

The Nature of Gender*

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I explain a biosocial model of women's gendered behavior (behavior on which the sexes differ). This model integrates a macro sociological theory with a biological theory derived from primate behavior. The sociological model is designed to explain changes in the relationship between sex and behavior over time or between groups. The biological model is designed to explain individual within-sex variance and between-sex variance in gendered behavior in a cohort. Results from an original study are presented to demonstrate that within-sex variance in women's gendered behavior is explained well by the primate model. I conclude that human nature is gendered. The implications of this conclusion are explored for demographic and other social science research.

I welcome my colleagues of the feminine gender, the masculine gender, and other genders not yet constructed. When I was young, the term *gender* referred to the grammatical inflection of nouns. In those days we had three genders; using *gender* to refer to the male/female classification was a joke. In a comprehensive bibliography of 12,000 titles for marriage and family literature from 1900 to 1964, *gender* does not appear once (Aldous and Hill 1967). Along came John Money; he proposed using the term *sex* to refer to the biological classification of male/female and *gender* to refer to differences in behavior by sex (Money and Ehrhardt 1972). Now everyone uses *gender*, but hardly anyone uses it in the way John Money proposed.

Today, journal editors strike out the word *sex* in my manuscripts and substitute *gender* whenever I mean male and female. *Opposite sex* becomes *the other gender*. I fill out questionnaires, even forms from the PAA, which ask for my gender, not my sex. I even find the word on my own questionnaires. I now realize that the joke about "being of the feminine persuasion" is a parody on the social science theory of gender: the most common use of *gender* in social science today is as a synonym for biological sex. In our urge to be politically correct, we now appear squeamish about using the word *sex*, today's equivalent of the Victorians' substituting *limb* for the more blatant *leg*. But this is only an appearance; today we use *gender* to indicate endorsement of a theory of gender as a human social invention.

Before I finish, I want to give you an integrated theory of gender. Since current usage is so inconsistent, we need a good definition. *Gender* is the relationship between biological sex and behavior; a *theory of gender* explains that relationship. A *gendered behavior* is one that differs by sex. My theory integrates a macrodimension with a microdimension, a

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between-sex dimension with a within-sex dimension, and a social dimension with a biological dimension.

When I was in graduate school, I was scarred for life by the slash of Occam's razor. I adopted parsimony as my mandate; I wrote the shortest dissertation in the history of my department; I am one of the shortest persons to hold this high office; someone in the audience is now hoping I will make the shortest presidential address.

I try never to invent a theory when a good one exists. I try never to have a different theory for each group, country, or species. I have been deeply impressed by what animal models in biological research have taught us about human biological functioning. I like the theory of biological evolution because it is panspecies and includes human beings. If there is an established theory about gender in other species, we ought to see how it works on humans.

A BIOLOGICAL THEORY

One well-established gender theory does apply to all vertebrates, from the garter snake to the lower primates. Since most biologists do not use the word *gender*, we will use their term: *sex dimorphism*. This theory of sex dimorphism varies in its details by species, but its overall outline is this: sex dimorphism in behavior is controlled by hormones. The hormones that control sex dimorphism are sex hormones. All mammals have basically similar primary sex hormones. We know how they should work in human biology by studying other mammals, from rats to monkeys. These sex hormones guide the development of sex-dimorphic body structures and control sex-dimorphic reproductive behavior, which lies at the heart of gender.

An important principle from animal research is that the same hormones which cause between-sex differences in a behavior cause within-sex variance in the same behavior. The hormone theory therefore is used to explain both sex dimorphism and within-sex variance on the same behaviors that are sex-dimorphic. Forty years of animal experiments have firmly established this model (Ehrhardt and Meyer-Bahlburg 1981; Goy 1970; Hines 1982; Money and Ehrhardt 1972; Reinisch, Ziemba-Davis, and Sanders 1991).

Social scientists have shown little interest in applying the mammalian model of sex dimorphism to humans; we have our own theories for explaining gender. The first principle of all social science theories of gender is that gender is explained by differences in social experience. Between-sex differences in behavior are explained by differences in the social experience of males and of females, and in the social structures that constrain that experience. Within-sex differences in gendered behavior are explained by the same differences in social experience as explain between-sex differences in that behavior. For example, if males and females differ in "aggressiveness," social science theories explain the between-sex and the within-sex differences in aggressiveness by the same variables, such as differential parental socialization and exposure to different normative structures and opportunities.

Let me clarify the theoretical predicament. A universal theory of sex dimorphism in behavior applies to all vertebrates. Because of the structure of the evolutionary process, all vertebrates share a basic reproductive system controlled by the same hormones. Most of the early progress in understanding human reproduction came from studying animal models. The same hormones control sex-dimorphic behavior as control the development of the reproductive system. But humans are the exception, we social scientists say. Even though they share their evolutionary origins with other vertebrates, humans are exempt from the sex-dimorphic behavior effects of hormones observed in all other species. Humans require a separate theory, we say.

There are important reasons why social scientists do not consider the biological gender theory. First, most do not know about it. Second, it has no place in our disciplinary paradigm. Third, it is politically incorrect; some call it “sexist” and “ideological” (Longino 1990, ch. 6). We believe that accepting a biological foundation for gender logically implies the support of current gender arrangements in society and undercuts motivation for change in gender structure. The idea that *any* behavior has a biological foundation is considered politically conservative. Social scientists imagine that if a behavior is under biological influence, there is nothing we can do about it; this naive notion is held only by social scientists.

A final reason why social scientists do not consider the biological theory is that we already have a theory we think is good, and we too follow the rule of parsimony that says “Don’t have two theories when one will do.”

The social sciences have one explanatory problem that they imagine is not shared with the mammalian theories: how to explain secular change. In humans, gender changes over time in response to environmental change. So does sex-dimorphic behavior in other species (Wilson 1975:19-21). For simplicity, in the remainder of this discourse, I will assume that only social factors affect secular change in gender.

A SOCIOLOGICAL THEORY

Social science explanations of gender depend on three concepts: gender role, socialization, and opportunity structures. I won’t burden you with a detailed development of these ideas, since they are quite familiar to all social scientists, but I’ll give you a once-over-lightly. A gender role is a range of acceptable behavior that differs by sex in a particular behavioral domain (say, parenting) and is supported by gendered norms. The boundaries of acceptable behavior differ by sex; violating these boundaries is accompanied by punishment and is made difficult by structured opportunities. We usually *infer* the existence of sex-differentiated norms from the sex differences in the behavior we are trying to explain by those norms. The reason for this tautology is that we, as social scientists, can’t think of any other way to explain sex differences. So if males and females differ in their interest in and attention to small children, we infer sex-differentiated norms from observations of sex-differentiated behavior, and then explain the sex-differentiated behavior by the norms we have inferred.

And where do the sex-differentiated norms supposedly come from? Here we have a range of theories: technology-driven theories, differences based on differential reproductive roles derived from the irreducible biological basics of reproduction, ideology-driven theories, even pure historical accident.

What determines which behaviors are gendered in a society? Psychologist Sandra Bem (1987) says it is historical accident and entirely arbitrary, but this is a silly idea that no demographer could love. A better starting place is that in mammals, those behaviors related most closely to reproduction and infant survival are the most sex-dimorphic. In humans these behaviors form the foundation for the division of labor by sex.

HYPOTHETICAL GENDER STRUCTURES

Now consider with me some hypothetical societies with different gender structures. Assume with me that we have constructed some kind of composite gender factor whose components are all gendered behaviors. On this composite factor we have a measure of the behavior of each individual in the society. Since we have constructed the measure from

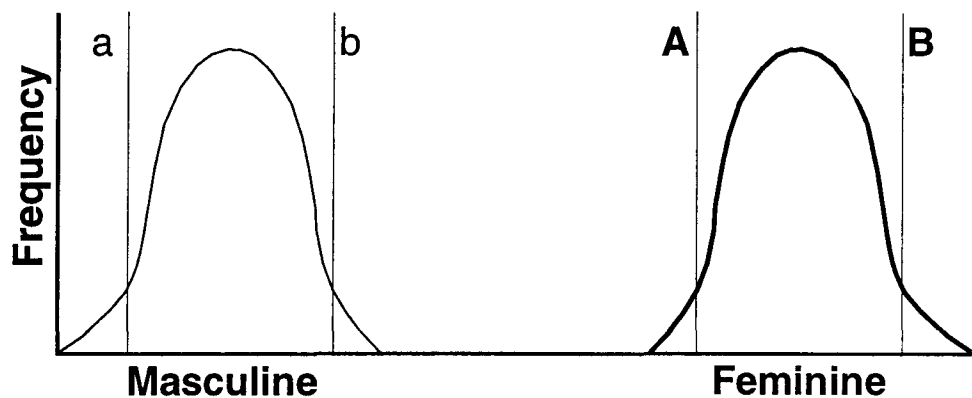
gendered behaviors (those on which males and females differ), we will call the direction in which males exceed females *masculine*, and the direction in which females exceed males *feminine*. In a traditional society, the distributions of males and females might look something like Figure 1. The degree to which the sex means are different is a measure of the importance of gender in the society. Within sex, some males are more masculine than others, and some females are more feminine than others, perhaps because of different socialization experiences or different placement with respect to opportunity structures. Mary is more feminine than Beth, and John is more masculine than Bill, but Bill is still a lot more masculine than Beth. There is little or no sex overlap in this traditional society.

From a sociological perspective, these distributions have the structure they have because of social norms that support different behaviors for each sex, and indicate the tolerance limits for diversity on gendered behaviors within sex. The vertical lines indicate those normative limits. Note that some members of each sex exceed this limit in each direction for their sex: the norms still have some more work to do.

Now imagine that this society undergoes a gender revolution. Transformations occur in childbearing, family structure, and the economy, accompanied by revolutionary changes in norms emerging from a new gender philosophy in the society—an antigender or unisex philosophy. If these new values are strong enough, we can imagine that a society might emerge in which, although there are still males and females, there is no gender—no relationship between biological sex and social behavior (see Figure 2). This society has a no-gender structure. This is a macromodel of social change; we explain such a change by social forces.

COMPARING BIOLOGICAL WITH SOCIAL STRUCTURES

Now let us suspend disbelief and assume that human gender, as in the case of other mammals, has a biological basis. This would mean that because of biological, *not* social, forces, males were predisposed to be more masculine on our composite measure of gender,



Behavior: — Male — Female

Normative limits: a,b - Male A,B - Female

Figure 1. Gendered Behavior in a Traditional Sex-typed Social System

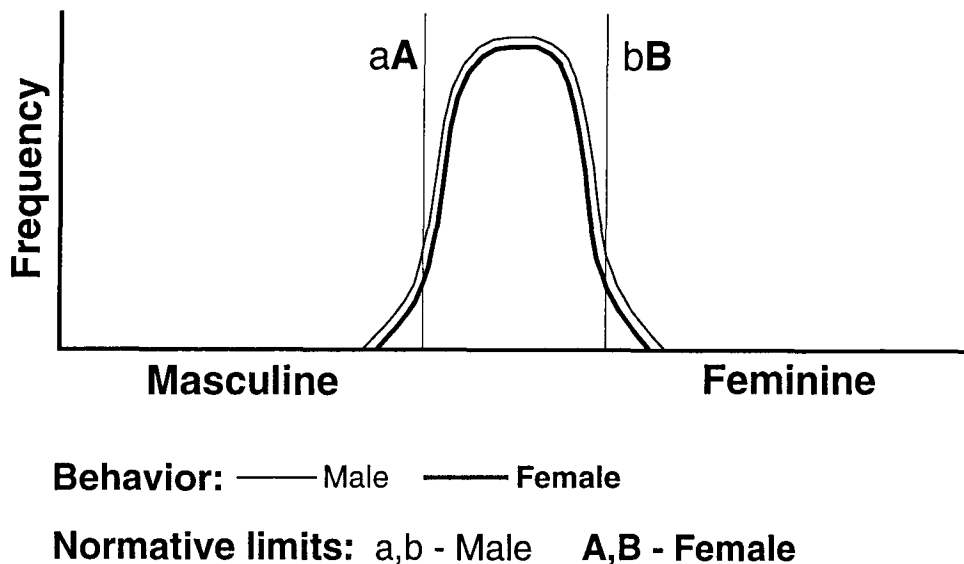


Figure 2. Gendered Behavior in a Unisex Social System

and females were predisposed to be more feminine. Furthermore, suppose that within-sex biological differences predispose some males to be more masculine than others, and some females to be more feminine than others. Assuming that we had the right biological measures, we could measure each person in the population and array their natural gender predispositions on our graphs.

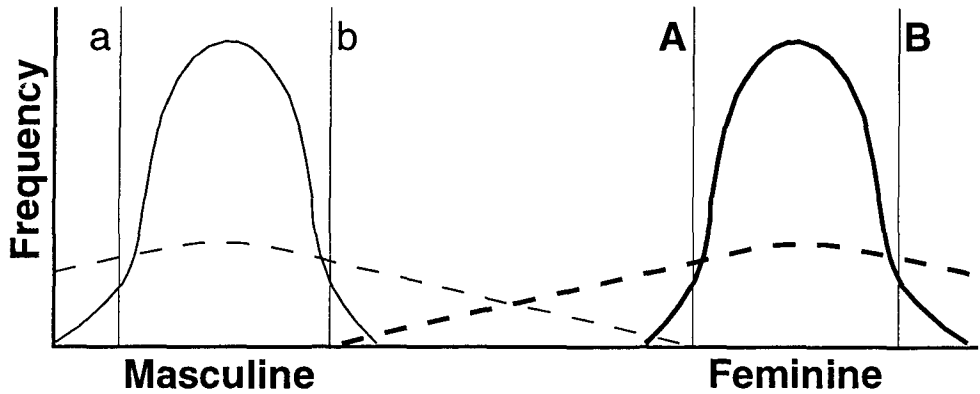
So we return to our diagram of a traditional gender system, but we add broken lines representing hypothetical distributions of gender predispositions for each sex (see Figure 3). We can now compare the behavior distribution with the predisposition distribution and get an idea of the fit between the two. To achieve the behavior distribution of a traditional gender regime, a lot of people have to be pushed far from their natural bent, but even more departure from natural bent is required to fit the unisex distribution (see Figure 4).

Now each of these societies has the same underlying structure of biological predispositions. The difference in the gender structure between societies is explained by differences in norms and in features of social structure. Different gender ideologies undergird these different gender structures.

Suppose that a society developed an underlying ideology which was gender-permissive instead of being antigender or strongly gendered. Norms and social structure were gender-permissive: everyone was encouraged to follow natural predispositions with respect to gendered behaviors. Under these circumstances, we would predict the actual gender structure to follow the distribution of natural predispositions by sex (see Figure 5).

This would be a gendered society, but without gender norms supporting the gender structure. Lacking a biological theory of gender, social scientists would be confident that this society had gender norms and gendered opportunity structures, whether or not they could observe them. This is because they imagine that without gendered norms and opportunity structures, the terminal state would be unisex, or the absence of gender.

Why consider Figure 6? In Figure 6, males have what is now feminine behavior and females have masculine behavior. Now hardly anyone's behavior is aligned with natural predispositions; I show it here because if gender is arbitrary and socially constructed from



Predisposition:

- - Male - - Female

Behavior:

— Male — Female

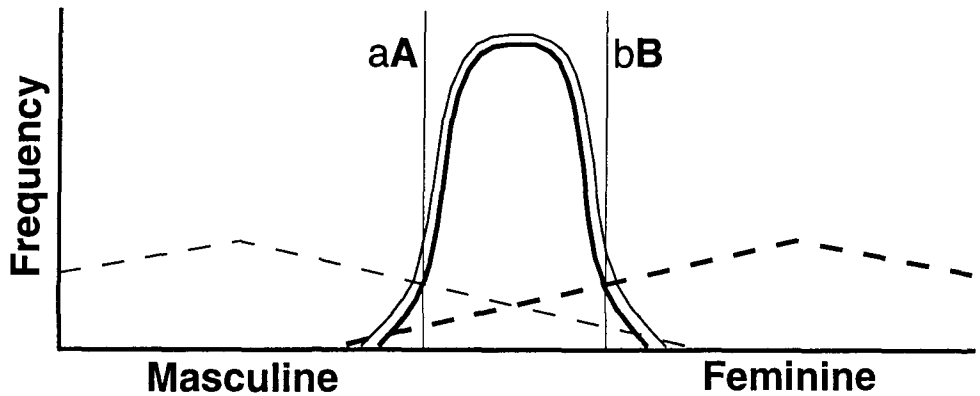
Normative limits: a,b - Male A,B - Female

Figure 3. Gendered Behavior in a Traditional Sex-Typed Social System, with Predispositions

unbiased material, then the social structure represented by Figure 6 ought to be as easy to construct as its opposite.

THE PRIMATE GENDER THEORY

Let us take a closer look at a primate model of sex-dimorphic behavior and its possible application to humans. With this theory I can explain why males and females behave



Predisposition:

- - Male - - Female

Behavior:

— Male — Female

Normative limits: a,b - Male A,B - Female

Figure 4. Gendered Behavior in a Permissive Social System, with Predispositions

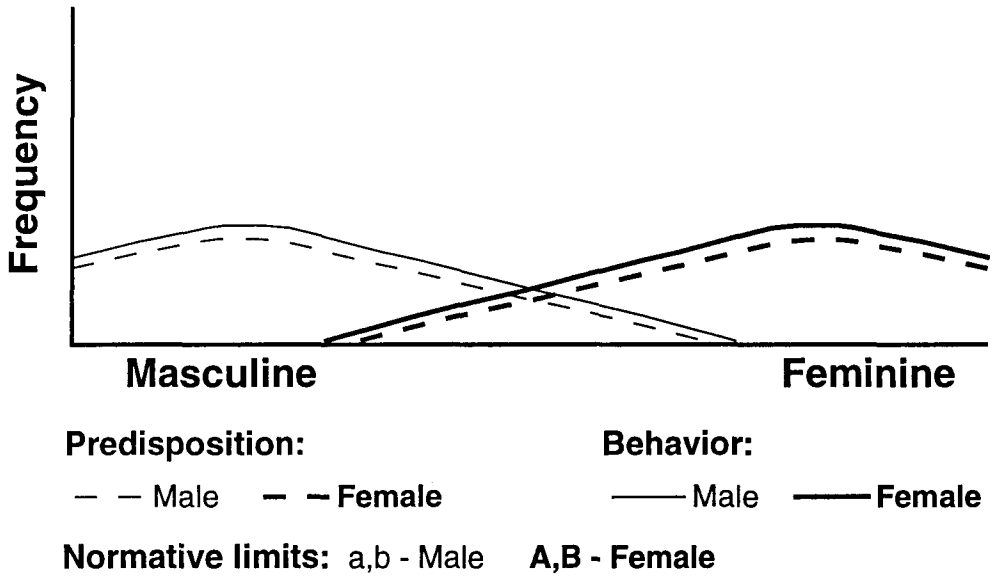


Figure 5. Gendered Behavior in a Permissive Social System, with Predispositions

differently, why these differences have cross-cultural generality, why some males are more masculine than others, and why some females are more feminine than others. I cannot explain secular change; by agreement we stipulate that secular change is to be explained by social science theories alone. The primate model can explain only variance in a cohort. Our theory says that some particular behaviors are sensitive to hormonal influence, and others are not. It is not a historical accident or a random outcome that some behaviors are

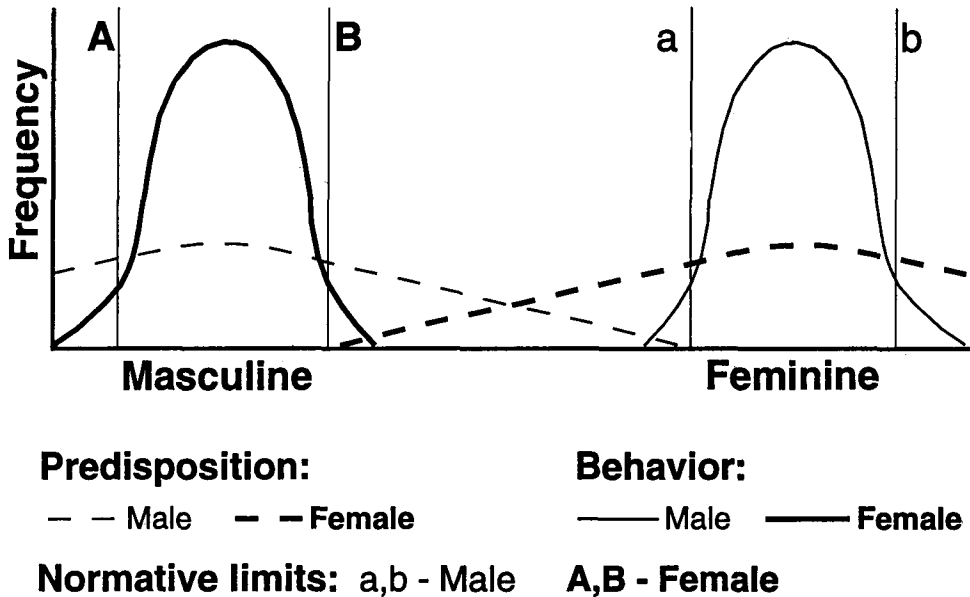


Figure 6. Gendered Behavior in a Reverse-Gendered Social System, with Predispositions

gendered, and others are not. We know which behaviors to examine for the hormone effects: gendered behaviors.

By 1970 a rather clear picture of the hormonal foundation for sex-dimorphic behavior had already been worked out for primates and other mammals (Goy 1970). For primates, the process operates in two stages. The first stage takes place in mid-pregnancy: male fetuses' testicles begin producing large amounts of testosterone early in the second trimester. This not only masculinizes their genitalia, but also masculinizes their brains by affecting the neural structure. By the third trimester, males have a different brain structure from females. This difference in brain structures predisposes males and females to different behavior, given the same environmental stimulus. Females receive very little testosterone fetally; what they receive comes from their mothers' blood, passing through the placenta. In the absence of testosterone, nature makes female genitalia and a female brain. Because the effects of the fetal testosterone reorganize the brain permanently, these are called organizational effects.

The second phase is the development at puberty of further anatomical sex dimorphism, caused by the sex hormones of adulthood. These adult hormones not only cause anatomical changes but also act on the neural structures laid down during the prenatal period to produce adult sex-dimorphic behavior. The degree to which the adult hormones affect sex-dimorphic behavior is contingent on the degree of prenatal exposure to androgens (or male hormones), specifically to testosterone. The primary adult sex hormones of interest are also androgens—testosterone and androstenedione.

APPLYING PRIMATE MODELS TO HUMANS

A body of research on humans tests separate pieces of this theory; most of this work concerns clinical syndromes of hormonal anomaly. To greatly simplify this literature, it shows the following:

1. Human females exposed fetally to abnormally high levels of androgens show distinctly masculinized behavior beginning in childhood and extending through adolescence into adulthood (Ehrhardt and Meyer-Bahlburg 1981; Reinisch et al. 1991).
2. Girls who, because of a genetic anomaly, lack all sex hormones (even female sex hormones) grow up to be unusually feminine (Money and Ehrhardt 1972).
3. Females exposed as fetuses to physician-administered androgenic hormones for the mother's therapy show masculinized behavior in childhood, even though they show no masculinization of anatomy (Reinisch 1977).
4. Women with high adult androgen levels show masculine-skewed behavior, as compared to women with low androgen levels (Purifoy and Koopmans 1979).

MY STUDY

I want to describe a project I conducted (with NICHD support), applying the primate hormonal model to predict within-sex patterns of gendered behavior among women.¹

To test this theory, I needed a sample of adult women for whom I had multiple measures of prenatal hormone exposure, a socialization history in childhood and adolescence, a measure of adult hormone levels, and measures of adult gendered behavior—a set of data seemingly impossible to assemble. Actually, I have found more than one possible data set that meets these conditions rather well. The one I used was the Child Health and Development Study, originally conducted jointly by the Kaiser Research Foundation and the University of California-Berkeley School of Public Health (van den

Berg, Christianson, and Oechsli 1988). In the early 1960s, prenatal patients at Kaiser Plan facilities were recruited into the study. Each woman provided blood samples during each trimester of pregnancy. These samples were stored, and later were made available to researchers. For those giving birth from 1960 through 1963, the children and mothers were followed up with measurement and interviews at children's ages 5, 9-11, and 15-17. These data are now also available for public use (van den Berg 1987).

We reinterviewed about 350 female offspring when they were 27 to 30 years old. From 250 we took blood samples during a controlled period of their menstrual cycles and at a controlled time of day. During this interview, the women completed a self-administered questionnaire in which we obtained measures of their adult gendered behavior. This procedure gave us all the required elements of the needed research design.

Measurement of Gendered Behavior

We measured many different gendered behaviors on our respondents; we tried to tap various domains of life and behavior manifestations. Our measurement technique was to identify a gendered behavior, identify the direction of difference between males and females, and call feminine high. Table 1 lists the measures of gendered behavior we obtained. On a personality test, for example, we scored women low insofar as they answered the personality items more as men answered them than as other women did.

We have 19 measures of gendered behavior, each containing its own unique variance in addition to the measure of gender that it may share with the other measures. Our theory says that the variance these measures share with other measures of gendered behavior is what is relevant to our theory. To identify the vector of shared variance among the gendered behavior components, we used factor analysis. All gender components load on a common superfactor, which we named GENDERED. This finding is important, because it says that there is some overall consistency in the way individual behavior is gendered.

Table 1. Gendered Behavior Components

Ever married to a man
Number of live births
Index of Sex Role Orientation
Importance of career
Importance of children
Domestic division of labor
Sex-typed activities scale
Importance of marriage
Feminine appearance factor
Strong Vocational Interest Inventory
Likes baby care
Proportion female in current occupation
Featherman socioeconomic index
Proportion female in work unit
Bem Sex Role Inventory, feminine score
Bem Sex Role Inventory, masculine score
Adjective Check List
Personality Research Form, masculine score
Personality Research Form, feminine score

Results of My Study

We then constructed multivariate models, including prenatal and adult androgen measures and their interaction in the same equation, to predict GENDERED. To avoid hormone overload I won't burden you with too many tables, but we can look at one example: Table 2 shows a multivariate model predicting GENDERED. This model shows the significant predicted hormone effects for prenatal exposure, adult androgen levels, and their interaction. Androstenedione is an adrenal androgen from which the body makes testosterone. Sex hormone binding globulin is a large protein molecule that binds maternal testosterone and prevents it from passing through membranes and reaching the fetus. In adults it prevents testosterone from reaching the central nervous system. Therefore sex hormone-binding globulin has an expected sign opposite to those for testosterone and androstenedione. The models work only with second-trimester hormones, as predicted. This is a good model; it predicts one-fourth of the variance in Women's GENDERED behavior.

So that you can see how the hormones work in predicting less synthetic gender measures, I offer one model predicting a simple measure. Our interviewers were asked to rate each respondent's appearance and personal demeanor on masculinity-femininity on a seven-point scale, with feminine as high. Interviewers received no further instructions on what to observe for this rating. The same hormone model as in Table 2 predicts 17 percent of the variance in interviewers' ratings of femininity.

These findings are highly consistent with what we would expect from the theoretical foundations we started with. Consider the constraints with which we worked. We had only one maternal blood sample and no fetal blood from which to measure prenatal androgen exposure in each trimester of pregnancy. We found gendered behavior correlations only to second-trimester androgens, not to first- and third-trimester androgens, just as predicted by the theory. We had only one blood sample for measuring adult androgens, from one phase of the menstrual cycle, whereas adult androgens vary from day to day and according to the phase of the menstrual cycle. Behaviors were measured about 30 years after the prenatal blood samples were drawn. Yet we were able to confirm several very specific hypotheses concerning the specific hormones involved prenatally, the trimester of effects of prenatal hormones, the specific hormones involved in adulthood, and the interaction of adult with prenatal hormones. No data dredging was involved. We measured some other, hypothetically irrelevant hormones (such as estrogen) and found them to be irrelevant.

Although this is only one of many studies that successfully applies the primate theory to humans, it is the first to test the organizational hypothesis by the use of prenatal blood samples. It is the first to be able to test the joint effects of prenatal and adult hormones. It is the first to use a broad spectrum of gendered behaviors. It is the first to use a sample from the general population. Obviously we want to replicate these results on other samples of women.

Table 2. Regression of GENDERED on hormonal predictors

Variable	Significance	Sign
Adult androstenedione	***	-
Adult sex hormone-binding globulin (SHBG)	*	+
Prenatal testosterone (trimester 2)	**	-
Prenatal SHBG (trimester 2)	***	+
Prenatal testosterone x adult androstenedione	***	-

R-square = .26

* < .05; ** < .01; *** < .001; one-tailed test.

IMPLICATIONS OF BIOLOGICAL GENDER THEORY

To see what the theory means for social demographers and other social scientists, we invoke the corollary proposition: Those processes which affect within-sex variance in gendered behaviors are the same processes as cause between-sex differences. With increasing confidence we can now say that individual women differ in their biological propensity to sex-typed behavior. We can also infer that males and females differ from one another in their average biological propensity to the same behaviors. In short, we have empirical justification for the dotted lines on my gender structure diagrams.

Once these propositions are admitted, social science gender theories are in big trouble. Gender has biological foundations. We have become so immersed in our own social science theories of gender that we haven't thought seriously about confronting alternative theories. The closest we come to confrontation is to say that it is impossible for a behavior to have biological foundations while experiencing secular change at the same time. Most demographers are accustomed to thinking that the variables which predict individual variance also predict secular change. No such logical deduction can be made, however. A typical example of this reasoning is a recent quote from Troy Duster, who was refuting arguments about the biological foundations of violent behavior:

Violence in our society and its present saturation among young black males is a recent phenomenon that has escalated only in the past 25 years. . . . But do we have reason to believe that things have changed all that much at the biochemical level, or is something else happening? (Touchette 1993:30).

I do not select this quote because it is a particularly egregious example, but because it is typical of my colleagues' reasoning. As far as I know, no one has ever argued that secular change in violence has any biological foundation. Any biological theory of violence is proposed only to explain individual variance in propensity to violence. The secular change must be explained by sociological and other environmental change. Duster and other social scientists are simply confusing the causes of individual variance with the causes of secular change.

What does an admission of a biological basis for individual variance in gendered behavior *not* mean? It does not mean that social forces do not also contribute to individual variance. Social scientists, of all people, often think that if certain behaviors have biological foundations, then those behaviors are foreordained, and there is nothing that society can do about influencing them. I quote sociologist Alan Wolfe on genes and criminal behavior:

If some children are biologically disposed to be criminals, then surely no amount of discipline can help them, unless we believe that social institutions can trump biological instincts (Wolfe 1993:36).

Lay society has always taken it for granted that much undesirable behavior has biological foundations, but society has never believed that there was nothing to be done about it. The whole force of social institutions is designed to "trump" these "biological instincts." Parents have always believed that "natural instincts" produced adolescent sexual behavior, but they never accepted its inevitability. Likewise, laymen have always believed that behavior differences in the sexes were part of the natural order of things.

So now, given a sound understanding of the way in which both biological and social forces affect variance in gender, and given that only social forces may affect secular change in gender, we can ask about the fit between social forces and biological propensities.

When social scientists still believed in human nature, a hot topic was the fit between human nature and social structure. Our hypothetical gender structures are a way of talking about that fit. If our biosocial model is correct, then there is a human nature, and it is

gendered. The permissive society allows a perfect fit to human nature. The traditional society provides a poor fit: it starts with a biological base and constrains humans to fit it. The unisex society starts with an ideology and constrains humans to fit it.

Let me be clear about my views. The future of gender in our society can, should, and will be determined by ideology. If we believe that one type of social structure is evil and another is good, then we must try to achieve the good one. On the other hand, if our theory of gender is not correct, then we will not know how to achieve our goals.

I don't know how far society can differ from nature without encountering difficult problems of social control, but I never said that the goal of society was to make people comfortable. My goal is not to create happiness, but to fulfill our most worthy ideals for humanity. Human dignity may be achieved at the price of happiness. I emphasize that society has never hesitated to encourage behavior it thought unnatural (for example, celibacy), even at the cost of making people miserable. We have not always been happy with our success in controlling what we considered biologically natural but bad, but we have always considered the effort worthwhile, even if it was only partially successful.

Two general types of implications can be drawn from my propositions. The first is for programs of social change; the second, for demographic and social science research on gender.

First, in regard to programs of social change, we can identify two alternative agendas. First, society should provide gender-neutral opportunity structures. Naturally occurring variation in gender predispositions will determine how people take advantage of these opportunities. This is the permissive society that encourages the unfettered flowering of natural endowments and propensities. The second alternative is the degendering of society (Bem 1994). Those in favor of such degendering assume that gender-neutral opportunity structures would degender society, but degendered socialization is impossible because males and females respond differently to the same socialization. Gender-neutral opportunity structures will produce gendered responses and therefore gendered societies. Degendering society will require compensatory gendered socialization and compensatory gendered opportunity structures.

The second type of implications from my propositions affects research. Demographers and social scientists continue to ascribe all gender findings to gendered socialization and gendered opportunity structures. Although this might be attributed to their desire to be politically correct, such attribution is an injustice to social scientists. They merely have an inadequate theory.

With an improved theory, the demographer and social scientist can see gender in new ways.

First, the existence of gendered social structure is not evidence for gendered behavior norms.

Second, gender norms may be consequences, not causes, of sex differences.

Third, the existence of gendered social structure is not evidence of sex discrimination.

Fourth, parental socialization may bear little responsibility for differences in gendered behavior.

Fifth, if demographers and social scientists don't want to tangle with biological predispositions in their models, they can focus on explaining social change and macrocomparative studies.

Now, I should add the warnings. Work on the biology of gender and how it can be integrated with the demography and social science of gender has just begun. My work is

only another step. It needs to be replicated; it needs to be remodeled and tested on males; other implications need to be examined. Demographers are not the most likely people to carry out this work. The empirical support or modification will accumulate only gradually. As we examine the issues further, they will always turn out to be more complicated than our simple models. Even so, we should not be surprised that our own human pattern of gender shares fundamental causes with the sex dimorphism of our animal relatives. The interesting questions will turn out to be not *whether*, but *how much*, and *in what ways*. There is nothing embarrassing about being a primate.

NOTES

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