond also pointed out that the John/Joan case was the *sole* example of "normal" prenatal hormone exposure being overcome by rearing. In opposition to the Money and Hampson theory of gender neutrality molded by environment into gender identity,[93] Diamond posed his own model of "psychosexual predisposition." He suggested that male and female embryos each begin with partially overlapping but relatively broad potential for psychosexual development. As both pre- and postnatal development proceeds, however, there appear "limits and restrictions in the form of culturally and biologically acceptable sexual outlets within the total capability"[94] (figure 3.8).

Only one other scholar dared to challenge Money.[95] In 1970 Dr. Bernard Zuger, a practicing psychiatrist, found several clinical case studies in which adolescent or adult intersexuals rejected their sex of rearing and insisted on changing sex. These individuals seemed to be listening to some inner voice

that said that everyone in authority surrounding h/her was wrong. Doctors and parents might have insisted that they were female, removed their testes, injected them with estrogen, and surgically provided them with a vagina, but still, they *knew* they were really males. Zuger concluded: "The data from hermaphrodites purporting to show that sex of rearing overrides contradictions of chromosomes, gonads, hormones, internal and external genitalia in gender role determination are found unsupportable on methodological and clinical grounds. Conclusions drawn from the data as to the adoption of such assigned gender role and the psychological hazard of changing it after very early childhood are shown not to be in agreement with other similar data found in the literature."[96]

Money was furious. When Zuger's paper appeared, he published a rebuttal in the journal *Psychosomatic Medicine*, fuming, "What really worries me, even terrifies me, about Dr. Zuger's paper, however, is more than a matter of theory alone . . . it will be used by inexperienced and/or dogmatic physicians and surgeons as a justification to *impose* an erroneous sex reassignment on a child . . . omitting a psychological evaluation as irrelevant—to the ultimate ruination of the patient's life."[97] In his 1972 book with Anke Ehrhardt, Money lashed out again: "it thus appears that the prejudices of physicians skew today's hermaphroditic sex reassignment statistics in favor of change from girl to boy, and in male rather than female hermaphrodites. It would not be necessary to belabor this point except that some writers still do not understand it."[98]

But Diamond pursued Money with a determination worthy of Inspector Javert in *Les Misérables*. Throughout the 1960s and 70s he published at least five more papers contesting Money's views. In a 1982 publication, he recounted how psychology and women's studies texts had taken up John/Joan "to support the contention that sex roles and sexual identity are basically learned." Even *Time* magazine was propagating Money's social constructionist doctrine. But Diamond reiterated his view that "nature sets limits to sexual identity and partner preference and that it is within these limits that social forces interact and gender roles are formulated, a biosocial-interaction theory."[99] (Note that by 1982 the terms of the debate had shifted. Diamond now spoke of *sexual* rather than *gender* identity, and a new term, *partner preference,* slipped in. I will return to partner preference—the origins of homosexuality—later.)

Diamond did not write this article just to gripe. He had big news. In 1980 the BBC produced a TV documentary on the John/Joan case. At first the producers planned to feature Money and his views while using Diamond for an oppositional backdrop. But the BBC reporters had found that by 1976 Joan, then thirteen years old, was not well adjusted. She walked like a boy, felt that boys had better lives, wanted to be a mechanic, and peed standing up. The

psychiatrists then caring for the child thought she was "having considerable difficulty in adjusting as a female" and suspected she would not succeed in remaining one. When the journalists told Money of these findings, he refused to talk further with them, and they broadcast the psychiatrists' findings of John's discontent without additional input from Money. Diamond learned of all this from the BBC production team, but the film did not air in the United States. In an attempt to bring the facts to light in North America, Diamond, in 1982, published a secondhand account of the documentary in the hopes of discrediting Money's sex/gender theory once and for all.[100]

The paper did not make the splash Diamond had wanted. But he did not give up. He started advertising in the *American Psychiatric Association Journal*, asking the psychiatrists who had taken over John/Joan's case to contact him so that they could get the truth out in the open. But John's psychiatrist, Keith Sigmundson, who said he "was shit-scared of John Money . . . I didn't know what he would do to my career,"[101] let years go by before he finally responded and told Diamond what no other professionals had known: in 1980 Joan had had her breasts removed, later had a penis reconstructed, and was married and living with a woman and serving as her children's father. Finally, Diamond and Sigmundsen made front-page news when they published the update on John/Joan, whom they now referred to as Joan/John.[102]

Diamond and Sigmundson used the failure of John's sex reassignment to dispute two basic ideas: that individuals are psychosexually neutral at birth, and that healthy psychosexual development is intimately related to the appearance of the genitals. Using the compelling details of the updated story, in which John/Joan/John's mother now recounted his/her consistent rejection of and rebellion against attempts to socialize him as a girl, Diamond argued that far from being sexually neutral, the brain was in fact prenatally gendered. "The evidence seems overwhelming," he wrote, "that *normal* humans are not psychosexually neutral at birth but are, in keeping with their mammalian heritage, predisposed and biased to interact with environmental, familial and social forces in either a male or a female mode."[103]

Since the Diamond/Sigmundson exposé, similar reports of rejection of sex reassignments and of the successful rearing as males of children born with malformed penises have received wide attention.[104] Diamond and a few others have gained a foothold (although some still harbor doubts)[105] in calling for new treatment paradigms—above all, postponing immediate and irreversible surgery and providing counseling instead. "With this management," Diamond reasons, "a male's predisposition to act as a boy and his actual behavior will be reinforced in daily interactions and on all sexual levels and his fertility will be preserved."[106]

The debate, however, is not over. In 1998 a group of Canadian psychiatrists and psychologists published a follow-up of another case of sex reassignment following *ablatio penis* (as accidental loss of the penis is so delicately called in the medical literature). This child was reassigned at seven months (much earlier than John/Joan, who was almost two years old when reassigned). In 1998 the unnamed patient was twenty-six years old and living as a woman. She had had love affairs with men, but had left her most recent boyfriend and now lives as a lesbian. She works in a blue-collar job "practiced almost exclusively by men." The authors note "a strong history of behavioral masculinity during childhood and a predominance of sexual attraction to females in fantasy." Yet they do not argue that the sex assignment was entirely unsuccessful. Rather, they insist that gender *identity* in this case *was* successfully changed by rearing, even if gender role and sexual orientation were not. "Perhaps," they conclude, "gender role and sexual orientation are more strongly influenced by biologic factors than is gender identity formation."[107]

Their theories have sparked intense debate. Some sexologists, for example, argue strongly that this paper by Susan Bradley and her colleagues actually provides evidence for rather than against Diamond's position. And the conversations have become even more nuanced as adult intersexuals have begun to contribute their viewpoints. Not incidentally, they also suggest more complex interpretations of the case studies than offered by academics or practicing physicians.[108] Even John Money, who has refused to discuss the case, has adopted a more intricate position. In a comment on another case of *ablatio penis,* in which a dog attacked a child, he concedes that with both early and late sex reassignment, "the long term outcome is less than perfect." He acknowledges that boys reassigned as girls often become lesbian, something he views as a negative because of the associated social stigma. Without ever citing Diamond or alluding to the debate, he concedes: "There is, as yet, no unanimously endorsed set of guidelines for the treatment of genital trauma and mutilation in infancy, and no provision for a statistical depository of outcome data."[109]

DEFINING HETEROSEXUALITY: A HEALTHY INTERSEXUAL IS A STRAIGHT INTERSEXUAL!

A specter is haunting medicine—the specter of homosexuality. What seems to be a recent focus on the connection between gender and sexual orientation only makes more explicit concerns that have long motivated scientific discussions of gender and intersexuality. It is impossible to understand the continuing arguments over the treatment of intersexuals without putting them in the historical context of highly charged debates over homosexuality. In the 1950s,

as one historian writes, "The media and government propaganda associated homosexuals and other 'sex psychopaths' with communists as the most dangerous nonconformists—invisible enemies who could live next door and who threatened the security and safety of children, women, the family, and the nation."[110] Joseph McCarthy and Richard Nixon saw homosexual Communists under every pumpkin leaf. When doctors chose to assign a definitive sex to an ambiguously sexed child, then, it was not enough that the child become psychologically male or female. For the treatment to count as successful, the child had to become heterosexual. The Hampsons, who understood homosexuality as a psychopathology, a "disorder of psychologic sex," stressed that properly treated intersex children posed no threat of homosexuality.[111] They advised medical practitioners that parents of intersexual children "need to be told that their child is not destined to grow up with abnormal and perverse desires, for they get hermaphroditism and homosexuality hopelessly confused."[112]

One can hardly blame the parents for feeling confused. If intersexuality blurred the distinction between male and female, then it followed that it blurred the line dividing hetero- from homosexual. Might one, in the course of treating an intersexual, end up creating a homosexual? It all came down to how you defined sex. Consider an AIS child born with an X and a Y chromosome in each cell, testes and ambiguous but primarily female-appearing external genitalia. Because her cells are insensitive to the testosterone her testes produce, she will be raised as a girl. At puberty her testes will make estrogen, which will transform her body into that of a young woman. She falls in love with a young man. She still has testes and an XY chromosome composition. Is she homosexual or heterosexual?

Money and his followers would say she is blessedly heterosexual. Money's logic would be that this person, raised as a female, has a female gender identity.[113] In the complex trek from anatomical sex to social gender, her male sex chromosomes and gonads have been ruled unimportant because her hormonal and assigned sex are female. As long as she is attracted to men, she is safely heterosexual. We have chosen, medically and culturally, to accept this kind of person as a straight woman, a definition she probably accepts as well.[114]

Money and his collaborators developed their treatment programs for intersexuality in the 1950s, when homosexuality was defined as a mental pathology. Even so, Money himself is quite clear that the designation "homosexual" is a cultural choice, not a natural fact. In discussing matched pairs of hermaphrodites, some raised as girls and others as boys, he and Ehrhardt write that such "cases represent what is, to all intents and purposes, experimentally planned and iatrogenically induced homosexuality. But *homosexuality in these cases must be qualified as homosexuality on the criterion of genetic sex, gonadal sex, or fetal hormonal sex.* Post surgically, it is no longer homosexuality on the criterion of the external sex organs nor of the sex of replacement hormonal puberty."[115]

More recently, the gay liberation movement has inspired a change in views that has helped medical practitioners see, to some extent, that their theories are compatible with a more tolerant view of sexual orientation. Diamond, who in 1965 spoke of "effeminacy and other sexual deviations," today writes that "it is our understanding of natural diversity that a wide offering of sex types and associated origins should be anticipated." "Certainly," he continues, "the full gamut of heterosexual, homosexual, bisexual and even celibate options . . . must be offered and candidly discussed."[116] Diamond continues to argue that nature is the arbiter of sexuality, but now, he believes, nature permits more than two normal types of sexuality. Today, he (and others) read from nature a story of diversity. Of course, nature has not changed since the 1950s. Rather, we have changed our scientific narratives to conform to our cultural transformations.

SAVING SEX: THE INTERSEXUAL AS NATURE'S EXPERIMENT

Money's prescriptions for managing intersexuality paint him, and those who agree with him, into an ideological corner. On the one hand, they believe that intersexuals inhabit bodies whose sexual development has gone awry. On the other hand, they argue that sexual development is so malleable that if one starts with a young enough child, bodies and sexual identities can be changed almost at will. But if bodily sex is so malleable, why bother maintaining the concept?[117]

Scientists struggling with this dilemma focus on intersexuals not only as patients in need of medical attention, but also as a kind of natural experiment. In particular, since the 1970s, intersexuals have been central to the scientific search for hormonal causes of behavioral differences between the sexes. Deliberate manipulations of hormones during development, performed with impunity on rats and monkeys, cannot be done on humans. But when nature provides us with an experiment, it seems natural enough to study her offering.

Building upon extensive animal research (see chapter 8) showing that gonadal hormones influence behavioral development, investigators have used intersexuals to examine three widely believed in sex differences:[118] differences in sexual desire,[119] differences in play in children, and differences in cognition, especially spatial abilities.[120] Analyzing this body of work shows

how intersexuals, seen as deviations from the norm who need to be "fixed" in order to preserve a two-gender system, are also studied to prove how "natural" the system is to begin with.

Consider, for example, the attempts of modern psychologists to understand the biological origins of lesbianism by studying female intersexuality caused by hyperactive adrenal glands (CAH). CAH girls are born with masculinized genitalia because their overactive adrenal glands have, during fetal development, produced large amounts of masculinizing hormone (androgen). When discovered at birth, the overproduction of androgen is stopped by treatment with cortisone and the genitals are "feminized" by surgery.

Even though to date there is no direct evidence to show that, in human embryos, hormones affect brain and genital development during the same time period,[121] scientists wondered if the excess prenatal androgen also affected brain development. If the fetal brain were masculinized, permanently altered by exposure to testosterone, would that "cause" CAH girls to have more masculine interests and sexual desires? The question itself suggests a particular theory of the lesbian as fallen woman. As the psychoanalysts Maggie Magee and Diana Miller write, "A woman who makes her emotional and intimate life with another woman is seen as having 'fallen' from the path of true feminine development, expressing masculine not feminine identification and desires."[122] Applying this concept to CAH girls seemed to make sense. Their "extra" androgen production had caused them to fall from the path of true female development. Studying CAH girls, then, might provide support for the hypothesis that hormones, gone awry, lie at the heart of homosexual development.[123]

From 1968 to the present, approximately a dozen (the number continues to grow) studies have looked for evidence of unusual masculinity in CAH girls. Were they more aggressive and active as children? Did they prefer boys' toys? Were they less interested in play rehearsal of mothering and, the ultimate question, did they become lesbians or harbor homosexual thoughts and desires?[124] In the gender system that frames this research, girls who like boys' toys, climb trees, don't like dolls, and think about having careers are also likely to be prone to homosexuality. Sexual attraction to women is understood to be merely a male-typical form of object choice, no different in principle from liking football or erector sets. Girls with masculine interests, then, may reflect an entire suite of behaviors, of which adult homosexuality is but a postpubertal example.[125]

Recently Magee and Miller analyzed ten studies of CAH girls and women. Although Money and colleagues originally reported that CAH girls were more active than controls (higher energy expenditure, more aggressive, more rough-and-tumble play),[126] more recent work, Miller and Magee conclude, does not bear them out.[127] Furthermore, none of the studies found increased dominance assertion in CAH girls.[128] A few publications report that CAH girls are less interested than control girls (often unaffected siblings) in doll play and other forms of "rehearsal" for motherhood. Inexplicably, however, one research group found that CAH girls spent more time playing with and caring for their pets, while other researchers found that CAH patients did not wish to have their own children and more often preferred the idea of a career to staying at home.[129] All in all, the results provide little support for a role for prenatal hormones in the production of gender differences.

Magee and Miller find special fault with the ten studies of lesbianism in CAH women. These, they point out, contain no common concept of female homosexuality. Definitions range from "lesbian identity, to homosexual relationships, to homosexual experience, to same-sex fantasies" and dreams.[130] Although several studies report increases in homosexual thoughts or fantasies, none found exclusively homosexual CAH females. One of the research groups concluded that "prenatal hormone effects do not determine the sexual orientation of an individual,"[131] others cling to the idea that "early exposure to androgens may have a masculinizing influence on sexual orientation in women."[132]

Thus, a critical look at the studies of masculine development in CAH girls reveals a weak, problem-ridden literature. Why, then, do such studies continue to appear? I believe these highly skilled, well-trained scientists,[133] return again and again to drink from the well of intersexuality because they are so deeply immersed in their own theory of gender that other ways of collecting and interpreting data become impossible to see. They are fish who swim beautifully in their own oceans but cannot conceptualize walking on solid ground.[134]

Wrap-Up: Reading Nature Is a Sociocultural Act

All choices, whether to treat with chemicals, perform surgeries, or let genitally mixed bodies alone, have consequences beyond the immediate medical realm. What might the phrase "social construction" mean in the material world of bodies with differing genitals and differing behavior patterns? The feminist philosopher Judith Butler suggests that "bodies . . . only live within the productive constraints of certain highly gendered regulatory schemas."[135] The medical approaches to intersexual bodies provide a literal example. Bodies in the "normal" range are culturally intelligible as males or females, but the rules for living as male or female are strict.[136] No oversized clits or under-

sized penises allowed. No masculine women or effeminate men need apply. Currently, such bodies are, as Butler writes, "unthinkable, abject, unlivable."[137] By their very existence they call into question our system of gender. Surgeons, psychologists, and endocrinologists, through their surgical skills, try to make good facsimiles of culturally intelligible bodies. If we choose to eliminate mixed-genital births through prenatal treatments (both those currently available and those that may become available in the future), we are also choosing to go with our current system of cultural intelligibility. If we choose, over a period of time, to let mixed-gender bodies and altered patterns of gender-related behavior become visible, we will have, willy-nilly, chosen to change the rules of cultural intelligibility.

The dialectic of medical argument is to be read neither as evil technological conspiracy nor as story of sexual open-mindedness illumined by the light of modern scientific knowledge. Like the hermaphrodite h/herself, it is neither and both. Knowledge about the embryology and endocrinology of sexual development, gained during the nineteenth and twentieth centuries, enables us to understand that human males and females all begin life with the same structures; complete maleness and complete femaleness represent the extreme ends of a spectrum of possible body types. That these extreme ends are the most frequent has lent credence to the idea that they are not only natural (that is, produced by nature) but normal (that is, they represent both a statistical and a social ideal). Knowledge of biological variation, however, allows us to conceptualize the less frequent middle spaces as natural, although statistically unusual.

Paradoxically, theories of medical treatment of intersexuality undermine beliefs about the biological inevitability of contemporary sex roles. Theorists such as Money suggest that under certain circumstances the body is irrelevant for the creation of conventional masculinity and femininity. Chromosomes emerge as the least important factor, the internal organs—including the gonads—as the next least important. The external genitalia and secondary sex characteristics obtain status for their ability to visually signal to all concerned that one should behave in certain gender-appropriate ways. In this view the society in which the child is reared, not mysterious inner bodily signals, decides which behaviors are appropriate for males and which for females.

Real-life medical practitioners, however, concerned with convincing parents, grandparents, and nosy neighbors about gender choices made for intersex infants, develop a language that reinforces the idea that lurking inside the mixed-sex child is a real male or female body. Thus they also encourage the idea that children are actually born with gender and contradict the idea that gender is a cultural construction. The same contradiction emerges when psychologists appeal to prenatal hormones to explain supposedly higher frequencies of lesbianism and other desires deemed inappropriate for a psychologically healthy female.

Within these contradictory practices and views there is room for maneuver. Scientific and medical understandings of multiple human sexes bring with them both the means to disrupt and the tools to reinforce dominant beliefs about sex and gender. Sometimes feminist analyses of science and technology present these enterprises as monolithic behemoths against which all resistance is powerless. Feminist accounts of reproductive technology have been particularly susceptible to this view, but recently the philosopher Jana Sawicki has provided a more empowering analysis. She writes: "although new reproductive technologies" can sustain the status quo for "existing power relations," technology also offers new possibilities for disruption and resistance."[138] Not only is this also the case for the medical management of intersexuality, I suggest it is always the case. Feminists must become comfortable enough with technology to ferret out the points of resistance.

Our theories of sex and gender are knitted into the medical management of intersexuality. Whether a child should be raised as a boy or girl, and subjected to surgical alterations and various hormonal regimes, depends on what we think about a variety of matters. How important is penis size? What forms of heterosexual lovemaking are "normal"? Is it more important to have a sexually sensitive clitoris—even if larger and more penile than the statistical norm—than it is to have a clitoris that visually resembles the common type? The web of knowledge is intricate and the threads always linked together. Thus we derive theories of sex and gender (at least those that claim to be scientific or "nature-based") in part from studying intersexual children brought into the management system. When needed we can, as well, appeal to animal studies, although those too are produced within a social system of sex and gender beliefs (see chapter 8).

This does not mean, however, that we are forever stuck—or blessed, depending upon your point of view—with our current account of gender. Gender systems change. As they transform, they produce different accounts of nature. Now, at the dawn of a new century, it is possible to witness such change in the making. We are moving from an era of sexual dimorphism to one of variety beyond the number two. We inhabit a moment in history when we have the theoretical understanding and practical power to ask a question unheard of before in our culture: "Should there be only two sexes?"