

Biological Determinism Redux: Comment on Silverstein (1993)

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L. B. Silverstein (1993) criticizes some sociobiologists and psychologists for inferences that are not consistent with the more recent scholarship. In this commentary, it is shown that sociobiology is widely misunderstood. Contrary to popular belief, sociobiologists are not determinists. Instead, most sociobiologists emphasize the important role of environmental factors in shaping the manifestations of endogenous tendencies (not imperatives). In addition, the empirical evidence (e.g., Lamb & Goldberg, 1992) fails to support the deterministic view that male primates are predestined to be uninvolved in child care. Even when correctly represented, however, it does not appear that sociobiology can play a useful role in directing public policy.

Once upon a time—not too long ago in historical perspective, but very long ago in the history of psychology—psychology was neatly organized into a respectably small number of camps, each comprising the advocates of a competing metatheory. Each metatheory was associated with a major figure who articulated a grand theoretical conception and intellectually led a group of acolytes conducting research designed to validate or refine this edifice. In that era, psychologists defined themselves with reference to the camps with which they were affiliated—psychoanalysts (and later the ego psychologists, object relations theorists, and neoanalysts), Piagetians (and later the neo-Piagetians), operant learning theorists, and so forth. By the 1970s, however, the field had expanded and changed dramatically. Instead of defining themselves by adherence to a particular metatheoretical approach, academic psychologists increasingly identified themselves with narrower and more specialized preoccupations and by virtue of the differences—often minor, frequently trivial—between their theories and those of others in the field. Unfortunately, the noncognoscenti have not kept abreast of this revolution; they continue to assume that grand theoretical approaches still predominate. Worse yet, they

believe that labels and constructs are carefully used and defined by consensus! Just as Carroll's (1960) Mad Hatter told Alice, "When I use a word, it means exactly what I want it to mean," writers rarely label theoretical perspectives with precision or consistency today. In her thoughtful and thought-provoking article, Silverstein (1993) demonstrates how much confusion can arise when a label such as *sociobiology* is used loosely and inaccurately in academic discourse as well as in the popular media. As with almost any other theoretical orientation, sociobiology is not a discrete monolithic theory. There is considerable ferment and disagreement among sociobiologists, and the label is frequently used as an epithet to describe a brand of extremist and deterministic reasoning. This misuse of the term has fostered considerable misunderstanding within the psychological literature about the focus, assumptions, predictions, and limitations of sociobiology. Silverstein gracefully punctures some of these myths in her article.

Today, sociobiology is best viewed as a broad approach to the study of behavior within which sociobiologists attempt to understand how biological "motives" (most notably inclusive fitness) influence behavior (Krebs & Davies, 1993). Sociobiologists are especially concerned about extended evolutionary processes that have yielded behavioral tendencies (not imperatives) that are evident at the large group or population level. Contrary to popular belief few sociobiologists study or speculate about human behavior, although some have noted that primates (including humans) deviate from other mammalian species in important ways (e.g.,

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Charnov & Berrigan, 1993). Most sociobiologists have sought to explain how individual fitness depends on the constraints imposed on and potentiation implied by others' behavior, the availability of resources, and the physical environment. Sociobiologists emphasize the important role of environmental factors in shaping the manifestations of endogenous tendencies. In Williams's (1966) classic book (written long before Wilson, 1975, popularized the label *sociobiology*), for example, substantial emphasis was placed on the need to view endogenous species-specific tendencies in the context of environmental potentiation, support, and constraint. Again contrary to the myth propounded by zealous proponents and opponents of sociobiology, few responsible sociobiologists adopt biological determinism as their model, and it is misleading to argue that sociobiology is synonymous with biological determinism (Lamb, 1993).

Stated most generally, a key tenet of sociobiology is that individuals aim to maximize their fitness in the context of the options available to them, given the physical, economic, and social ecology. The goal is individual inclusive fitness, not propagation of the family, group, or species. Behavior is only optimal, in terms of fitness, in the context of a specific environment (broadly defined), and thus it is necessary to consider the constraints, limitations, and potentiation represented by diverse aspects of the social and physical environment. Whereas Trivers (1972) emphasized sex differences in fertilization and gestation, Lamb, Pleck, Charnov, and Levine (1987) underscored the other factors that must be considered in assessing biological influences on paternal involvement (see also Clutton-Brock, 1991). The following were among the important and interrelated factors identified by Lamb et al. (1987): the number of young born simultaneously (clutch size), the relative size and nutritional needs of offspring and adults, the length of interbirth intervals, the species' mode of feeding (ranging from omnivorousness to extreme selectivity), the nutritional richness of the ecology, and the species-typical social organization, particularly as it affects the options for reproduction and male certainty regarding paternity. These species-typical social practices include marriage, sanctions for adultery, the sexual double standard, and other social arrangements designed to keep women in relative seclusion from men. Together, a variety of fac-

tors thus ensure that men benefit by behaving in a much less promiscuous fashion than a simple analysis of the situation or Trivers's hypothesis leads one to expect. These conditions counter the pull toward male promiscuity described by Trivers with the needs to provide for and protect female partners and their young to maximize inclusive fitness. Sociobiologists argue that the goal for modern men is not to maximize the number of sexual encounters and fertilizations (as some readings of Trivers might suggest) but to maximize the number of related offspring who can be raised to reproductive maturity.

The fact that these factors, among others, affect paternal involvement in diverse species (including humans) is important because it undercuts simplistic deterministic notions concerning the biogenetic constraints on parental—both maternal and paternal—behavior (Clutton-Brock, 1991). Clearly, a sociobiological perspective compels researchers to consider not only endogenous predispositions but also the ecological features of the environment in which these are manifest, whether that environment resembles the one for which the predispositions may have evolved (“the environment of evolutionary adaptiveness” in Bowlby's, 1969, terms) or is an evolutionarily novel context. Behavioral ecologists also stress that within-species variability may often be desirable as well (Maynard Smith, 1982). For example, if most males of any given species adopt Strategy A, it may be advantageous for some others to adopt alternative Strategy B. The social system would then stabilize when the fitness gains of pursuing Strategy A were equal to those gained by pursuing Strategy B.

As Tinbergen (1963) pointed out many years ago, any attempt to explain why individuals behave in a certain way involves addressing any or all of four complementary issues: *ultimate function* (survival and reproductive value), *causation* (internal and external proximate factors), *ontogenetic development*, and *evolutionary history*. In their efforts to explain the differential parental involvement of mothers and fathers, determinists tend to focus on either evolutionary arguments or more proximate hormonal factors. Such deterministic positions are not the inevitable consequences of sociobiological thinking, however. Indeed, as I have argued above, most sociobiologists emphasize the flex-

ible adaptation of behavior to accommodate social and physical ecologies.

The empirical evidence likewise fails to support the deterministic view that male primates are predestined to be uninvolved. Consider, for example, that in species like pygmy marmosets (*Callithrix jacchus*), female members typically give birth to twins that are quite large in relation to the adult members of the species. It is physically impossible for female pygmy marmosets to feed these twins and themselves without assistance, so male pygmy marmosets assume most of the child-care responsibilities, carrying and caring for the young at all times other than when the young are nursing (Ingram, 1975). Freed of the burdens of carrying her offspring, the mother is able to nurse the twins, feed herself, and as an added bonus to both herself and the loyal male individual, become pregnant again in a short period of time. In this case, therefore, the reproductive fitness of both male and female pygmy marmosets is enhanced by the high paternal involvement.

Social historians have also shown that the male breadwinner role is a recent normative ideal (Pleck, 1976). Prior to the 20th century, women already had clearly defined and socially recognized economic roles, albeit roles that involved types of provisioning that were different from those that men undertook; increasingly, breadwinning is a central responsibility for both mothers and fathers. Thus the family type often described as *traditional* or *natural* actually represents a very recent innovation, historically speaking. Psychological research also shows that male and female individuals can be equivalently responsive and sensitive to their young (see Lamb et al., 1987, for a review). Behavioral differences between mothers and fathers seem to represent responses to societal pressures and expectations, not the product of endogenous differences in responsiveness to infants. In addition, parental behavior in humans is surely an overdetermined behavior (Lamb & Goldberg, 1982), with any endogenous hormonally mediated influences supplemented by many years of sex-differentiated socialization. In other words, if evolution has rendered women better prepared and suited for parental behavior than men, then this advantage is secured largely because cultures capitalize on and reinforce non-definitive endogenous predispositions.

Silverstein (1993) bemoans the misstatement of sociobiology and primate research in the service of political goals, particularly by a group she identifies as "neoconservatives" (p. 268). I am not convinced that the ideological positions Silverstein describes can legitimately be traced to any scientific theory, however. Self-proclaimed experts hold forth in innumerable columns and on countless talk shows, but true science is frequently obscured in these contexts. Instead, hucksters posing as scientists and ideologues seeking scientific justification for their positions either selectively use whatever scientific evidence they can muster or misstate that which exists. As a result, I am skeptical that broad theoretical frameworks, such as sociobiology, can usefully drive the creation of social policy. Other than by debunking simplistic notions of biological determinism, asserting the extraordinary flexibility of the human developmental trajectory, and underscoring the sensitivity of all organisms to environmental constraints and potentiations, sociobiology likely provides little direction for social policy makers.

Throughout recorded history, ideologists have adduced support for their cases from whatever repositories of power or prestige are most influential in their era. In this time, when science has gained enormous and sometimes unwarranted respect, it is not surprising that ideologists of all political persuasions have sought scientific rationalizations for their social prescriptions. Doubtless, they will seek alternative sources of support when the current love affair with scientific precision and determinism fades. Silverstein (1993) provides a useful corrective to widespread misunderstanding of the literature on sociobiology and primate behavior, but I fear that she has overreached in her attempts to reformulate policies on the basis of current scientific knowledge in these two areas.

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