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Mistaken Gender: 5-Alpha Reductase Hermaphroditism and Biological Reductionism in Sexual Identity Reconsidered

Biomedical research on a rare hermaphroditic condition among males of the rural Dominican Republic has supported biologically reductionist explanations of male gender identity development. I reinterpret this research by comparison to a parallel case among the Sambia of Papua New Guinea. Meanings of mistaken gender are reviewed to contrast sex assignment and socialization in two-sex and three-sex cultural systems. I refute the unicausal biological model and suggest that psychocultural factors in these cultures are more salient in the explanation of hermaphroditic sex-role change.

A FEW YEARS AGO AN EMINENT TEAM OF MEDICAL RESEARCHERS began to publish research on a rare hermaphroditic disorder that profoundly influenced contemporary sex research. Imperato-McGinley et al. (1974) identified a syndrome in which hermaphroditic males were sometimes mistakenly assigned to the female sex in the Dominican Republic. These "females" were reported to change sex roles near puberty, to the "male sex" role. The study concluded:

> In a laissez-faire environment, when the sex of rearing is contrary to the testosterone-mediated biological sex, the biological sex prevails if the normal testosterone-induced activation of puberty is permitted to occur. Thus, it appears that the extent of androgen (i.e., testosterone) exposure of the brain in utero, during the early postnatal period and at puberty has more effect in determining male-gender identity than does sex of rearing. This experiment of nature emphasizes the importance of androgens, which act as activators, in the evolution of male gender identity. [Imperato-McGinley et al. 1979:1235–1236]

A recent study of 5-alpha reductase deficiency hermaphroditism among the Sambia of Papua New Guinea has provided a different interpretation of mistaken gender (Herdt and Davidson 1988). Though supporters and critics continue to cite the Dominican Republic work (reviewed below), fundamental issues in third-gender categories and their cultural analysis have been ignored in favor of the biological side of the phenomenon. In this article, I review these studies, provide new data on the Sambia case, and highlight the reasons why the biological reductionism of this hermaphroditism has been so compelling to Western science.

The classification and meaning of hermaphroditism is a particularly challenging topic in the anthropology of gender (Edgerton 1964): the orders of culture and nature collide in the match between the phylogeny of biologic sex and the enculturation of sexual identity. Many anthropologists believe that much of gender is "constructed," to use the prevailing textual metaphor (Ross and Rapp 1981). Such a view finds its foundations in Benedict (1938), Malinowski (1927), and Mead (1935); and among the sexologists in Ellis (1945), Ford and Beach (1951), and Money (1961). My initial work with Sambia took a similar perspective in tacitly agreeing with them that the cultural construction of

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a third sex—the *kwolu-aatmwol*—as inexorable (Herdt 1981). Continuing field study has made me realize, however, that while Sambia recognize three sexes and at birth sex-assign them as such, their world view systematically codes only two genders, masculine and feminine, in cultural discourse (Herdt 1987; Herdt and Davidson 1988).

A long line of sex and gender research assumes that sexual dimorphism is the innate and essential foundation of sex assignment and the modeling of gender identity development across cultures. Not only is this order of nature thought to be a preconception (Gadamer 1965) of ontology in species of nature, but it is readily extended to gender antecedents of human nature across societies. Sexual dimorphism is certainly prominent in Western biological and evolutionary thinking since Darwin (1871), and it continues in recent work (Hall 1982). Perhaps sexual dimorphism seems so "natural" that our culture and—therefore—Western science have scarcely considered the absolutism which this piece of common sense (Geertz 1983) exercises over sex research. Feminist and Marxist critiques have well considered parallel issues in biologically reductionist interpretations of women's roles and the reproduction of motherhood (Balbus 1982; Chodorow 1978; Rosaldo and Lamphere 1974; Sanday 1981). Generally, however, reductionism continues in studies of males, where there appears to be a compelling match between the cultural expectations ascribed to males, and the biological fact of their maleness (reviewed in Herdt 1981; Weeks 1985:79–91). Interpretations of hermaphroditism, have, likewise, tended to obey a presumed natural law of dimorphism, encoded in cultural reasoning, that assigns all things "sexual" (Foucault 1980b) to *biological* types, male and female. Even Edgerton (1964), whose sensitive study on the Kopot of East Africa provided a primary text, recently recapitulated the Western essentialism of sexual dimorphism: "It is probably a universal assumption that the world consists of only two biological sexes and that this is the natural and necessary way of things" (Edgerton 1985:77–78; Lev-Ran 1974). Abundant evidence suggests the existence of third gender categories in other cultures (Callendar and Kochems 1983; Whitehead 1981; Williams 1986).

But the relationship between these cultural categories and gender identity development is problematic in two areas. First, does a society have a two-sex or three-sex (or more) code for sex assignment at birth? Those who argue for the primacy of sex assignment in the determination of gender identity see anomalies here with regard to ambiguous sex assignment; that is, the possibility of hermaphroditic gender identity arises (Stoller 1968). For normative individuals, however, the power of our dimorphic two-sex code is largely taken for granted: one is either male or female. Second, how does the gender code of a society apply developmentally to the socialization of individuals such as hermaphrodites? Gender identity theorists have emphasized the difficulty of postnatal gender change (Money and Ehrhardt 1972). Recent critiques challenge this primacy of early influences, however (Kohlberg, Ricks, and Snarey 1984). A key problem concerns the ideological significance that a two-sex system such as ours places upon sex assignment in childhood. As Mead (1961:1453) once suggested, however, "sex assignment may be far more complex in other cultures than our own," largely because in subsequent "sex role assignments" (Mead listed 11 forms of these cross-culturally), there are other lifespan transition points for gender identity socialization.

Clifford Geertz (1983:80–84) argues that the Western dimorphic model is neither universally shared nor scientifically reliable when it comes to understanding hermaphroditism across cultures. His conceptual position straddles Whorf and Wittgenstein by viewing gender categories as reflecting neither individual experience nor collective representations. Some peoples hold unhappy attitudes toward hermaphroditism, Geertz says, citing Edgerton's (1964) Pokot of East Africa, the Ancient Romans, and, more extreme, contemporary America, whose natives express feelings of "horror" and "nausea" about hermaphroditism. Others, however, such as the Navaho, hold a positive view of hermaphroditism, Hill (1935) tells us. Because of their curative powers, the *nadle* were "movers and shakers" who brought magical blessings and became leaders—"just like President Roosevelt," they said—so that hermaphrodites were even "afforded a favoritism not

shown to the other children in a family" (Hill 1935:274). The Navaho categorize "transvestites" and "hermaphrodites" together as *nadle*, although Hill (1935:275) remarks that their hermaphrodites dressed and acted as women: an outcome suggested by a meaning of *nadle* as "being transformed." How very different from Edgerton's (1964) Pokot, who, like Americans, do look down on the hermaphrodite, but not with disgust. Rather, they see them as simple errors of God: like a botched clay pot, pathetic and useless.

The Greeks' mythic and ritual regard for the hermaphrodite (Hoffman 1984) was noteworthy, partly due to the divine precedent of Hermaphroditus (Money 1961). Also famous in myth was Tiresias, the soothsayer, "who was born a boy, changed into a woman, and then back into a man" (Bullough 1976:113). These instances are especially remarkable because the Greeks, like the later Romans, "usually destroyed" hermaphrodites and other abnormal infants at birth. The Greeks apparently circumvented this taboo by "mistakenly" assigning a hermaphrodite to the female sex, a situation not unlike 5-alpha reductase hermaphroditism in places such as the Dominican Republic and New Guinea, described below.

These cultural variations in sex-assignment codes and socialization attitudes suggest an alternative approach to mistaken gender. While morphological sex is generally easy to classify, at least in a two-sex system, gender tasks and meanings are not. Category membership is harder to advance for gender; sex is a clearer and gender is a fuzzier set (Gelman, Collman, and Maccoby 1986). Cultures, such as our own, which overlay sexual dimorphism in nature upon gender identity development in humans, tend to be essentialist and morally restrictive regarding conceptions of personhood and sexual conduct. Perhaps, then, the more gender is defined by the two-category classification of biological dimorphism, the more disgusting and stigmatized gender anomalies will be regarded. On the other hand, cultures with three-sex systems tend not to advance such an inexorable and seamless fit between gender identity and sexual classification. Thus, they will tend to be less restrictive in socialization and more accepting of sexual variations, making of androgyny a significant motif in cultural representations, even in the sacred (Herdt 1987). Their permissiveness might be characterized, to use Freud's (1953) famous phrase, as "polymorphous perverse."

Underlying these two ideal types of sex and gender coding are alternative ontologies. Pragmatically, each ideal type is associated with different commonsense beliefs and empirical attributions about maleness, femaleness, and hermaphroditeness in everyday discourse. Dimorphic cultures, such as that of the Anglo-Saxon tradition, define persons primarily by biological or deeper psychological essence, thought to be invariant through life (Herdt 1990). Polymorphous cultures such as those of Melanesia, by contrast, define persons as more fluid and as relatively male or female, according to social and developmental characteristics such as lifespan stage, socioeconomic status, and body ritual.

The Dominican Republic Case

The Dominican Republic syndrome (steroid 5-alpha reductase deficiency) is extremely rare; it occurs as a hormonal defect but only in males who seem, otherwise, biologically normal; and it is inherited as an autosomal recessive trait. (See Money and Ehrhardt 1972 for a primary review of hermaphroditic conditions; and Imperato-McGinley et al. 1981, Rubin, Reinisch, and Haskett 1981, and Stoller 1985, for updates.) The hormonal defect in these male pseudohermaphrodites is caused by a genetic deficiency in the enzyme 4 steroid 5-alpha reductase, which impairs the metabolism of testosterone to dihydrotestosterone (DHT). Since DHT is the prenatal mediator of masculinization of external genitalia, such persons at birth are sexually ambiguous, with a marked bifid scrotum that appears labia-like, an absent or clitoris-like penis, undescended testes, and associated hermaphroditic traits. Some of these persons are recognized and assigned as "males" at birth. But in other cases the ambiguous characteristics cause categorization to the female sex, with subsequent socialization as "females" (Imperato-McGinley et al. 1974).

This "natural experiment" (Imperato-McGinley et al. 1979) in mistaken sex-assignment could end here without further theoretical interest for gender research were it not for the fact that subsequent virilization occurs in these persons at puberty. Because they are genetically normal males, with presumed prenatal exposure of the brain and CNS to testosterone, all 5-alpha reductase hermaphrodites begin to virilize again at puberty through the peripheral timing effects of their own plasma testosterone. Hence, the voice deepens, muscles develop, the penis grows somewhat, and testes descend. Erections occur; sexual intromission is possible but without insemination, due to abnormal urethral position.

The Dominican Republic research established that 38 male pseudohermaphrodites were known from 23 extended families spanning four generations in three rural villages. The local condition is known as *guevedoche,* "penis at twelve." Of these subjects, 19 were supposedly reared "unambiguously" as girls; 18 of these 19 were studied. "Of the 18 subjects, 17 had successfully changed to a male-gender identity and 16 to a male gender role" (Imperato-McGinley et al. 1979:1234). These persons are said to have changed through stages of "no longer feeling like girls, to feeling like men, and finally to the conscious awareness that they were indeed men." Sex-role change from "female to male" occurred at around age 16. Their postpubertal masculinity was indicated by sexual interest in women, with intercourse at ages 15–17. Fifteen of 16 living subjects have since had common-law marriages with women. As "men," these former "women" took social roles as farmers and woodsmen, their wives being housewives and gardeners, which are locally normative socioeconomic routines. The medical team therefore concluded that "in a laissez-faire environment, when the sex of rearing is contrary to the testosterone-mediated biologic sex," the biological sex will prevail and "over-ride" the social environment's gender socialization (Imperato-McGinley et al. 1979:1234).

The Dominican Republic hermaphrodites posed a major challenge to the breakthrough theory of Money and the Hampsons (1955). They argued that gender identity development is determined by sex assignment and rearing, not by the gonads, a conclusion which Ellis (1945) had exhaustively presaged in the literature on hermaphroditism. In cases of ambiguous sexual genitalia, they added a new criterion for standard clinical practice: sex of assignment up to age 2½ is the best predictor of nonpathological gender development (Money and Ehrhardt 1972). Gender identity change by clinical sex-reassignment after this age is extremely risky for subsequent positive mental health (Stoller 1968). Microscopic prenatal sex hormonal research since that time has not changed the picture (Ehrhardt and Meyer-Bahlburg 1981; Ehrhardt 1985:84ff.; Grumbach and Conte 1985). Social environment remains primary in gender identity development.

The consequences of this view on sex research and clinical treatment have been many and varied. The Dominican Republic study has been vigorously criticized by Money (1976), Meyer-Bahlburg (1982), and others, and Ehrhardt (1985:87) has chided the work because "clinicians have become insecure and now seriously suggest assigning males with five-alpha reductase deficiency to the male sex, despite the fact that they will grow up severely diminished and with ambiguous genitalia" (see also Grumbach and Conte 1985:382). It is important to note, however, that those who have been most critical of this work are also strong proponents of the theory it challenges.

It is easy to pick holes in the study as well, and some critics have done so. The ethnography and interview data are sketchy; neither the interview schedule nor the exact psychosexual assessment procedures have been published (Money 1976; Sagarin 1975). Rubin, Reinisch, and Haskett (1981:1322) have deconstructed the reported sample size on female-to-male sex role change: out of 18 subjects, two were dead, one continued to maintain an adult female identity and was married, another dressed as a female but reportedly considered himself male, while another lived alone as a "hermit" in the hills. Thus, 13 rather than the 19 subjects were actually observed to make a clear-cut sex role change (see Ehrhardt 1985; Ehrhardt and Meyer-Bahlburg 1981; Rubin, Reinisch and Haskett 1981). These critiques raise two basic questions: (1) Are Dominican Republic

pseudohermaphrodites sex-assigned and reared unambiguously as females? (2) Is their postpubertal gender identity clearly male, so that "they consider themselves as males and have a libido directed toward the opposite sex" (Imperato-McGinley et al. 1974:1215), as claimed?

A review of the Dominican Republic study reveals inadequate evidence for these developmental claims, before or after puberty, either in behavior or in the head. We are told that villagers are aware of the existence of the hermaphroditic condition in local villages, even though the ontology of the *guevedoche* is never described. We are also told that the prepubertal subjects "showed self-concern over their *true* gender"; between the ages of 7 and 12 anatomical abnormality made them aware that they were "different" (Imperato-McGinley et al. 1979:1234). Public bathing and crowded living conditions may expose their childhood genital oddity, which seems critical to their gender socialization (see also Sagarin 1975:331). Indeed, the *guevedoche* feel "Insecurities because of their . . . genitalia. . . . They view themselves as incomplete persons . . . [which] saddens them. They fear ridicule by members of the opposite sex and initially feel anxious about forming sexual relations" (Imperato-McGinley et al. 1979:1234). We must also wonder at the circumstances of the two *guevedoche* who did not convert to the male role, in spite of considerable cause to do so (see below). Finally, the fact that the sex-role change occurred as late as between ages 14 and 24, with a mean age of 16, seems inconsistent with the main effect, hormonally driven theory of gender identity development (Meyer-Bahlburg 1982:686).

A critical reinterpretation of this study requires two new "insider" understandings of how their cultural system works. First, their cultural system seems to code for not two but rather three sexes. It is striking that neither the medical researchers nor their critics have noticed this simple yet profound social fact (see Sagarin 1975). In the 1979 report it is remarked, "The phallus enlarges to become a functional penis, and the change is so striking that these individuals are referred to by the townspeople as *'guevedoches'*—penis at 12" (Imperato-McGinley et al. 1979:1213). Again, villagers' familiarity with the anatomical differences are noted because subjects are ridiculed as "*guevedoche, guevote* . . . or *machihembra* (first woman, then man)" (1979:1235). This registers a cultural difference in the local ideology of commonsense sexual categories used in sex-assigning and socializing *guevedoche*. The villagers have more than a word for hermaphrodite; they have a triadic sexual code. That the village ontology includes a third sex category challenges the biological answers to the two developmental questions raised above.

The second understanding involves rethinking the cultural topography of the Dominican Republic. The researchers argued that the Dominican Republic works as a "laissez-faire" environment for gender identity development, implying no social "pushes" or "pulls" toward the male or female gender poles. Here we are handicapped by a hiatus of ethnographic information on the *guevedoche* category in the Dominican Republic villages in question. Yet, existence of the *guevedoche* suggests that over generations villagers historically have responded to the presence of these persons through the construction of gender-related norms, rules, and attitudes that served to mediate the normative male/female dichotomy widely occurring throughout the Dominican Republic area. We cannot know whether the third gender category was adopted elsewhere. In the absence of such local knowledge, we must rely upon the distal ethnographic corpus to interpret the cultural meanings of the male/female dichotomy locally (see Brameld 1959:108; Brown 1975:324–325; Leyburn 1966:197; Weil et al. 1973:65–76). Carribbean images of gender inequality hardly constitute a neutral notion of "laissez-faire," and this seems generally true throughout the region (see Brameld 1959:108, on Puerto Rico; Floyd 1979:66, on Jamaica; Kerns 1983:89–103, on Black Caribs; and Leyburn 1966:196–197ff., on Haiti).

Anatomically ambiguous and stigmatized hermaphrodites have much to gain and little to lose by "switching" sex roles. Dominican males are better off than females, for men have wives as domestic workers, are birth-preferred, and have more status in political and economic arenas. To summarize from a recent Dominican ethnography: "*Machismo*

also helps explain why power is in the hands of males" (Wiarda and Kryzanek 1982:19). In cases of an unbalanced sex ratio of children in a family, children may be adopted-in as inexpensive servants—which raises the question of the desired economic contribution of the *guevedoche* to families in rural Dominican Republic (cf. Royce 1987:339–340, on the Zapotec third sex). That a *guevedoche*—either primarily female or male-hermaphrodite in sex socialization—should aspire in the direction of *machismo* is understandable.

Contrary to the biomedical explanation, then, my hunch is that the Dominican *guevedoche* does not experience postpubertal developmental change as being from "female to male." Instead, the transformation may be from "female"—possibly ambiguously reared—to male-identified hermaphrodite, who is, in certain social scenes, categorized with adult males. This is a very different view than that of Imperato-McGinley et al. (1981:101), who suggest that as the result of (testosterone-induced) "serious self concern" over their sex, *guevedoche* began to "feel like men" (see also Green 1987:44). We are told virtually nothing about the proximal social circumstances of this feeling, which seems decontextualized. However, we know that cultural influences were always developmentally present. *Guevedoche* are not so confused as to forget that by sex assignment they were *not* male. That is why villagers call them *guevedoche!*

Two important missing links in the Dominican Republic study are related to this psychocultural interpretation. The first has to do with the absence of detailed clinical ethnography (Herdt and Stoller 1990) on the subjective identity states of those *guevedoche* reared in the male direction, a point to which I shall return. The second missing link concerns the outcomes of those two female-assigned *guevedoche* who did not switch roles. Imperato-McGinley et al. (1981) provide anecdotal notes to fill this gap, and while their report is not ethnographically satisfying, it casts further doubt on their own biological interpretation. Subjects 4 and 25 (Figure 3, Table 1, in Imperato-McGinley et al. 1981) did not make the switch to the male role. In particular, subject 4 "adopted a male gender identity" (the measure or index of this is not reported) but "continues to dress as a female" (1981:100). This person has not had sex with women, denies sexual attraction to such, has worn false breasts for years, and desires sex change to become a "normal woman." Had they been reported ethnographically, the circumstances of gender resocialization of these female *guevedoche* could illuminate their mistaken gender and subsequent sex role change. Suppose, for instance, that a female's development was developmentally clear, providing a stronger biological bias to femaleness (Diamond 1979; Hood et al. 1987:59); or that any hint of her ambiguity was hidden from others. Or suppose (with Green 1987, Money 1987) that her temperament was somehow better "matched" to the female identity/role than that of the others. The possibilities are developmentally complex but not infinite.

Interventions by the medical research team in the Dominican Republic villages seem to have been dramatic. Various clinical specimens—blood and urine—were taken. The related psychosocial intrusions are hinted at in a statement on "materials and methods" (Imperato-McGinley et al. 1979:1234), although the full impact cannot be gleaned from the relevant reports (see especially Imperato-McGinley et al. 1979, 1981). We may have, here, an example of "hospital culture" (Klaus and Kennel 1976) exported to the field and then withdrawn to the clinic, where the "clinical gaze" (Foucault 1973) of sex surgery would decontextualize gender identity and role even more. Thus, too, cross-cultural sex research may directly alter the social field in which it takes place (Gagnon 1975).

Did a two-sex Western folk model unwittingly color the Dominican Republic hermaphroditic study? From a letter in *Science* we learn that "the younger pseudohermaphrodites of the last generation are being raised as boys, and the townspeople therefore now recognize the condition" (Imperato-McGinley et al. 1976:872). If these researchers were ethnographically insensitive to the distinctions between two-sex and three-sex cultural codes, and between normative males and *guevedoche,* they may have inadvertently interpreted or even cued cultural responses, so that formerly naive actors came to label *guevedoche* as "male" or "female," obviating their own third-sex schema.

The New Guinea Case

Carleton Gajdusek (1977) first suggested that hermaphrodites reported from scattered parts of Melanesia might be afflicted with 5-alpha reductase deficiency similar to that of the Dominican Republic study. Anthropological reports of hermaphrodism from New Guinea, as for instance among the Hua (Meigs 1984:93), and the Bimin-Kuskusmin, identified by Poole (1985:229), are probable cases of 5-alpha reductase deficiency. The presence of a third sex category among the Bimin-Kuskusmin is particularly interesting in view of the marked androgyny motifs of their origin myths (Poole 1981).

Research among the Sambia of Papua New Guinea, beginning in 1974, made me peripherally aware of a few anatomically aberrant persons. At first I mislabeled them as "transvestites," only later realizing that Sambia believed them to be hermaphroditic. I have studied one of them in depth, a male pseudohermaphrodite named Sakulambei, over a ten-year period, originally because of his role as a powerful shaman (see Herdt 1987:63–64), and later because of his hermaphroditic gender identity (Herdt and Stoller 1985). In 1983 I was visited in the field by Dr. Julian Davidson (an endocrinologist from Stanford University), who analyzed blood samples from the Sambia pseudohermaphrodites, which confirmed our hunch that 5-alpha reductase deficiency was the presenting syndrome (see Herdt and Davidson 1988 for a clinical study). I have since identified fourteen male pseudohermaphrodites over three generations since 1910; they derive from eight villages having a total historical population of about 1,700. Of these fourteen subjects, six are living, and five have been studied in some depth. Four of the total were reared as females.

To summarize the ethnography of Sambia hermaphrodism: Sambia have three sexual categories: male, female, and *kwolu-aatmwol,* a word that indexes "male thing-transforming-into-female thing." In popular discourse, Sambia use another term, from Neo-Melanesian Pidgin, which refers to "turning into a *man.*" As a historical/symbolic category in their society, parents and midwives know that the condition causes anatomical ambiguity at birth and dramatic masculinization at puberty (Herdt 1981). Hermaphroditic infants are sex-assigned as *kwolu-aatmwol,* not as male. Those assigned as female are mistaken as normal females. Hermaphrodism is regarded as a sad and mysterious quirk. The *kwolu-aatmwol,* unless distinguished as a shaman or war leader, is quietly disparaged. Yet several *kwolu-aatmwol* are well known in local history, and one of them, now deceased, was famed both as shaman and fight leader. The *kwolu-aatmwol* is therefore not rejected or frozen out of daily and normative social contacts, and may indeed rise to distinction through special achievements, as Sakulambei has done. Nor do Sambia feel disgust regarding these liminal beings. Still, Sambia is a sexually polarized society, and parents do not want infants to be hermaphroditic: the intersexed infant may be killed at birth by women, the men believe (Herdt 1981). If it passes as female, however, it is sure to survive. Consequently, at birth, women carefully check the infant's sex to ensure that it is not *kwolu-aatmwol.* When discovered at birth, the child is reared in the direction of masculinity, but not unambiguously; rather, it is referred to as *kwolu-aatmwol* or male, because parents know that their infant will not change into a female. Sometimes the *kwolu-aatmwol* as a child is teased and humiliated by peers for having "no penis." If parents feel ashamed or rejecting of the child, the mental health outcome is poorer (Herdt and Davidson 1988).

Five of the fourteen *kwolu-aatmwol* were reared as females. Two of these are still alive. One late adolescent continues to live as a female, though she is unmarried, physically larger than a normal female, and is now known to be a *kwolu-aatmwol.* The other living subject is an older adult who was reportedly reared ambiguously as a female. There were signs of anatomical peculiarity after puberty, such as the lack of breast development, in this person's development; but these were ignored. However, she was married at 19 to a man in a normative marriage arrangement, who discovered that she had a small penis. The outraged and shamed husband wanted to kill her, but their relatives intervened. After this traumatic incident, the mistaken female switched to wearing male clothes,

changed from a female to a male name, and moved far away to another area. Today he passes as a "male" in a distant Highland town. He is unmarried, and though he dates women, he seems uninterested in them. In three other historical cases this same social outcome occurred: gender switching took place only *after* marriage, humiliation, and exposure (see Herdt and Davidson 1988 for details). In these instances, however, the psychosexual change was not from female to male but from putatively female to *kwolu-aatmwol*—"female thing to male thing"—sometimes opportunistically categorized with other "men" for symbolic purposes strategically useful to the men and/or the hermaphrodite.

A key factor of the hermaphrodite's cultural anomalousness is the withholding of puberty rites and marriage in adolescent development. The male-assigned *kwolu-aatmwol* is initiated at ages 7 to 10 with his age-set. A second prepubertal initiation at ages 11–13 also is performed for them. But a remarkable feature of the Sambian response to the developmental course of male-identified *kwolu-aatmwol* is that no further initiations, including the collective third-stage *ipmangwi* ceremony (Herdt 1981), are normatively planned or sponsored for them. Because by canonical male theory all males are initiated fully into the six stages of the men's secret society, this omission seems to violate the men's own ideology of like ritual treatment for all men. Indeed, Sambia are so consistent ideologically regarding the uniformity of male ritual development, that for some time I ignored asking about the subsequent initiations of the hermaphrodites. I had observed Sakulambei initiated into the third stage in the 1970s, so my view was influenced by the apparent normativeness of this event. Only later did I realize that the men, Sakulambei's father and clan brothers included, had passed him by for initiation with his own cohort in 1968. Subsequent work revealed that he had entrepreneurially engineered his own 1975 initiation in another phratry through a powerful relative's influence, an old male shaman invested in Sakulambei's career (Herdt and Stoller 1985). Later interviews and ethnohistorical work showed that all other male-assigned hermaphrodites had likewise been bypassed for "pubertal" initiation. Moreover, all cases of female-to-male gender switching occurred without any subsequent initiation into the men's society, an extraordinary outcome which again contradicts the internal consistency of the "all men are initiated" view, but one which the Sambia ignore. These cases support the interpretation of a three-sex code in subsequent socialization. *Biological* changes in the male body anticipate the subsequent *social* events of third-stage puberty rites. For the person sex-assigned as *kwolu-aatmwol,* they suggest that ritual initiation is not enough to "activate" complete masculinization (cf. Herdt 1981). The late-adolescent transformation of the mistakenly female-assigned *kwolu-aatmwol* comes long after this person's male age-set cohort has passed into advanced normative role-status positions. Thus, the Sambia tacitly believe that it is too late to change gender status and related ritual knowledge in both types of late bloomers.

That the socialization of male pseudohermaphrodites such as Sakulambei is ambiguous can be seen both from their social behavior and their internal identity state. Behaviorally, they show less aggressive and assertive behavior, more nurturance and deference behavior, than normative males. They are erotically avoidant as adolescents and timid as adults (Herdt and Stoller 1985). Because Sakulambei, for instance, was not initiated properly at puberty and could prolong his practice of the homosexual recipient role of normative male ritual development (Herdt 1987), his sexual behavior history is aberrant. Furthermore, there were ambiguous features in Saku's ritual development (see Herdt and Stoller 1985): for instance, contrary to all other male Sambia (Herdt 1982), Sakulambei has never nose-bled or felt the need to let "female" blood from his body. He feels it is a part of his core identity. It is no surprise, then, that *kwolu-aatmwol*'s gender identity state is neither clearly one of the sense of maleness nor of femaleness: they have a hermaphroditic psychosexual identity that is distinctively different (cf. Stoller 1968:3–37), and their phenomenology reveals them to feel unique or alone in the world (Herdt and Stoller 1990).

New Guinea systems would seem to manifest the strongest sexual dimorphism in their conceptions of the natural world and human nature. In fact, however, we find discor-

dance between the order of nature and the order of culture. Androgyny in species such as cassowary and pandanus tree is coded into symbolic systems (Gardner 1984; Herdt 1981). Elsewhere the husbandry of hermaphroditic pigs is popular and symbolically potent (Baker 1928). Hermaphroditism is encoded also in the primal ancestors of certain peoples (Poole 1981, 1985). Among the Sambia, too, such a myth exists, and its hermaphroditic theme speaks both of what to be and not to be, in male development. Its revelation comes to initiates at the completion of their final initiation into full manhood (Herdt 1981:ch. 8). The myth tells of two persons, with small breasts and tiny penes, who began the world. Feminization and masculinization are prominent in the mythic narrative. The story causes concern in some men in the audience about whether males, females, or hermaphrodites are sexually dominant. Their concerns are as unnecessary as the hermaphrodites are absent, however, because—not being initiated beyond the third stage—*kwolu-aatmwol* never hear this story. The myth of parthenogenesis does, therefore, "charter" Sambian hermaphroditism in a further, sacred sense. Its secrecy precludes the amelioration of the psychological feelings of hermaphrodites, however. Nor does its existence preclude some derision of the third sex as a lower form in the order of nature. Here, then, the *kwolu-aatmwol* is a Janus, its existence sufficiently independent as an ontology and cultural category that for Sambia men, and perhaps women, too, the hermaphrodite is sometimes a useful blessing, as the Navaho seem to feel, but a mixed one, because they fear their children being hermaphrodite. The *kwolu-aatmwol* category for Sambia men thus functions largely as a pejorative category in male culture, an interpretation similar to that once posed by Levy (1973) in his study of the Tahitian *mahu* (transvestite) role, in its meaning for the maintenance of normative Tahitian male identity.

Like other New Guinea societies, Sambia is a symbolically elaborate and gender-preoccupied culture. Males have the upper hand in public affairs, their gender hierarchy supported by the men's ritual cult. In such a world, a rational choice would favor one being born male, in spite of its ritual contradictions and real-life dangers. Would we not, therefore, expect that the hermaphrodite, belatedly discovered to be mistakenly female, would aspire to opportunistically change to "male"? And yet, this bit of common sense does not match the facts. In the four historical cases of sex role change, the female-defined *kwolu-aatmwol* did not convert to a different role until after their exposure and failure as female. One of them still lives as female. In other words: social catastrophe forced them to change, or else face an unbearable and ambiguous future as no longer clearly female but not yet male-associated pseudohermaphrodites.

It is hard to see in this forced outcome nearly 20 years after birth strong evidence for a hypothetical effect of male testosterone-exposed brains overcoming gender role socialization. I am impressed much more by the continuity in gender development that was interrupted only by the ultimate failure of the female-assigned hermaphrodite's body to sexually and reproductively deliver what was necessary for her to fulfill her social destiny.

Discussion

In retrospect it seems obvious that these peoples in the Dominican Republic and New Guinea would have evolved a three-category sex code in living with male pseudohermaphrodites in their midst over generations. And these poor souls in turn were spared the dualistic ultimate dilemma of having to be what they were not; unambiguously male or female (cf. Foucault 1980a). For the presence of a third sex category served to mediate sexual dimorphism, providing a different, perhaps anomalous or residual if not fuzzy set of responses to their bodies and, within themselves, to their own sense of their identities.

This interpretive study has provided two alternative critical developmental points for explaining how Dominican intersexed males, mistakenly reared as females, become the cultural beings "men" in local discourse. One is that what counts is not anatomical sex as an objective fact but the cultural meaning of sex assignment in the symbolic world and handling of the person. The infant's anatomical ambiguity creates a horrific deficit only

in a two-sex cultural category system like ours. In a three-sex system, with its fuzzier boundaries, the person's sex and identity are reckoned in relation to a more complex sexual code and social field having three alternate socialization regimes and outcomes, each of which is known to be historically coherent: male, female, and hermaphroditic. In this sense, these persons are not mistaken females, but, rather, *guevedoche* and *kwolu-aatm-wol;* that is, third genders. The second point derives from the developmentally later effect of how a three-category system provides for greater fluidity in postpubertal gender identity transition into adult roles. It is to the inherent social advantage of the hermaphrodite to "switch" from mistaken female-defined to male-defined hermaphrodite, once the person enters an adult career, because the power dynamics of gender roles in both these cultures create such motivations. This interpretation suggests an entirely different hypothesis than that of the biomedical model (cf. Imperato-McGinley et al. 1974). Only a profound inner sense that one is inexorably female would inhibit such persons from making the structural sex transformation from exposed "female" to hermaphroditic male. This sense would be an identity state similar to that of the primary transsexual (Stoller 1975), one whose roots are deep in the order of nature of the person.

The Dominican Republic study epitomizes the history of medicalized sex research, which focuses too much on the level of individual experience, taking a "lone child" model that ignores social context and ideology in gender development. In a wise and far-seeing conclusion, Margaret Mead (1961:1476) once suggested a similar critique of the American folk model: "Early and absolute assignment of sex [and] continuous therapeutic interference with any anomalies are all highly congruent with this contemporary emphasis on the importance of every human being able to function in the same way." However, the two studies examined here do not resolve the controversy over biological determinants of gender identity. The 5-alpha reductase deficiency syndrome clearly creates extraordinary prenatal hormonal effects in gender development. We cannot know for sure what is normal and abnormal hormonally in such cases (Money and Ehrhardt 1972), or what their long-term effects on adult behavior will be (Ehrhardt 1985; Maccoby 1979). No biopsychic "force" can be ruled out (Green 1987; Stoller 1985). But neither has the existence of prenatal hormones as the ultimate cause of sex role switching been demonstrated, so it is false to think of the Dominican Republic case as a "natural experiment" (Imperato-McGinley et al. 1974) for such reasons (Sagarin 1975).

Sufficient demographic instances in a local group make it plausible, and perhaps inevitable, that over time a third sex category will symbolically emerge to classify and handle the hermaphrodite. As a cultural ideal this category may be perceived and projected into the order of nature. Feral animal species may be classified as third sex, while other animal species may be domesticated to place them in the third sex, as well. Because most hermaphroditisms occur in *males,* who are competitive in public affairs and may be preoccupied to exaggerate their superiority over females anyway, this third category is inherently problematic and unstable in gender hierarchies. Where it applies purely to biologically normal males, it may be utilized as the antithesis of masculinity, as in the case of Tahitian *mahu,* where femininity is *not* the logical sign of what "not to be" (Caplan 1987:21). Its practical and material manifestations may be blurred in praxis, however, because cultural gender ideals may be invoked or denied for strategic situational advantage. The point is that the third gender is a perishable category, and the historical consciousness and social practices related to it may suffer demise in encounters with Western Others, whose ideals and pragmatics are more strictly dimorphic.

A special unconscious collusion between American folk biology and sexual ideology has evolved in gender identity research, making it difficult to separate formal scientific from folk criteria in many cases. Beginning with Freud (1953), it could be shown that each treatment of a gender identity theme begins with an assumption of biological essence in or regulated by males. From this viewpoint, the deficit model of gender variations arises: males are missing *something inside:* not enough genes, not enough hormones, not enough mother, not enough father, the cultural factors informing sex assignments and

development generally ignored (Weeks 1985). Furthermore, folk models of human nature and culture are so situated in the power structure of societies to produce unconscious structural variations in reaction (Greenberg 1988) to hermaphroditism. The polymorphous culture of the Navaho seems to have achieved a remarkable zenith in its cultural praise of the blessed hermaphrodite. For the Ancient Greeks, their polytheism and gender fluidity were associated with a model of sexual polymorphism; whereas the later Roman Empire, increasingly exposed to diverse cultural standards imported from Empire into Rome, became successively more orthodox in clinging to naturalisms and more restrictions on Roman citizenship (Hoffman 1984:42). For the Dominican Republic and Sambia, the historical institutionalization of a third sexual category implies a cultural transcendence of the dimorphism of species by investing in a polymorphous "fluid" definition of the person. Gender identity for the hermaphrodite is not unambiguously male or female. Yet, the cross-cultural variations reviewed here attest strongly to the importance of signs of gender identity as *cultural achievement.*

Is gender identity all constructed, an illusion of culture? Is there no need for critical biosocial "time-loaded" mechanisms of experience? Maccoby (1979:195) has suggested that "It is not children who have critical periods with respect to gender assignments, but societies; that is, after a given age, too many people know a child, and their memories are too long to permit them to change the nature of their supportive behavior." This turns the idea on its head and points us in the opposite direction of cultural invention. But its challenge to the order of nature may go too far; for, as Yeats asked, how can we know the dancer from the dance? No, we do not have to alienate biology from culture, and gender identity is not merely an illusion of culture. But an illusion it would be to imagine that the answer to the problem of mistaken gender could be solved without the work of culture and the study of whole lives.

Acknowledgments. A previous version of this article was commented on by the following colleagues, to whom I am grateful: Andrew Boxer, Norman Bradburn, Joseph Carrier, Julian Davidson, John DeCecco, Daniel Freedman, Paul Friedrich, Martha McClintock, John Money, Steven Murray, Robert LeVine, Bennett Simon, Robert Stoller, Richard Shweder, and Donald Tuzin. The writing of this manuscript was supported in part by a grant from the Spencer Foundation, whose help is gratefully acknowledged.

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