

**Biology and Human
Social Behavior:
a Response to
van den Berghe and Barash**

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In an otherwise extremely stimulating article,
van den Berghe and Barash (*AA* 79:809-823,

1977) disappointingly assume that the biological characteristics that humans share with all mammals are sufficient to account for the human division of labor by sex (p. 813). True, mammalian characteristics alone are sufficient to account for different male and female reproductive strategies, but they are not sufficient to account for the fact that "... most societies make no attempt to equalize parental care; they leave the women holding the babies" (p. 813)—even long after babies have been weaned and even when child care has been institutionalized, as in some utopian communities. Therefore, if one assumes a biological basis for human social behavior, one must also assume that some specifically human biological characteristic in addition to general mammalian characteristics is also necessary to account for the human division of labor by sex and its virtually universal aspects: the designation of females as child rearers and of males as warriors and hunters with weapons.

Van den Berghe and Barash (p. 813) list as relevant the following typical mammalian characteristics:

... sexual dimorphism and sexual bimaturism ..., differential size and number of gametes produced by males and females, the energetic drain of gestation and lactation, and male-female differences in confidence of genetic relatedness to their purported offspring.

These were necessary preconditions for the development of a division of labor by sex in human society but together do not constitute a sufficient condition. Another precondition was necessary, a sexual difference in humans in addition to those found in other mammalian species. We learned of such a difference when, as students, we were taught to "sex" human skeletons; however, we have generally minimized the significance of that difference for human social organization.¹ That sexual difference, of course, is in the human pelvic structure and is intimately connected to hominid bipedalism and brain size.

Bipedalism is not a very efficient form of locomotion, and thus, in and of itself, is not necessarily adaptive. The disadvantages of bipedal locomotion, however, were counterbalanced by the advantages of freed hands, which allow hominids not only to manufacture tools but also to carry the tools with them. But the increasing hominid reliance on manufactured tools for survival brought with it an increasing dependence

on learned behavior, which resulted in selection for larger-brained infants (Brace and Montagu 1977; Pfeiffer 1972). This selection resulted in further pelvic changes and in increasing differences between males and females. The preservation of an adequate birth passage for the larger-brained infants resulted in selection for females with wider hips. The widening of the hips and related changes in musculature, however, meant that females lost a measure of speed. Although it is true that some women can run faster than some men, it is nevertheless also true that, generally, men can run faster than women, even when the women are not pregnant or lactating (Pfeiffer 1972; also, compare male and female winning times in Olympic track events).

The anatomical structures affecting mobility differ between males and females to a greater degree among humans than among other mammalian species; those differences gave even non-pregnant and nonlactating females a disadvantage in activities that demanded rapid mobility, including self-preservation in environments in which hominids are thought to have evolved, specifically terrestrial environments with predators. Without accompanying behavioral modifications, the evolving differences in body structure resulting from bipedalism and selection for larger-brained infants would give males, in the short run, a survival advantage. Because females were less expendable than males, however, eventual extinction of the species could result. Therefore, an adaptive advantage would be conferred on populations in which females were exposed to fewer risks than were males. That could be accomplished if females did not participate regularly in those activities that demanded a high degree of mobility. Populations in which only males participated in such activities would possess a selective advantage over populations in which males and females regularly participated equally in all activities.

The sexual differences in human pelvic structure and the general mammalian characteristics outlined by van den Berghe and Barash (p. 813) are sufficient to explain, without recourse to the highly questionable assumption of "male supremacy" (see Divale and Harris 1976 for one view, and Sacks 1976 for an opposing one), why hunting with weapons and engaging in combat are virtually universal male specialities in which females participate only rarely and occasionally. Both are high-risk activities as well as activities that require a high degree of mobility. There-

fore, the risks would be even greater for females than for males. Given the greater expendability of males, the regular participation of females in these activities would be maladaptive from an evolutionary perspective, and was selected against. Selective factors favoring this arrangement must have been very strong in the course of human evolution; even in the brutal warfare of state societies, the killing of women and children is generally avoided; they are more usually taken captive.

Human pelvic differences and general mammalian characteristics are also sufficient to explain why "There is no human society that does not ascribe the bulk of the responsibility for raising children, at least until the age of five or six, to women" (p. 813). Evolutionary survival demands that offspring be reared to reproductive maturity; therefore, they must be protected as much as possible. That has been long known. In fact, the long period of human infant dependence has generally been viewed by many anthropologists as the cause of the division of labor by sex. The fact that the activities in which females typically participate, apart from the actual child-rearing duties themselves, have been those involving low risk and carried out close to a home base, has usually been explained as a response to the need to protect children from exposure to risks (see Brown 1970, 1973 and Lancaster 1976). But the question is begged by the tautology, "because women take care of the children, they participate in low-risk activities close to home; therefore, because women participate in low-risk activities close to home, they take care of the children." However, the need of both women and children to avoid high-risk activities that demanded rapid mobility for their successful completion can explain the universal cultural designation of females as the rearers of children, even when the females are neither pregnant nor lactating and even when child care has been institutionalized.

The human division of labor by sex, characterized by the designation of females as child rearers and of males as warriors and hunters with weapons, can be seen as an adaptive behavioral response. Necessary preconditions were the biological characteristics of all mammals. Another necessary precondition was a sexual difference in humans in addition to those found in other mammalian species. This precondition was met in the evolving sexual differences in pelvic structure that accompanied hominid bipedalism and the selection for larger-brained infants. Together, these necessary

preconditions constituted the necessary and sufficient condition for the emergence of the division of labor by sex. Given its universality in human society and the obvious reproductive success of the species, the selective factors favoring this behavioral response must have been very strong during the course of human evolution. Even so, that implies *neither* that the division of labor by sex has always been adaptive for all specific human societies *nor* that it will always be adaptive for human society in general.²

Although a brief response does not permit full discussion, I would like to raise these questions:

(1) Why was a division of labor by sex not abandoned in societies in which the environment was not regularly hostile and the male's greater mobility would therefore not confer a survival advantage, and in societies in which usual daily activities did not demand rapid mobility? A related question is, why were some activities restricted to males only, even when they could safely be performed by females? A tentative partial answer is that a high segregation of sex roles produced a complementarity of roles that ensured the formation of relatively stable pair bonds.³

(2) Given the complementarity of sex roles, what is the relation of sex role to sex status? The following tentative answer is offered to stimulate discussion: in a given society, women's status *vis-à-vis* men generally varies inversely with population pressure, which is influenced by a variety of environmental factors as well as subsistence base (see, for example, Divale and Harris 1976:531-532); that is, female status generally decreases as population pressure increases.⁴ Although Friedl's (1978) explanation of why men hunt and women care for children is inadequate, her suggestion that male domination of women increases with their control of scarce resources is a valuable insight into the relation of sex role and sex status. Because the abundance or scarcity of a resource is determined by population pressure, however, Friedl's statement is less inclusive than the statement above.

(3) If the division of labor by sex in human society has resulted in a reproductive success so great that survival of the species is now threatened, are we, as the animal that prides itself on the capacity to modify its behavior, capable of modifying this behavior quickly enough to save our species from extinction? If the traditional role of mother is the only meaningful role available to women, it can be ex-

pected that most women will assume that role even in the face of overpopulation. Therefore, if the world's growth rate is to be altered significantly, women must be able not only to choose if and how often they will become mothers, choices made possible by cheap and efficient methods of birth control, but also to choose other significant roles that will give meaning to their lives.

This response to van den Berghe and Barash is a reaction to their assumption that general mammalian biological characteristics alone are sufficient to account for the human division of labor by sex. I have argued that a specifically human biological characteristic is also necessary to account for the division. This argument does not detract from their otherwise cogent and stimulating analysis; rather, it should be seen as a positive response to their contention that "... a century after Darwin, we have learned enough biology to try to apply it to behavior in general, social behavior in particular, and human social behavior most especially" (p. 821).

Notes

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¹ There are two major reasons why this has been so: male bias and female bias. Anthropologists with a male bias believe that the difference had some significance in the development of a division of labor by sex, but that it was far less significant than the long period of infant dependency (for example, see Pfeiffer 1972:157), thereby begging the question of why females were designated the child rearers. Those with a female bias refuse to believe that the differences ever had significance (for example, see Friedl 1975:1-4, 18), apparently because they believe that a logical argument for political and economic equality of the sexes can be made only if biological differences have never had significance.

² It also does not imply that the division of labor by sex ever improved one human adult's "quality of life."

³ A careful reexamination of Bott's (1971) hypothesis in light of inclusive-fitness theory could perhaps provide some valuable insights into these problems.

⁴ This is consistent with the interpretation offered by Divale and Harris (1976) for female infanticide.

References Cited

- Bott, Elizabeth
1971 *Family and Social Network*. 2nd ed.
London: Tavistock Publications.
- Brace, C. Loring, and Ashley Montagu
1977 *Human Evolution: An Introduction to
Biological Anthropology*. 2nd ed. New
York: Macmillan.
- Brown, Judith K.
1970 A Note on the Division of Labor by
Sex. *American Anthropologist* 72:1,073-
1,078.
1973 The Subsistence Activities of Women
and the Socialization of Children. *Ethos* 1:
413-423.
- Divale, William Tulio, and Marvin Harris
1976 Population, Warfare, and the Male
Supremacist Complex. *American Anthro-
pologist* 78:521-538.
- Friedl, Ernestine
1975 *Women and Men: An Anthropol-
ogist's View*. New York: Holt, Rinehart and
Winston.
1978 Society and Sex Roles. *Human Nature*
1(4):68-75.
- Lancaster, C. S.
1976 Women, Horticulture, and Society in
Sub-Saharan Africa. *American Anthropol-
ogist* 78:539-564.
- Pfeiffer, John E.
1972 *The Emergence of Man*. 2nd ed. New
York: Harper and Row.
- Sacks, Karen
1976 State Bias and Women's Status.
American Anthropologist 78:565-569.

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