

The Evolution of Homoerotic Behavior in Humans

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ABSTRACT. This paper presents a theoretical model for the evolution of same-sex sexual behavior, or homoerotic behavior, in humans. Contrary to the traditional study of the topic, the emphasis is on homoerotic behavior itself, irrespective of sexual orientation. It is an inferential model drawn from cross-species evidence, cross-cultural evidence, and current evolutionary theory. It is posited that humans evolved a disposition for homoerotic behavior because it increased same-sex affiliation among peripheralized hominids and indirectly influenced rates of survival and reproductive success. The implications for the conceptualization of same-sex sexual behavior and future research are indicated. *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: <getinfo@haworthpressinc.com> Website: <http://www.HaworthPress.com>]*

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Evolutionary psychology is fascinating new field. The evolutionary model has proven to be rich in heuristic value and has generated a wealth of academic dialogue (Buss, Haselton, Shackelford, Bleske, &

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Wakefield, 1998). The evolutionary explanation focuses on why a behavior exists. Contemporary advantages and disadvantages are considered largely irrelevant to the larger evolutionary question (Buss et al., 1998). Cosmides, Tooby and Barkow (1992) have indicated that the examination of psychological mechanisms (e.g., homoeroticism) can be used to investigate the possibilities of adaptive function. A behavior may be considered adaptive if it can be demonstrated that during evolution the behavior may have solved an adaptive problem by contributing to reproduction either directly or indirectly (Buss et al., 1998; Tooby & Cosmides, 1992).

The most widely recognized evolutionary theory of homosexuality is that of E. O. Wilson (1975, 1978). The theory holds that homosexual individuals in early human societies may have helped close family members, either directly or indirectly, to reproduce more successfully. Thus, genes for homosexuality would have been passed on indirectly through relatives. The theory does not posit any direct or indirect adaptive value for homosexual behavior itself. Wilson's theory is based on a number of false assumptions (Dickemann, 1995), and there is no evidence to support it. Consequently, it has been largely rejected as an explanatory model (Muscarella, 1999).

Overall, the consensus within the field of evolutionary psychology is that homosexual behavior does not have adaptive value and consequently did not evolve (Archer, 1996; Buss, 1994; Futuyma & Risch, 1984; Gallup & Suarez, 1983; Margulis & Sagan, 1991; McKnight, 1997; Posner, 1992; Ridley, 1993; Seaborg, 1984; Stevens & Price, 1996; Symons, 1979; Thiessen, 1996; Wright, 1994). I have argued that this interpretation may be due to several factors: the negativity with which homosexuality is viewed, a false dichotomization of human sexuality (heterosexual and reproductive; homosexual and nonreproductive), and the use of unreliable terms like "gay" and "homosexual" in scientific writing (Muscarella, 1999). Moreover, an analysis of the evolutionary origins of any behavior is complex and requires consideration of a number of competing explanations (see Buss et al., 1998).

Based on earlier theorizing (Muscarella, 1999), and in sharp contrast to the traditional approach, this paper examines same-sex sexual behavior irrespective of sexual orientation and uses the term "homoerotic" to describe it. Homoerotic behavior is defined as same-sex sexual behavior involving genital contact that is experienced as plea-

surable. The motivation of the behavior (e.g., sexual orientation, exploration, lack of opposite-sex partners) is not taken into account. The relation of behavior to sexual orientation will be discussed later in the paper. The term homosexual is used when the operational definition of homoerotic cannot be applied and when it is awkward to apply the term homoerotic to other writers' descriptions of same-sex sexual behavior.

It is assumed that human sexuality is not dichotomous. Thus, for most of the species for most of its evolutionary history, individuals would have exhibited both heteroerotic and homoerotic behavior, a characteristic seen in closely related nonhuman primates. In the remainder of the paper I will attempt to demonstrate how homoerotic behavior may have solved an adaptive problem during the course of human evolution.

THE PROPOSED MODEL

It is posited that a species-wide disposition for homoerotic behavior in humans has evolved through natural selection because it had adaptive value. Specifically, it is speculated that hominid adolescents and young adults may have gone through a period of sex-segregated social and physical peripheralization similar to that found among many primates. A disposition to engage in homoerotic behavior may have served as a mechanism of affiliation which reinforced and strengthened the relationships among same-sex peripheralized hominids themselves and with higher status conspecifics. The social assistance of peers and higher status companions may have increased the likelihood of access to resources and may have provided allies to help ward off attacks from other conspecifics.

Consequently, a disposition to engage in homoerotic behavior, which is assumed to exist concurrently with a disposition for heteroerotic behavior, can be seen as having had direct affects upon survival and indirect affects upon reproductive success. Same-sex friendships, reinforced by erotic behavior, may have helped individuals of both sexes to attain personal survival. Further, the long-term social alliances formed in this way may have facilitated males' abilities to mate with females likely to conceive and females' abilities to successfully raise their offspring. The evolutionary hypothesis presented in-

corporates evidence from current evolutionary theory, primatology, cultural anthropology and history.

THE ADAPTIVE VALUE AND EVOLUTION OF HOMOEROTIC BEHAVIOR

Human sexual behavior is considered to be the most complex and highly evolved of any animal species (Bancroft, 1989). It has been argued that among humans sexual behavior evolved primarily to promote bonding between males and females, which was secondarily related to reproductive success (Fisher, 1992; Lovejoy, 1981). Diamond (1992) writes, "In no species besides humans has the purpose of copulation become so unrelated to conception . . ." (p. 78). It is speculated that complex and frequent sexual behavior promoted strong male-female bonds. When pregnancy did occur, the presence of a bonded parental pair increased the likelihood of the offspring's viability and the ultimate propagation of the parents' own genes. Because complex heterosexual behavior ultimately led to reproductive success, it was adaptive. De Waal (1987) argues that through the course of human evolution affiliative behavior between adult males and females may have increased the reproductive success for both, and that homosexual behavior then evolved from heterosexual behavior. However, it has also been argued that affiliative behaviors may have also been adaptive for other social units independent of mating units (Kinzey, 1987).

Hominid Life and the Adaptive Value of Homoerotic Behavior

The behavior of hominid ancestors is unknown, but the social behavior of other primates, particularly common chimpanzees (chimpanzees) and pygmy chimpanzees (bonobos) is often used as a model (e.g., Diamond, 1992; de Waal, 1996). It is speculated that early hominid ancestors lived in loosely affiliated groups of 50-60 individuals that included males, females, and their offspring. They may have survived by gathering plant stuffs, scavenging, and engaging in some cooperative hunting (Campbell, 1985; Wilson, 1975). Hominid ancestors lived in a threatening and dangerous world. They were probably more often prey than hunters (Susman, 1987) and probably engaged in

frequent and fatal intergroup aggression (Diamond, 1992; van der Dennen, 1995; Wrangham 1987; Wrangham & Peterson, 1996).

In this threatening context, adolescence may have been a particularly dangerous age for hominids because adolescent primates tend to become socially and physically peripheralized. This leaves them in a highly vulnerable position, with an increased chance of mortality and limited reproductive opportunities (Pusey & Packer, 1987; Sapolsky, 1993). Peripheralization occurs among a number of nonhuman primate species (Pusey & Packer, 1987). These include rhesus macaques (Boelkins & Wilson, 1972) and baboons (Hall, 1965) as well as gorillas (Fossey, 1983), chimpanzees (de Waal, 1982; Tutin, 1979), and bonobos (Kuroda, 1979). The peripheralized adolescents and young adults no longer have the close attention and protection of their mothers, and they lack the maturity and social status to help ensure their own survival and reproduction. Depending upon the species, adolescents tend to be pushed to life on the periphery of their own natal group or that of a foreign group to which they may have immigrated.

In view of the cross-species evidence, it is likely that adolescent hominids endured a period of peripheralization. Sexually maturing adolescent and young adult hominids must have been faced with two powerful selective pressures: basic physical survival and successful reproduction. Isolated and vulnerable adolescent hominids with restricted access to the opposite sex may would have benefitted from the ability to affiliate with same-sex conspecifics. The same-sex partners of both male and female hominid adolescents may have helped them to survive by providing access to food and protection from aggression. Further, the social alliances formed and reinforced through homoerotic behavior may have offered advantages for the particular and unique reproductive needs of each sex. The alliances of males may have helped them to move up the male social hierarchy and ultimately obtain mates. Females may have gained entry to the middle of the social group where the relative stability and assistance from female friends would have increased the chances of their offspring surviving. In the following sections, corroborating data from the areas of primatology, anthropology, and history are presented.

NONHUMAN PRIMATE HOMOSEXUAL BEHAVIOR

Homosexual behavior in nonhuman primates has been inadequately studied, and its causes and functions are poorly understood (Hamb-

right, 1995). Further, only some homosexual behavior can be accurately described as erotic. Consequently, its implications for homosexual behavior in humans remain unclear at this time (Hambright, 1995; Nadler, 1990; Wallen & Parsons, 1997). However, evidence of commonalities in the behavior of closely related species can give some insight into broad evolutionary trends (Hambright, 1995).

Vasey (1995) speculated that some aspects of primate homosexual behavior may have developed as an exaptation. That is, the behavior is not a direct product of natural selection. Rather, it may have originated as a neutral variation which then demonstrated some fitness enhancing quality. Consequently, there was selection for the behavior because of this quality which ultimately enhanced reproductive success. Vasey has suggested that natural selection may have begun to act upon homosexual behavior because it served a number of sociosexual roles that might have incidently increased reproductive success.

It is recognized that sexual behavior among nonhuman primates, as among humans, can serve functions other than direct reproduction (Hambright, 1995). One function may be related to the development and maintenance of affiliative bonds between the participants (Hambright, 1995; Nadler, 1990; Parish, 1994; Wallen & Parsons, 1997; Yamagiwa, 1987). In some cases it has been suggested that the homosexual behavior reinforces relationships which may contribute to individual survival and ultimate reproductive success (e.g., Akers & Conaway, 1979; Small, 1993; Vasey, 1995; Wrangham, 1976 cited in Crook, 1980; Yamagiwa, 1987) although this hypothesis has not been carefully and systematically studied (Hambright, 1995; Vasey, 1995; Weinrich, 1980). Nonetheless, there is ample evidence that nonhuman primates engage in homosexual behavior (some of which is clearly erotic) which coexists with heterosexual behavior and does not preclude reproduction (Akers & Conaway, 1979; Boelkins & Wilson, 1972; Carpenter, 1942; de Waal & Lansing, 1997; Ford & Beach, 1951; Fossey, 1983; Hall, 1965; Hambright, 1995; Harcourt, Stewart, & Fossey, 1981; Hess, 1973; Mori, 1979; Nadler, 1990; Small, 1993; Vasey, 1995; Wallen & Parsons, 1997; Wolfe, 1979, 1986; Yamagiwa, 1987).

Monkeys

Male homosexual behavior is particularly well-documented among baboons and rhesus monkeys. Baboon and rhesus groups contain a

central core of dominant males surrounded by females. Subadult males are pushed to the outside of the group and are considered peripheralized (Mori, 1979; Pusey & Packer, 1987). Sexual behavior is very common among these peripheralized males and is not limited to dominance-submission displays (Hall, 1965; Mori, 1979; Wrangham, 1976 cited in Crook, 1980). Peripheralized baboon males form "friendships" which are characterized by mutual embracing, grooming, penis display and touching, masturbation, oral stimulation and mounting (Ford & Beach, 1951; Wrangham, 1976 cited in Crook, 1980). When there is a significant age difference between the two partners, the older partner may also provide the younger partner with social protection. It has been speculated that sexual activity among the peripheralized males may also indirectly contribute to reproductive success. The sexual activity may stimulate the production of testosterone and lead to collaborative male-male alliances both of which increase the likelihood of gaining a harem (Wrangham, 1976 cited in Crook, 1980). Homosexual behavior among rhesus males occurs commonly (Carpenter, 1942; Ford & Beach, 1951; Goldfoot, Wallen, Neff, McBrair, & Goy, 1984; Southwick, Beg, & Siddiqui, 1965). Maturing young males change group membership, and they enter into new groups by forming an apparently affectional relationship with an established male who offers access to resources and social protection (Boelkins & Wilson, 1972).

Female-female sexual behavior has also been well-documented for rhesus monkeys and is considered an essential component of their complex social behavior (Akers & Conaway, 1979; Carpenter, 1942; Harlow, 1965). Akers and Conaway (1979) noted that females appeared to establish very strong and enduring affectional bonds of which the sexual behavior was only a part. The females sometimes formed consort pairs. Membership in such a pair, either homosexual or heterosexual, appeared to temporarily raise the dominance status of the subordinate animal, and the partner was often an ally in aggressive confrontations against other troop members (Akers & Conaway, 1979). It is recognized that female-female sexual behavior and consorts are also an integral part of the sexual repertoire of the Japanese macaque (Hanby, Robertson, & Phoenix, 1971; Wolfe, 1979, 1986).

The Great Apes

The great apes share a high degree of genetic relatedness to humans (Diamond, 1992), and their sociosexual behavior may provide especially important insights into the origins and functions of human sexual behavior (Graham, 1981). Same-sex sexual behavior has been documented among both captive and feral gorillas of both sexes. Hess (1973) reported male-male mounting in the presence of receptive females among captive gorillas. Yamagiwa (1987) reported a high level of male-male sexual behavior with ejaculation among a group of feral unrelated males. Further, he reported that this sexual behavior appeared to contribute to the high level of cohesiveness among group members and that group living was advantageous to the younger males because it may have protected them from the dangers found within bisexual groups and traveling alone. Fossey (1983) reported that in the highly unusual case of a young blackback male immigrating to a new group the resident silverback copulated with him frequently; meanwhile, he mated with the silverback's harem in his absence. Genital exploration and stimulation has been observed among both captive (Hess, 1973) and feral (Nadler, 1986) juvenile female gorillas as well as among adult feral females (Harcourt et al., 1981).

Both chimpanzees and bonobos exhibit same-sex behavior although it appears to be more developed and complex in the bonobos (Savage-Rumbaugh & Wilkerson, 1978). Grooming behavior, particularly in the anogenital areas, frequently causes erections in chimpanzee males of all ages (Taub, 1990). Adult male chimpanzees demonstrate the highest frequency of grooming among all age-sex classes (Simpson, 1973; Sugiyama, 1969), and grooming and appeasement frequently involve the fondling of the dominant male's scrotum by the subordinate male (de Waal, 1982; Goodall, 1965; Sugiyama, 1973). It has been theorized that the frequent and intense grooming which occurs between male chimpanzees reinforces their social bonds (de Waal, 1982) and that male coalitional alliances are associated with reproductive success (van der Dennen, 1995). Male-male sexual behavior among bonobos has been observed in all age combinations. It includes French kissing, oral-genital contact, genital massaging, dorso-ventral mounting, ventro-ventral mounting with penis rubbing, and rump-rump rubbing (de Waal, 1987, 1990; de Waal & Lansing, 1997; Kuroda, 1980; Linden, 1992; Savage-Rumbaugh & Wilkerson, 1978; Small, 1992; Thompson-Handler, Malenky, & Badrian, 1984).

Female bonobos frequently engage in genito-genital (GG) rubbing. This reinforces the social and coalitional bonds between them and results in increased social status (Parish, 1994). In some instances females have been observed to prefer GG rubbing to copulation with a willing male (Small, 1992). Adolescent females transfer out of their natal group at maturity and immigrate to groups where they have no social contacts. These young females quickly identify the most dominant females and initiate sexual contact with them. In this manner, they form “friendships” and alliances with established females that allow them to become integrated into the group, and more importantly, allow them access to food resources (de Waal & Lansing 1997; Small, 1993).

HOMOEROTIC BEHAVIOR AMONG HUMANS

Among humans, homoerotic behavior exists concurrently with heteroerotic behavior and exclusive homoerotic behavior is rare (Ford & Beach, 1951; Greenberg, 1988; Kinsey, Pomeroy, & Martin, 1948; Kinsey, Pomeroy, Martin, & Gebhard, 1953; McKnight, 1997; Posner, 1992). However, humans appear to be the only primates who exhibit exclusive homoerotic behavior (Hambright, 1995; Vasey, 1995). Homoerotic behavior in various forms has been recorded among a large number of the world’s historical and contemporary peoples (e.g., Herdt, 1997; Ford & Beach, 1951; Greenberg, 1988), and its *absence* in a culture rather than its presence, appears to be unusual. In a classic study, Ford and Beach (1951) found that some homoerotic behavior was accepted in 64% of the 76 cultures studied. However, this may actually be an underestimate. There has been much criticism of the anthropological study of homosexuality in the past, which was seen to be biased, uninspired, and plagued with theoretical and methodological problems (Blackwood, 1986a; Greenberg, 1988; Herdt, 1988, 1997; Williams, 1986).

Male Homoerotic Behavior

Vasey (1995) indicated that some hominid or protohominid individuals appear to have evolved the behavioral capacity to engage in exclusive homosexual behavior and consort bonding by the late Mio-

cene-early Pliocene era. There is evidence that human male homoerotic behavior has existed since prehistory (Taylor, 1996). There are extant paleolithic cave paintings dating back 17,000 years of men with erections and lines connecting them (Ross, 1973) which have been interpreted as representing men engaging in sexual behavior (Boswell, 1980; Greenberg, 1988). The culture of a group of Melanesians who practice ritualized homosexuality has been traced back 10,000 years (Herdt, 1981). Some Australian aborigines practice institutionalized homosexuality (Adam, 1986; Greenberg, 1988), and they are believed to be descended from a group of people who migrated to Australia 116,000 years ago (Fullagar, Price, & Head, 1996).

The world appears to have a long history of institutionalized homosexuality between higher status and lower status males which usually, but not always, involves a significant age difference (Greenberg, 1988; Rind, 1998). Mackey (1990) presented data suggesting that humans evolved a mechanism of attraction between adolescents and same-sex adults. He states that among males this may serve the function of incorporating young males into all-male groups, which contributes to the survival of the group as well as the individual. These relationships tend to socialize the youths into the adult male role, nurture and protect the youths and provide the basis for life-long friendships, social alliances and consequent social status (Adam, 1986). Some authors have posited that erotic behavior (which may but does not necessarily include consummated sexual acts) is an important psychological factor in contemporary societies for bonding, alliance formation, and maintenance of dominance hierarchies in sports (Guttman, 1996), the military (Henningsen, 1961; Poundstone, 1993; Shilts, 1993), and fraternities (Wingate, 1994). It may be a vestige of the social use of direct sexual expression seen among early humans (cf. Rawson, 1973).

The degree of reproductive advantage associated with dominance status is being reevaluated for many species with advances in research technology (Hughes, 1998). However, Ellis (1995) reviewed the literature on dominance and reproductive success and found that among nonhuman primates higher-ranking males tend to have a slight but consistent lifetime reproductive advantage over the lowest-ranking males. The reproductive advantages of dominance status for male chimpanzees have been actively debated, but the advantages do appear to be significant in small groups (Nishida & Hiraiwa-Hasegawa,

1987). de Waal (1982) reported that among the chimpanzees he studied, dominant males did the majority of mating with the females most likely to conceive (de Waal, 1982).

Social status, a reflection of political strength and alliances, appears to have played a large role in the evolutionary history of human male reproductive success. Wolpoff (1976) suggests that early hominid males were twice as large as females. Such sexual dimorphism in size suggests that early hominids were polygamous and that there was much intra-male competition. It has been speculated that during the early period of human evolution males' sexual access to females was probably indirectly resolved through fighting for social rank (Fox, 1971; Zillman, 1984) which may account for prominent sexual dimorphism in facial hair and baldness among humans (Muscarella & Cunningham, 1996). Among human males, social status is a primary determinant of perceived attractiveness as a potential mate and is often associated with increased reproductive success because of more mating opportunities (Boone, 1986, 1988; Buss, 1989, 1992, 1994; Ellis, 1992; Hill, Nocks, & Gardner, 1987; Mealey, 1985; Symons, 1979).

Homoerotic behavior may have reinforced relationships which helped socially peripheralized lower-status hominid males climb the social hierarchy and ultimately increase their reproductive success. Van der Dennen (1995) suggests that human males, like chimpanzee males, evolved a coalitional reproductive strategy. Male chimpanzee coalitions are reinforced by grooming (de Waal, 1982) which is often sexually arousing (de Waal, 1982; Taub, 1990). Dominant male chimpanzees sometimes allow their closest allies (those who groom them the most) copulations with estrus females that are denied other males, and this has been interpreted as "sexual bargaining" (de Waal 1982). Considering that the average female chimpanzee produces only five viable offspring in her lifetime (Tutin, 1979), any behavior which increases a male chimpanzee's chance of fathering an infant can be interpreted as contributing to his fitness. It is speculated that hominid females, like human females throughout most of their history, had a reproductive rate similar to that of chimpanzees (Symons, 1979). Thus, the behavioral flexibility to engage in same-sex sexual behavior, in the service of alliance formation and sexual bargaining, may have had the same adaptive value for male hominids that it appears to have for chimpanzees.

Churchill (1967) has argued that patterns of sexual behavior in

nonhuman primates which lead only to arousal (e.g., that associated with grooming in chimpanzees) could be expected to lead to a consummated act in humans (and by implication close human ancestors) because of the increased complexity of their sociosexual behavior. Thus, an argument could be made that the sociosexual behavior associated with grooming, appeasement, and sexual bargaining was a pre-adaptation for a greater range of homoerotic behavior in hominids.

It has been suggested that there is a long history of human males seducing each other for both sexual pleasure and social gain (Boswell, 1980; Hirsch, 1990). Boswell (1980) states that historically, contrary to contemporary attitudes, younger, subordinate males as well as females have been acceptable objects of sexual interest for older, dominant males. History reveals that in a number of cultures the relationships between the older and younger males not only provided sexual pleasure but clear social advantages for the younger partners. The relationships often increased their social status which allowed them to attract high status mates for themselves and their relatives. Such was the case among the Chinese (Hirsch, 1990), Japanese (Hirsch, 1990; Ihara, 1972); Romans (Boswell, 1980, 1994) and Greeks (Cantarella, 1992; Dover, 1978). It has been suggested that Augustus Caesar as well as many other Roman and Byzantine Emperors may have gained access to the throne partly through sexual relationships with their predecessors (Boswell, 1980, 1994).

The direct reproductive advantages of homoeroticism for males is described in some of the earliest Western literature, *The Iliad*, through the relationship of Achilles and Patroclus which was commonly understood as being sexual in nature (Boswell, 1980). Patroclus is a low-status male who is peripheralized in a foreign group after fleeing his natal group to avoid punishment for a murder he committed. He enters into a high level of the social hierarchy as a result of his relationship with Achilles, one of the dominant males of the society. Secondly, Patroclus has a large number of reproductive opportunities because Achilles gives him access to many of the female captives he himself is accorded due to his own high status.

In a number of societies the homoerotic relationships which developed among socially peripheralized males who banded together for survival are evocative of the strategies hominid ancestors may have relied upon themselves. Burg (1984) reports that transgenerational homosexuality was an essential part of the all-male society of pirates

in past centuries, and the relationships and social alliances benefitted both partners. Rocke (1996) indicates that in Renaissance Florence many of the powerful guilds and gangs to which lower-class men belonged appear to have derived their strength from the homoerotically reinforced relationships among the members. Hughes (1987) indicates that much sexual behavior and mutual support occurred between socially peripheralized and vulnerable British men sent to Australia as punishment for crimes. The survival and ultimate reproductive benefits of homoerotically reinforced alliances between socially peripheralized males and males with higher social status are also evidenced in reports of working-class England at the turn of the century (Gardiner, 1992), Australian Aborigines (Adam, 1986), tribes in Melanesia and Papua, New Guinea (Herdt, 1984; Schiefenhovel, 1990), and contemporary Thailand (Allyn, 1991).

Female Homoerotic Behavior

Homoerotic behavior among human females has been documented among both historical and contemporary peoples (Greenberg, 1988). These include the ancient Greeks and Romans (Cantarella, 1992), early Europeans (Boswell, 1980), the ancient Chinese (Hinsch, 1990) and numerous others (Blackwood, 1986b; Ford & Beach, 1951; Greenberg, 1988). Female-female sexual behavior among humans is considered less frequent than male-male sexual behavior (Kinsey et al., 1953; McKnight, 1997; Posner, 1992), but the true incidence is unknown and may be underestimated because of methodological and theoretical problems with anthropological research (Blackwood, 1986a; Greenberg, 1988). The historical incidence is also unknown because of the lack of literature and poetry addressing the issue secondary to the nearly universal lack of access that women had to these vehicles of communication in the past (Boswell, 1980).

Traditionally, in scenarios of human evolution, much emphasis has been given to increased heterosexual pairbonding which has theoretically allowed and co-evolved with increased intelligence and infant dependence (Campbell, 1985). However, there seems to be little published speculation regarding the female hominid strategy for successfully rearing offspring before the advent of reliance upon the biological father. Theoretically, most hominid fathers would have been concurrently pursuing a number of other mating opportunities (cf.

Symons, 1979) leaving limited time and assistance for any one female and their offspring.

Among chimpanzees and bonobos the biological father appears to play no direct role in raising offspring. Fisher (1992) states that even among humans, males and females have a tendency to want to remain pairbonded for only 3-4 years. This time period allows a human child to develop enough so that the mother alone can care for it. Historically and cross-culturally, the fact that many heterosexual couples remain together for life is partly an artifact of culture as a function of local social, political, and economic pressures (Boswell, 1980; Faderman, 1981; Hirsch, 1990). Relationship longevity is not a reliable measure of the couples' happiness and desire to remain together. Furthermore, even when culture encourages life-long heterosexual pairbonds, severe economic and political situations appear more likely to result in fathers abandoning their children than mothers (Benson, 1968; Dudley, 1991; Gerson, 1991). This phenomenon is partly reflected in the significant number of adult and adolescent males in contemporary societies who do not take responsibility for the children they have fathered. Given the history of problems with human fathers, the role played by hominid fathers remains unclear.

Current evolutionary theory implies that during the early period of human evolution hominid females confronted a number of simultaneously occurring phenomena: increasing infant dependence, increasing but still unreliable assistance from the biological fathers, and coexistence with a number of other unrelated females in the same territory because of male polygyny and female exogamy (Campbell, 1985; Fox, 1971; Morris, 1967; Symons, 1979; Wilson, 1975; Wolf-off, 1976; van der Dennen, 1995; Wrangham & Peterson, 1996; Zilman, 1984). These interacting factors suggest that alternative strategies to reliance on the biological father would have been adaptive. For example, there may have been an increased likelihood and necessity of strong relationships between unrelated females. It is reasonable to speculate that homoerotic behavior would have been adaptive for reinforcing the female-female relationships and alliances as it is among bonobos (cf. Parish, 1994). Interestingly, Bohan (1996) reports that same-sex relationships are common among cowives in polygynous societies in Africa. The relationships are not viewed as definitive of the women's sexuality or an obstacle to their heterosexuality.

During the course of evolution, homoerotically reinforced alliances

and friendships may have allowed young females to move toward the more stable and life-preserving core of the group. They may have also allowed females to unite against attacks against themselves and their offspring and to assist in the feeding and protection from predators of their offspring. Consequently, there may have been strong selection pressures for females to exhibit homoerotic behavior because it worked in the service of their own survival and ultimate reproductive success.

Selection pressures to exhibit homoerotic behavior may have been exerted upon both male and female hominids. The observed sex difference in this behavior among humans may be explained in at least two ways. First, the selection pressures among hominids may have been greater for males than females because of the close association between dominance status and reproductive success for males. In fact, there may have been a selection against males who could not express homoerotic behavior to reinforce alliances or engage in sexual bargaining. Second, human females may not exhibit the full range of their disposition toward homoerotic behavior as they often do not with heteroerotic behavior. Kaplan (1974) states that males have a more compelling sex drive than females, suggesting a greater tendency to act upon sexual desires. Furthermore, historically, all female behavior has tended to be closely regulated by males (Faderman, 1981), and their sexual behavior is sometimes brutally controlled as demonstrated by the historically long custom of female genital mutilation (Lightfoot-Klein 1989a, 1989b, 1993).

There is some agreement that the incidence of human female homoerotic behavior increases concomitantly with women's economic and social power and the consequent freeing of their sexual behavior from the control of men (cf. Faderman, 1981). Sankar (1986) describes the homoerotic relationships which developed among Chinese women who were able to resist marriage and live without husbands because of the opportunity to work in factories. The Mombasa women of Kenya are unique among Moslem women for their system of open social networks and homoerotic relationships between older wealthier women and poorer younger women (Greenberg, 1988). Hirsch (1990) reports that there are records of female-female marriages in China, particularly in Guangzhou. He states that the female couples could adopt female children, and the marriages were a manifestation of a wider range of female homoerotic practices.

The homoerotic relationships between some human females, in environments which may have been quite similar to those of hominids, allow a cooperative, supportive social unit that could be interpreted as increasing one or both women's chances of survival and successfully raising her offspring. Gay (1986) describes the "mummy-baby" relationships which exist among Lesotho women in Africa. These women live in an economically depressed area where the men are forced to leave as migrant labor. The women rely upon themselves and each other for support in living and raising their children. Older and younger women form homoerotic relationships which help the younger partner to learn about sex and child care. These women often form life-long bonds and share food and provide assistance to each other. Wekker (1993) has described the institution of mati-ism among the women of Surinam where many people are the descendants of slaves and where the cultural institution of marriage was weak. Mati are women who have homoerotic relationships with other women as well as relationships with men, and who usually have children. The women often set up households together and give each other mutual support and assistance. In the past, mati-ism was common among women of all social backgrounds, but in contemporary Surinam it appears to be more common among working-class women than among upper-class women.

For both female and male hominids homoerotic behavior may have been part of a greater range of social manipulation used for alliance building among individuals of all status levels. The elaborate sexual behavior of bonobos appears to be closely related to social manipulation (Nishida & Hiraiwa-Hasegawa, 1987). It has been speculated that a capacity for social manipulation, particularly among males, was selected for during human evolution (Western & Strum, 1983). Social manipulation is an important part of creating and maintaining alliances (de Waal, 1982) which may have been critical for hominid male reproductive success (van der Dennen, 1995). Its role in powerful female alliances is clearly seen in bonobos (Parish, 1994). The higher status partners in homoerotically reinforced relationships may have benefited indirectly from increased social alliances. A higher status adult hominid with long-term standing in a group would have had the opportunity to befriend a number of peripheralized individuals. Theoretically, this would provide the opportunity for a network of alliances

through both the proteges who reached adulthood and also through their kin.

LIMITATIONS OF THE PROPOSED MODEL

I have conceptualized a disposition for homoerotic behavior as having evolved because it can be seen as having had adaptive value during the course of human evolution. There are several limitations to the proposed model. It has the weaknesses inherent in all evolutionary models based on inference although such models may prove rich in heuristic value. Cross-species comparisons of behavior may not always be reliable indicators of evolutionary trends; however, such comparisons form the basis of many evolutionary hypotheses regarding human behavior (e.g., de Waal, 1982; Diamond, 1992). The current analysis presents evidence that homoerotic behavior, particularly the transgenerational type, has been a persistent feature of the human species since recorded history. However, it does not prove that such a behavioral disposition evolved through natural selection. Evidence of recurring behavior among different groups of people is traditionally used in conjunction with cross-species evidence to infer species-wide behavioral dispositions in humans (Tooby & Cosmides 1992). There are no alternative methods. There are a variety of expressions (e.g., Blackwood, 1986b) as well as suppression of homoerotic behavior among human groups. These patterns can be expected to express the effects of particular ecological and social contexts on the manifestation of an evolved behavioral disposition (cf. Tooby & Cosmides, 1992).

The relationship between homoerotic behavior and sexual orientation is not fully explained by this model. However, it is not the intent of this paper to do so. Sexual orientation is a complex construct the definition of which lacks consensus among those who research it (Bohan, 1996; Diamant & McAnulty, 1995; Gonsiorek & Weinrich, 1991; Greenberg, 1988; Herdt, 1997; Shively, Jones, & De Cecco, 1984) despite continued attempts to explain its development (Money, 1986; Bem, 1996). Further, much homoerotic behavior among humans occurs independently of the concept of a homosexual orientation (Bohan, 1996; De Cecco & Parker, 1995; Diamant & McAnulty, 1995). However, it is generally agreed among sexologists that sexual orientation appears to result from an interaction between genetic, cultural,

and personal historical factors (Bohan, 1996; De Cecco & Elia, 1993; De Cecco & Parker, 1995; Greenberg, 1988; Herdt, 1988; McWhirter, Sanders, & Reinisch, 1990; Money, 1986; Weinrich, 1987). The theory presented here attempts to explain the evolution of a disposition to engage in homoerotic behavior, a component of sexual orientation, and presupposes a genetic component which can be expected to vary among individuals.

IMPLICATIONS FOR FUTURE STUDY

A change in paradigm which allows homoerotic behavior to be viewed as having had adaptive value during human evolution may lead to new perspectives of the behavior and generate some new hypotheses for testing. For example, an increase in homoerotic behavior in single-sex groups is often attributed to lack of opposite-sex partners. Using the new model, it may be understood as a type of behavioral scaling. That is, homoerotic behavior may be evoked as a normal response to placement in an environment which closely resembles the environment in which it evolved and was adaptive in the evolutionary past. Homoerotic behavior has been described as nearly universal among human male adolescents (McKnight, 1997). This may reflect a developmentally linked predisposition for the behavior consistent with the behavior's speculated evolutionary history. Studies could be constructed to ascertain the incidence of homoerotic behavior in various sex-segregated settings hypothesizing a greater incidence in environments believed to be more similar to the speculated environmental conditions of hominids.

Other studies could be designed to try to predict sex differences in the manifestation of homoerotic behavior as a function of the types of coalitional strategies used by human males and females. For example, in chimpanzees and bonobos the sex which demonstrates the greatest same-sex coalitional strength appears to exhibit the most frequent and intense sociosexual behavior with same-sex allies (cf. de Waal, 1982; Parish, 1994). Application of the model to studies of self-identified lesbian, gay, and bisexual populations may generate some testable hypotheses about the nature of the relationships and patterns of sexual behavior. For example, McWhirter and Mattison (1984) reported that in male couples most likely to remain together there was an age difference of at least five years. Perhaps this reflects a difference in

age-related dominance status which may be necessary for the maintenance of a long-term same-sex mating pair. Also, the current model may prove to be more helpful than others in attempts to explain the historical shift in the predominant expression of homoerotic behavior from the transgenerational type to the adult-peer type (cf. Rind, 1998).

CONCLUSIONS

In conclusion, a new model for the evolution of homoerotic behavior in humans has been presented. It has the weaknesses inherent in all inferentially derived models, but such models can provide significant heuristic value. The current model has a number of advantages over other contemporary models. It is comprehensive and integrates data from a number of important and related disciplines. It clearly distinguishes between homoerotic behavior and culture-bound definitions of homosexual behavior and can contribute to theories of the development of sexual orientation. It also addresses the adaptive value of homoerotic behavior among hominids. The current model allows new interpretations of same-sex sexual behavior among humans and can generate testable hypotheses about homoerotic behavior. In turn, the results of such tests can be used to demonstrate the usefulness, or lack thereof, of the model. Finally, the application of the evolutionary model to homoerotic behavior may prove to be heuristically rich and generate new thinking about homoerotic behavior in humans.

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