

The Man Who Mistook His Wife for a Chattel

MARGO WILSON AND MARTIN DALY

Men take a proprietary view of women's sexuality and reproductive capacity. In this chapter, we (a) argue that sexually proprietary male psychologies are evolved solutions to the adaptive problems of male reproductive competition and potential misdirection of paternal investments in species with mistakable paternity; (b) describe the complex interrelated design of mating and paternal decision rules in some well-studied avian examples; (c) consider the peculiarities of the human species in this context; (d) characterize some features of human male sexual proprietariness, contrasting men's versus women's perspectives and actions; and (e) review some of the diverse consequences and manifestations of this ubiquitous male mindset.

THE EVOLUTIONARY LOGIC OF MALE SEXUAL PROPRIETARINESS

By "proprietary," we mean first that men lay claim to particular women as songbirds lay claim to territories, as lions lay claim to a kill, or as people of both sexes lay claim to valuables. Having located an individually recognizable and potentially defensible resource packet, the proprietary creature proceeds to advertise and exercise the intention of defending it from rivals.

Proprietariness has the further implication, possibly peculiar to the human case, of a sense of *right* or *entitlement*. Trespass by rivals provokes not only hostility but a feeling of grievance, a state of mind that apparently serves a more broadly social function. Whereas hostile feelings motivate action against one's rivals, grievance motivates appeals to other interested persons to recognize the trespass as a wrong against the property holder and hence as a justification for individual retaliation or a grounds for more collective sanctions. Proprietary entitlement thus rests upon a social contract: Property owners reciprocally acknowledge and cooperatively enforce one another's claims.

Socially recognized property rights have several components. Full proprietary entitlements include the right to sell, exchange, or otherwise dispose of one's property, to interference, and to demand redress for the theft or damage of it. People claim these entitlements with respect to inanimate objects (whether movable or not)—land, crops, livestock, and even such intangibles as investment opportunities and ideas. They have claimed the same entitlements with respect to "their" slaves, household servants, and children; and men, but not women, have regularly asserted claims with respect to spouses.

Because claims of proprietary entitlements are responses to rivalry over limited resources, all such claims necessarily exist in an arena of actual or potential conflicts of interest. These conflicts increase in number and complexity when the “property” is a living creature with interests of its own. Efforts to exert proprietary rights over nonhuman animals frequently involve a conspicuous struggle of wills. Even plants exhibit thorns, toxins, and other devices that must be understood as evolved conflict tactics for thwarting those who would exploit them. But the most complexly conflictual of all proprietary claims are those in which people assert such rights over other people, for here is property that can understand its owners’ purposes and weaknesses, that may have relatives and friends, that can plan escapes or attacks with as much foresight and ingenuity as its owners and that can play rivalrous aspirant owners off against one another. And yet, with all these difficulties, men do attempt to exercise proprietary entitlements over other people (Bradley, 1984; Davis, 1966; Finley, 1980; Karras, 1988; Patterson, 1982; Sawyer, 1986), especially women.

One could imagine a psyche in which the various components of proprietariness—one’s presumed rights to use, modify, and dispose of the property, and the hostility and sense of grievance aroused by trespass—were dissociated, applying independently to distinct classes of resources. But it would not be a human psyche. People merge the logically separable aspects of proprietariness and generalize their applicability, as witness the breadth of domains within which human grammars use possessive pronouns and their equivalents and within which the lexicon of ownership is applied. These considerations suggest that referring to a man’s view of woman as “proprietary” is more than a metaphor. Some of the same mental algorithms are apparently activated in the marital and mercantile spheres.

Why would evolved psychology see sexual partners as a sort of property and why should this be especially characteristic of male minds? According to Triver’s (1972) influential evolutionary model of parental investment and sexual selection, whichever sex invests more efforts and material resources in offspring becomes, in effect, the limiting resource for the reproduction of the less investing sex and hence an object of competition. In mammals, including *Homo sapiens*, the female is the sex making the greater parental investment, while males devote proportionately more time and energy into mating competition. Male mammals attempt to monopolize females and their reproductive capacity just as creatures contest any limited resource. But men, unlike most male mammals, make significant parental investments, too, and the combination of this paternal investment with an asymmetrical risk of cuckoldry (misattribution of parenthood) produces a powerful selective force favoring the evolution of motives that effectively guarantee one’s paternity of one’s putative offspring, maximizing the number of young sired. In species with internal fertilization and biparental care, males have a susceptibility to mistakes in the identification of offspring in a way that females lack.¹

We propose that these selection pressures have been responsible for the evolution of psychological mechanisms whose adaptive functions are success in sexual competition and cuckoldry avoidance and that men’s attitudes, emotions, and actions indicative of sexual proprietariness and the commoditization of women are products of these evolved mechanisms in the context of particular historical and cultural circumstances. There is more to human sexual proprietariness than mere mate guarding. The social complexity of our species—with its alliances based on both kinship and reciprocity, its moral systems and consequential personal reputations,

and its cultural and ecological diversity--provides an arena within which male sexual proprietariness is diversely manifested (Dickemann, 1979, 1981). But we shall argue the ubiquity of a core mindset, whose operation can be discerned from numerous phenomena which are culturally diverse in their details but monotonously alike in the abstract. These phenomena include socially recognized marriage, the concept of adultery as a property violation, the valuation of female chastity, the equation of the "protection" of women with protection from sexual contact, and the special potency of infidelity as a provocation to violence.

Why Male Sexual Proprietariness?

The relationship between mates is special. Since Hamilton (1964), evolutionary theorists have considered kinship to be the bedrock of commonalities of interest: The degree of genetic concordance between two parties specifies a degree to which their genetic posterities (fitnesses) must coincide, and it is this coincidence of genetic fates that is responsible for the evolution of nepotistic solidarity. The evolutionary basis of solidarity between (unrelated) mates is analogous but distinct: The pair's genetic fates are linked not because they share genes with one another, but because both share genes with their mutual offspring, the common vehicles of their fitness. Because of this covariation between the fitnesses of sexually reproducing mates, selection shapes a relationship-specific social psychology vis à vis actual or potential mates.

Mates who are truly committed to monogamy reproduce only through shared descendants, so that insofar as descendants rather than collateral relatives are the principal beneficiaries of an organism's reproductive and/or nepotistic efforts, monogamous creatures may be expected to have evolved psyches such that individuals perceive their interests as coinciding more closely with those of their mates than with anyone else's (Alexander, 1987). But although the overlap of interests between mates is analogous to that between genetic relatives, and although this overlap has the potential of surpassing that of even the closest kin (in the case of monogamists with minimal investment in collateral kin), the relationship between mates is nevertheless more easily betrayed. Blood is thicker than water because the genetic fates of blood relatives are indissolubly linked, a consideration that favors forgiveness and reconciliation. Marital ties are thinner gruel: Because cuckolded males risk expending their lives unwittingly raising their rivals' children, the correlation between the expected fitness of mates can be abolished or reversed by infidelity.

The possibility of extrapair reproduction by one's mate is a major threat to fitness. Insofar as this threat has been part of a species' chronic selective milieu, we may expect to find an evolved psychology adapted to reducing its probability or impact. One strategic means for reducing the costs of cuckoldry is adjusting parental efforts according to cues indicating the likelihood of genetic parenthood; to this we shall return. But even at the prezygotic stage of mating, males confront a problem of how to budget their reproductive efforts between seeking, courting, and contesting new mates, on the one hand, and doing whatever it takes to monopolize the ones already acquired, on the other (e.g., Thornhill & Alcock, 1983; Trivers, 1972, 1985). Where to strike this balance depends in part upon the anticipated magnitude of later paternal efforts: In any species in which paternal investment is significant, one would expect males to exhibit a considerable interest in monopolizing mates, since a paternal investor is concerned

not merely to maximize the numbers of his progeny, but to correctly identify them so as to avoid parental contributions (Daly & Wilson, 1987).

In the case of *Homo sapiens*, paternal investments are often substantial, including allocations of time and effort and transfers of resources over the course of decades. Thus a major threat to a man's fitness is the possibility that his mate may become pregnant by another man, especially if the cuckold should fail to detect the fact and invest in the child as his own. If there is a corresponding threat to a woman's fitness, it is not that she will be analogously cuckolded, but rather that her mate will channel resources to other women and their children. It follows that men's and women's proprietary feelings toward their mates are likely to have evolved to be qualitatively different, men being more intensely concerned with sexual infidelity per se and women more intensely concerned with the allocation of their mates' resources and attentions. We will review evidence of such a sexually differentiated psychology below, and we will argue that diverse cultural practices can be understood as manifestations of a cross-culturally ubiquitous male concern with the monopolization of female sexuality and reproductive capacity, reflecting a history of selection for a male sexual psychology effective in deterring rivals and in limiting female sexual and reproductive autonomy.

Note that male concern with sexual exclusivity need not imply a conflict of interest between mates. The fitness of both parties might benefit from female monogamy, for example, if detected infidelities were to inspire diminution of male parental efforts or if other males' mating efforts otherwise impose costs on already mated females. In such cases, a male's guarding of his mate to deter coercive copulatory attempts by rivals serves the interests of both mates (e.g., Lumpkin, 1983). But females are not always monogamously inclined, even when their mates' aggressions raise the costs of infidelity, and some guarded females expend considerable effort attempting to evade their mates. Male threats and coercion may therefore be directed at rivals, at the mate, or both. It follows that both theoretical and empirical analyses of the costs and benefits to all parties of each's alternative actions are essential if we are to understand the strategic functioning of the evolved psychological and physiological mechanisms of heterosexual transactions.

SEXUAL PROPRIETARINESS ON THE WING

Male sexual proprietariness is likely to evolve in any animal species with internal fertilization and paternal care. The best studied cases are neither human beings nor our close primate relatives, but birds. Unlike mammals, most avian species are predominantly monogamous and biparental, and they have the additional virtue of behaving sexually and parentally with relative observability. The result is that several species have been intensively studied, affording complex quantified accounts of the degree of sexual exclusivity in mated pairs, the circumstances of extrapair copulations, who the rivals are, the circumstantially contingent magnitudes of parental efforts and (to some degree) the costs and benefits of alternative courses of action for the various actors in these dramas. Two exemplary research programs focusing on the problem of adaptive allocation of efforts by males in a biparental species are Anders Pape Møller's work on swallows and Nick Davies's work on dunnocks.

We shall discuss these avian cases in some detail. Our aim in so doing is not to provide a facile "referential model" whereby some other species is alleged to manifest a suite of

characteristics identical to those that were relevant to the evolution of human traits (see Tooby & DeVore, 1987). Rather, the heuristic value of these studies for the student of human sexual proprietariness is that they illustrate the following:

1. The multiple conflicts of interest that arise in sexual rivalries (even in the absence of those nepotistic or reciprocity-based cooperative alliances among interested parties other than the mates themselves that complicate human sexual rivalry);
2. the diversity of behavioral and psychological adaptations that assess and respond to demographic and ecological cues of the expected fitness consequences of one versus another course of action ("expected" in the statistical sense of that which would be anticipated from past contingencies cumulated over evolutionary time); and, especially,
3. the ways in which behavioral ecologists have conducted a successful program of evolutionary psychological research, using apprehensions of the problems confronting the animals as guides to the search for strategic adaptations.

Swallows

The swallow (*Hirundo rustics*) nests under the roofs and eaves of barns, sometimes in isolated pairs, sometimes in colonies, which vary markedly in size according to the availability of insect food and shelter from the wind (Møller, 1987d). Female swallows, like other songbirds, are only briefly fertile. They lay their eggs one a day until a target clutch size is attained, and the intensity of incubation increases throughout laying so that the eggs hatch over a 1 to 3 day period. Female swallows incubate the eggs alone, but both parents feed the hatchlings.

Male swallows establish breeding territories in the spring, before the females arrive and choose their mates. One cue that has been experimentally demonstrated to affect female choice among potential mates is male tail length (Møller, 1988b). It is normally the older males, first to arrive in the spring, who have the longest tail feathers, and the longer the tail feathers the more attractive the male. So in effect, females use tail length as an index of age and arrival date, criteria that appear to be predictors in their turn of the male's vigor and prior breeding experience. Once established, pairs commonly remain intact through a breeding season, raising successive broods.

Male swallows behave as if cuckoldry were an imminent risk, following their mates closely while they are fertile. Once incubation begins, this mate guarding virtually ceases, and mated males reallocate their efforts toward the pursuit of whichever neighboring females are still fertile. The males of many other songbird species exhibit similar mixed strategies, dogging their own mates' every move during egg laying, and then switching to pursuing other fertile females (Birkhead, Atkin, & Møller, 1987). Mated males have even been observed to knock neighboring fertile females from the air and copulate by force. In *H.rustica*, the intensity of mate guarding is positively correlated with colony size, larger colonies entailing more persistent and intense pressure from rivalrous neighbors (Møller, 1987d).

Is alien insemination of a guarding male's mate a genuine risk? At least five lines of evidence indicate that it is. The first is that rivals indeed pursue, court, and harass his mate, and do so preferentially in her brief fertile period. Second, although female *H.rustica* have not been seen to actively solicit extrapair copulations, they accede (selectively) to some such attempts. Third,

variations in the intensity of mate guarding apparently track variable risk, as noted above. Fourth, variations in the mated pair's own copulation rate can be interpreted as adaptive male responses to apprehended cuckoldry risk, the idea being that males increase insemination of their mates as an adaptive "sperm competition" tactic (Birkhead, 1988; Birkhead, Atkin, & Møller, 1987; Møller, 1988d; Smith, 1984a): The rate of copulation within mated pairs is enhanced by such cuckoldry risk cues as (a) brief experimental detentions of the male while his mate was fertile (Møller, 1987c) and (b) proximity of male neighbors (Møller, 1985). The fifth line of evidence that cuckoldry risk is genuine is that nestlings' tarsus lengths are more strongly correlated with their mothers' than with their putative fathers' dimensions; statistical analysis of these correlations suggests that as many as a quarter of nestlings are the products of extrapair copulations (Møller, 1987a). Genetic studies in progress will soon provide more precise information on the incidence of extrapair paternity in swallows.

Female infidelity is not random. Certain characteristics are preferred in adulterous sexual partners, and they seem to be the same characteristics that females seek in their permanent mates. Early-arriving males, for example, are not only chosen as mates, but also attain more extrapair copulations than the later breeding males (Møller, 1987b). One might then expect that these successful cuckolders would themselves be vulnerable to cuckoldry, as a result of leaving their mates unguarded while philandering, but early males instead hold an advantage both ways. This suggests that whatever makes an early male attractive to other females also makes his own mate less inclined to accept an extrapair copulation.

As for tail length, Møller (1988b) manipulated it experimentally, thus eliminating its association with other cues of quality. Males with artificially elongated tails were selected as mates sooner, were more likely to get two clutches completed in the season, and had significantly more fledged offspring. Moreover, as in the case of early-arriving males those given long tails were both significantly more successful in attaining extra-pair copulations and significantly less likely to be cuckolded themselves. Males who had their tails experimentally docked suffered opposite effects. These results can be interpreted to mean that a longer tail makes a male more attractive, providing him with an apparent quality marker which gains him both greater fidelity from his better mate and greater success in philandering. It is especially striking that artificial tail elongation should enhance brood size, suggesting that males with quality markers either attract the best females or inspire greater reproductive efforts from them, or both.

A further remarkable finding is that male swallows adjust their subsequent parental efforts according to cues that indicate the likelihood of having been cuckolded. Analyzing data from 38 intensively observed breeding pairs, Møller (1988c) found the males provisioning effort during the nestling phase to be negatively correlated with the number of extrapair copulations that his mate had been observed to participate in during her fertile period two to four weeks earlier and positively correlated with the number of within-pair copulations. Møller also captured and detained males from colonies, keeping them from their mates for a few hours either in the morning (when fertile copulations normally occur) or at night; the males' proportional and absolute contributions of food to the young were reduced after detentions in which extrapair fertilizations might have occurred, but not after other detentions. Those males who were experimentally confined in the morning had good cause to act as if they had been cuckolded:

Their females actually copulated with rival neighboring males whereas none of the control males' mates did so (Møller, 1987c).² When males with grounds for paternity doubt reduced their paternal efforts, nestling mortality increased, so it appears that copulating with a male other than her mate can cost a female valuable paternal contributions. Perhaps there are offsetting genetic benefits of such infidelity.

Additional experimental manipulations revealed that males are sensitive to another cue of cuckoldry risk in addition to separation from their mates and the proximity of rivals, namely, a partial clutch of eggs in the nest, which is ordinarily an indicator that the female is presently laying and hence fertile. Møller (1987c) showed that experimental creation of partial clutches, whether by removal or addition, inspired male mates both to guard more intensely and to initiate more copulations even though the experimental females were neither fertile nor receptive. In both of these experiments, neighboring males also became more interested in experimental females than in controls. It is unlikely that the neighboring males saw the addition or removal of eggs from the experimental nests, but they could have been cuing on the conspicuous mate guarding or copulatory behavior of the experimental males, which would ordinarily be accurate indexes of female fertility.

The many contingent responses of the male swallow described above add up to a complex anticuckoldry strategy adapted to the behavioral inclinations of both mates and rivals. Note that the male's repertoire does not include every imaginable anticuckoldry tactic. Neither male swallows nor any other songbirds seem able to discriminate own from alien conspecific offspring by comparing their phenotypes to self, for example. But the swallow's evolved domain-specific psychology of cuckoldry avoidance is quite impressive enough, combining tactics of mate guarding, of sperm competition, and of parental effort adjustment, all employed facultatively in relation to circumstantial cues indicative of cuckoldry risk.

Dunnocks

The dunnock (*Prunella modularis*) is a drab little bird found lurking in hedges of English gardens, but its mating system is anything but dull. Monogamous pairs, polyandrous trios, polygynous trios, and even polygynandrous groups are all common resolutions of battles within and between the sexes (Davies, 1989).

Dunnocks overwinter on their breeding grounds and begin to define and defend territories in late winter. As in many animals, female territory size is inversely correlated with food abundance, whereas males seem less concerned with food than with the females themselves and try to defend a superterritory overlapping that of several females (Davies & Lundberg, 1984). The final distribution of monogamous, polyandrous, and polygynous associations is the result of females' variable success in keeping female rivals at bay and males' variable success in monopolizing female territories (Davies & Houston, 1986; Houston & Davies, 1985). In a 4-year study of the dunnocks inhabiting Cambridge University's botanic garden, Davies (1989) found 62 monogamous pairs, 81 polyandrous females, 21 polygynous males, and 65 polygynandrous associations of two or more birds of each sex sharing mates. The research reports to date have primarily focused on comparing polyandrous trios and monogamous pairs.

The second ("beta") male of a polyandrous trio is subordinate to the "alpha," who by no means welcomes him. The most aggressively successful males are able to avoid polyandry, and in the polyandrous association, the alpha male apparently tolerates the beta male only after many

aggressive confrontations fail to repel him. Monogamous males are slightly larger than the alphas of polyandrous trios, who are in turn significantly larger than the betas (Davies & Lundberg, 1984). Males attempting to establish themselves as betas are sometimes killed (Davies, 1989), but if they get to stay, they can get a share of paternity.

Both sexes feed nestlings and fledglings beakloads of tiny insects. Monogamous males always participate, but in the polyandrous trios, male contributions are more variable and evidently depend upon the particular male's likely genetic stake in the nest (Burke; Davies, Bruford, & Hatchwell, 1989). Beta males who were seen to enjoy some time alone with the female during her fertile period almost always helped feed (22 of 27 such cases in 1981 to 1988), whereas those who apparently failed to gain such access almost never helped feed (1 of 11 cases). Moreover, among those betas who helped feed, rates of food delivery increased as proportionate share of mating access increased.

Although alpha males do not welcome betas, females do. Nestlings fed by two males received more feedings and weighed more than nestlings of either monogamous pairs or trios with noninvesting beta males; furthermore, the numbers fledged from such broods were greater than in any other breeding combination (Davies, 1986). From the female's point of view, then, two mates are better than one. But the alpha male's perspective is different: The brood's gain as a result of the beta males help is insufficient to offset the loss from shared paternity, a point to which we shall return. Moreover, since a male's help at the nest is contingent upon his having mated, it behooves the female to escape the guarding alpha for trysts with the beta, and the more so since a beta male who fails to mate may become an active saboteur: Though the culprits were not observed directly, damaged or discarded eggs or chicks were peculiar to the circumstance of an unmated beta male (Davies, 1986).

A female dunnock determined to be actively polyandrous creates a problem for her mate who has at least three distinct tactics to deal with it. The first is the preventive tactic of mate guarding. Any failure of the alpha male to stay within 5 m of the female provides an opportunity for the beta male to copulate, and so, although nest building is solely a female task, the male follows his mate closely as she gathers nesting materials and throughout her fertile period (Davies, 1985). This intensive guarding of the fertile female interferes not only with the guarding male's own feeding, but with the female's as well, yet the gain in paternity protection apparently offsets the costs from the male's perspective. However, given the female's interest in mating with both her males, the alpha's attempts to monopolize her are typically less than fully successful. Hence, the dunnock is a species characterized by sperm competition, which selects for frequent, circumstantially contingent copulation (Birkhead, 1988; Smith, 1984a), and in fact the male's second line of defense is the damage containment tactic of copulating frequently in response to cues of possible infidelity.

These two anticuckoldry tactics characterize many other songbirds, including the swallows discussed earlier. But the exceptional practice of stable polyandrous associations makes sperm competition a stronger selective force in dunnocks than in other biparental songbirds, and the male dunnock has evolved a third tactic, namely, a direct means of stimulating the female to eject a prior mate's ejaculate. In an elaborate and protracted foreplay the male pecks the female's cloaca for up to two minutes until she ejects a mass of cloacal contents, including sperm from recent matings, and then copulation occurs (Davies, 1983). Alpha males in

polyandrous trios copulate more frequently than monogamous males, and they employ cloacal pecking more, too. Moreover, within polyandrous trios, both a male's copulations and his cloacal pecks become more numerous the more time the female spends with her other mate.

Most recently, Davies and collaborators have used DNA fingerprinting to determine parenthood and assess the utility of these tactics (Burke et al., 1989). The resident female was the mother of every one of 133 young tested, and even though neighboring males showed interest in fertile females when their own mates were busy incubating, only 1 of the 133 was sired by an intruder. Eleven broods of polyandrous trios were assessed, totalling 34 chicks (including the lone chick sired by an intruder); alpha males had a surprisingly small advantage, siring 18 chicks versus 15 by betas. From the alpha male's perspective, the greater productivity of polyandrous trios as compared with monogamous pairs does not nearly compensate this lost paternity, confirming the point that the beta male's presence profits the female but not the alpha male.³ The other striking result was that the actual shares of paternity achieved by beta males provided no further prediction of their feeding effort beyond that provided by their mating success; if a male copulated but happened to sire no young, he was still likely to help. From this fact and from a lack of any evident within-brood discrimination, it seems that males cannot identify their own offspring within a multiply sired brood, and use proportionate sexual access as their rule of thumb for allocating parental effort.

Summary Remarks on Avian Anticuckoldry Tactics

The mating frequency, mate guarding, feeding rates, and other actions of male birds have been shown to vary adaptively in relation to numerous predictors of cuckoldry risk, including the timing of their mates' fertility, the mating strategies of rivals, the degree of coloniality, one's attractiveness relative to rivals, and lapses of surveillance of the mate. The research on swallows and dunnocks (along with work on many other birds; e.g., Alatalo, Gottlander, & Lundberg, 1987; Beecher & Beecher, 1979; Birkhead, 1988; Birkhead, Atkin, & Møller, 1987; Bjorklund & Westman, 1983, 1986; Carlson, Hillstrom, & Moreno, 1985; Frederick, 1987; Fujioka & Yamagishi, 1981; Hatch, 1987; Hatchwell, 1988; Lumpkin, 1983; McKinney, Derrickson, & Mineau, 1983; Montgomerie, 1988; Morton, 1987; Ridley & Hill, 1987; Røskaft, 1983; Sherman & Morton, 1988; Smith, 1988) provides strong evidence that paternally investing male animals have evolved sexual psychologies designed by selection to reduce both the likelihood of cuckoldry and its costs once incurred.

We may expect no less of the evolved psyches of paternally investing *Homo sapiens*.

THE HUMAN MALE'S PROBLEM

Unfortunately, the study of our own species has, until recently, been conducted almost without regard for evolutionary strategic considerations. The result is that we cannot yet answer many of the questions about human sexual proprietariness that a behavioral ecologist would consider elementary. There is a substantial social psychological literature on "jealousy", for example,

that has never addressed questions of how (or even whether) jealous feelings and actions might track the fertility of their objects. Nevertheless, sexual rivalry and proprietariness are such prominent aspects of human sociality that there is much in the literatures of the humanities and social sciences bearing upon the topic.

To elucidate the strategic organization of human male sexual psychology, we need to reconstruct the social and mating systems to which it is adapted. The evidence that human mating and parental practices have long been different from those of other hominoids is diverse, including the reduction of sexual dimorphism in hominid evolution, the sexual division of labor in foraging societies, and the cross-cultural ubiquity of marriage, of patrilineal or bilateral kinship reckoning, and of biparental care. Like songbirds, men make major parental investments in their putative offspring despite the problem of uncertain paternity (Smith, 1984b; Wilson, 1987).

But why should uncertain paternity be endemic to the human condition? Why would females in a biparental species such as ours not have evolved purely monogamous inclinations? The question is not simply sexist, since females do not gain in expected fitness by increasing their numbers of mates the way that males do (Bateman, 1948). Moreover, there are several potential costs to polyandrous mating, including superfluous gametes, risk of disease transmission or damage during mating (Daly, 1978), possible diminution or withdrawal of paternal investment should the male mate discover that he has been cuckolded (Trivers, 1972), possible elevation of competition among one's offspring in response to cues of reduced relatedness due to mixed paternity (Holmes & Sherman, 1982), and any additional costs such as violence, that the mate may impose in pursuing his own counterstrategy of deterring infidelity.

However, there is an equally long list of potential benefits that a paired female might gain by extrapair mating (Smith, 1984b). One possibility is superior genes; females may cuckold investing mates when other males appear to offer better genes (Benshoof & Thornhill, 1979). If this sounds farfetched, it is worth noting that the "monogamous" bird species have been found to engage in surreptitious extrapair copulations mainly or exclusively with known neighbors of higher dominance ranking or with other qualities that are superior to those of their mates (Frederick, 1987; Fujioka & Yamagishi, 1981; Smith, 1988; Westneat, 1987). A second reason for females to engage in extrapair mating is simply the material benefit of whatever aspirant adulterers offer (Symons, 1979). Kaplan and Hill (1985) found that the better hunters in a foraging society outreproduced poorer ones, partly because their children survived better, but also in part because hunting prowess gained men extramarital affairs with fertile women. A third potential benefit of female adultery is that the distribution of some possibility of paternity among multiple males may sometimes increase the total investments received by young from their possible fathers, as in Davies's dunnocks, or at least reduce the probability that those males will directly damage the young later (Hrdy, 1981). Other potential benefits listed by Smith (1984b) include status enhancement, fertility backup, and genetic diversification of young as a hedge against environmental change or as a means of reducing their similarity and hence their detrimental competitive effects on one another. Finally, even where extrapair mating is neither beneficial to nor sought by the female, the extrapair male's threats may make ready compliance less costly than resistance.

Strict Female Monogamy Has Not Characterized Human Sexual Selective History

A number of morphological and physiological phenomena in *Homo sapiens* appear to reflect a history of selection in which polyandrous mating and sperm competition were frequent enough to be consequential. The feature that has been most discussed in this context is "loss of estrus" (or "concealment of ovulation"): Women, unlike our nearest relatives, the chimpanzees, have no conspicuous signal of ovulation and relatively little cyclicity of sexual activity. Some of the many hypotheses proposed to account for these facts assume that the evolving human female was not strictly monogamous. Benshoof and Thornhill (1979) and Symons (1979) suggested that women have evolved to hide ovulation from their mates specifically to facilitate cuckolding them. Others have offered variants on the idea that concealing ovulation from one's mate is useful more by virtue of obliging prolonged mate guarding, which tips the male's strategic balance from extrapair mating effort to investment in spouse and offspring (Alexander & Noonan, 1979; Strassmann, 1981; Turke, 1984). Although the hypothetical female in this second scenario is more of a monogamist, her gambit can work only if she "threatens" her mate with the prospect of polyandrous mating. However, it is by no means clear that loss of estrus is adaptively linked to polyandrous inclinations in females. An alternative is that the benefit of concealed ovulation lies precisely in facilitating true monogamy, the point being to conceal her fertile state not from her monogamous mate but from other males whose high dominance status would allow them to supplant her preferred mate and who would then offer less in the way of paternal investment (Daniels, 1983; Strassmann, 1981). Burley (1979) and Symons (1979) offer additional hypotheses, which neither require nor disallow that the woman be polyandrously inclined. In view of these multiple scenarios, it is not yet clear what "loss of estrus" implies about ancestral human mating systems.⁴

More convincing vestiges of a sexual selective history in which females mated polyandrously can be found in the human male. Perhaps the clearest such vestige is testis size (Short, 1977). Men's testes are substantially larger, relative to body size, than those of gorillas, a species in which males are polygynous but females mate monogamously so that "sperm competition" within the female reproductive tract is absent. The idea is that such sperm competition selects for high sperm counts and ejaculate volumes and that men evolved in a sexual selective milieu where sperm competition was more extreme than in gorillas. Conversely, among chimpanzees, individual females frequently mate with two or more males during a single ovulatory period, engendering intense sperm competition, and the relative testis size in these animals is much greater than our own, implying that humans do not lie at this end of the sperm competition spectrum either. Broader taxonomic comparisons (Harcourt, Harvey, Larson, & Short, 1981; Kenagy & Trombulak, 1986; Møller, 1988a) verify the relationship between female polygamy and male testis size, reinforcing the conclusion that human testis size and sperm production are adapted to an ancestral mating system in which females were not so promiscuous as chimpanzees, but did not always confine themselves to a single mate either.

A distinct vestige of sexual selection is the scrotum, a structure that prolongs the life of spermatozoa by placing them in a relatively cool environment, at some cost in testicular vulnerability. Bedford (1977) proposed that the scrotum is an adaptation for epididymal sperm

storage in those mammals who need to produce fertile ejaculates repeatedly in short order, a demand he linked to polygyny. Smith (1984b) amended the argument, noting that the presence of scrota in chimps and people and their absence in gorillas and orangutans are more consistent with the idea that the demand derives from polyandrous matings by females and resultant sperm competition than from polygynous matings by the males.

If men evolved under the selective pressure of sperm competition, we might furthermore expect that they, like swallows and dunnocks, will exhibit strategically variable responses to possible cues of female infidelity. Baker & Bellis (1989) had monogamous couples collect intravaginal ejaculates by condom, while maintaining diaries of their sexual and other activities. The number of spermatozoa transferred in a given copulation was not a function of the elapsed time since the last ejaculation, as might have been expected. Instead, sperm transfer increased dramatically as a function of the proportion of the time since the last copulation that the pair were out of contact. Baker and Bellis interpret this effect as a sophisticated psychophysiological adaptation to lapses in mate monitoring.⁵

MONOPOLIZING WOMEN

Men and women's sexual psychologies have been shaped by a history of selection in an ancestral sociosexual milieu which no longer exists and which was certainly radically different from the complex agricultural and industrial societies we now occupy. But evolutionary theory, comparative data, and, above all, the common aspects of human psychology in its diverse cultural and technical settings all afford windows on the sociosexual milieu in which the human mind evolved and on the adaptive problems to which our species-typical social and sexual motives, emotions, and ways of thought constitute the solutions. Inquiring what remains stable in the face of diversity (such as sex differences in the use of violence; Daly & Wilson, 1988b, 1990) can direct us to an appropriate level of abstraction for avoiding the pitfalls of ethnocentrism in our efforts to characterize an evolved human nature. Equally revealing of evolved inclinations are phenomena that did not exist during our formative millennia and hence cannot be considered targets of selection or adaptations in their own right, yet emerge with uncanny regularity in certain circumstances. An example, discussed later, is the establishment of harems.

Our best guess about the sort of reproductive system in which the human psyche evolved, and to which it is adapted, is one in which mateships were predominantly but not exclusively monogamous, paternal investment was significant, and the variance in reproductive success was slightly greater among men than among women (*effective polygyny*). One sort of evidence supporting this surmise is the fact that such a system appears to be almost universal among relict human societies occupying nonagricultural niches (although Australian aborigines, with their relatively extreme marital polygyny, are a puzzling exception). Additional evidence of mild effective polygyny during human evolution can be seen in a number of small but robust morphological and life-historical sex differences in body size, age at maturity, and rate of senescence. Sexually differentiated psychologies and sexualities are products of that same selective history.⁶

Biparental care notwithstanding, men, like other male mammals, have generally had some chance of increasing fitness by increasing their numbers of mating partners. The male psyche appears adapted to exploit any such opportunities: Men, more than women, aspire to polygamy and to extrapair sex (Symons, 1979; Daly & Wilson, 1983). One result of this chronic aspiration is that even in monogamous societies, a few relatively successful men have typically

been able to be effectively polygamous, whether simultaneously or serially, by multiple marriage or concubinage. Relatively recently in human history, with the inequities engendered by agricultural surpluses and the rise of complex, role-differentiated societies, extreme polygyny and extreme sequestering of women became possible, and wherever men gained despotic power over a populace, they then used their power and resources to hoard large numbers of fertile women as wives and concubines (Dickemann, 1979; Betzig, 1986). The most despotic harem holders confined women in cells, guarded them with eunuchs, maintained records of their menstrual cycles, farmed them out to the harems of underlings when they got too old, and sometimes even killed and replaced them en masse in the event of a security failure and possible cuckoldry (Dickemann, 1979; Betzig, 1986; Busnot, 1715).

Harems are telling phenomena not because they are anything our psyches are specifically adapted to, but because they reveal evolved appetites. The widespread establishment of harems falsifies a popular hypothesis among anthropologists to the effect that the reason men aspire to polygyny is because wives are economic assets (e.g., Boserup, 1970; Grossbard-Schechtman, 1984). Proponents of this view deny, sometimes explicitly, that women are valued as goods in themselves - as the perquisites of power and status rather than the means thereto. But the occupants of harems are typically prevented from being productive, and their maintenance is enormously costly. Fantastically wealthy and powerful men neither forsake the acquisition of women nor use them to augment their wealth; they collect them. Neither can the agendas of harem holders be understood as the pursuit of mere sexual diversity: Monopolization is invariably a principal objective. Guarded harems constitute the hypertrophied manifestations of male ambitions released from the usual constraints of limited personal power, the fantastic products of a male psyche that evolved in social milieus in which extreme polygyny was impossible, but any increment in the numbers and/or the degree of monopolization of one's mating partners would gain a selective advantage.

Only the richest and most powerful men could institute such elaborate arrangements to retain exclusive sexual access to many reproductively valuable women. However, millions of men have guarded and constrained "their" women by practices that seem to depart from those of despots only in degree. Veiling, chaperoning, purdah, and the literal incarceration of women are common social institutions of patrilineal societies, and it is only women of reproductive age who are confined or chaperoned. Prepubertal children and postmenopausal women enjoy considerable freedom. These practices are status graded (Dickemann, 1981): The higher the social status the more claustrated the women.⁷ Chinese foot binding was another such status-graded practice, which simultaneously made an ostentation of the male owner's capacity to dispense with the woman's labor and rendered her incapable of flight. There is considerable cross-cultural variation in the severity and institutionalization of such practices, but the repeated convergent invention of claustration practices around the world and the confining and controlling behavior of men even where it is frowned upon (Daly, Wilson, & Weghorst, 1982) reflect the workings of a sexually proprietary male psychology.

Man's inventive imagination has produced countless designs for chastity belts. Less

familiar to Westerners but much more frequent are genital mutilations designed to destroy the sexual interest of young women and even their penetrability until surgically reopened. These practices range from partial through complete clitoridectomy to removal of most of the external genitalia and suturing shut of the labia majora (*infibulation*). Such genital mutilations are still prevalent in at least 23 countries, affecting tens of millions of women (Hicks, 1986; Hosken, 1979). Clausturation and chastity belts might be interpreted as responses to male-male competition whether women were polyandrously inclined or not, but practices like clitoridectomy show that the women are being "guarded" not only from predatory males but from their own inclinations.

What about mate guarding plain and simple? Are men inclined to dog their fertile mates like songbirds during egg laying? In patrilocal societies, where wives are surrounded by their husbands' relatives, a man may be content to leave his wife under the scrutiny of his mother or other kin. But in many societies - including the foraging (hunting and gathering) peoples who provide the best contemporary models of the ecological and socio-political contexts within which the human psyche evolved - people were mobile and group compositions variable. Men had to look out for their own interests.

We are aware of only one naturalistic study of men's mate guarding that tested evolutionary psychological hypotheses. Anthropologist Mark Flinn (1988a) recorded the identity, whereabouts, and activities of everyone he saw during standardized scan-sampling walks in a Caribbean village, where mating relationships were unstable and often nonexclusive and where men directed paternal investments selectively to their own offspring in matrifocal households of mixed paternity. Flinn's data showed the following:

1. Men whose mates were "fecund" (i.e., cycling) were more often in their company than those whose mates were "infecund" (pregnant or postreproductive).
2. A women's fecundity was associated with proportionately more agonism in her mate's interactions with her and with other men.
3. Among mated couples that had nonexclusive relationships there was more agonistic interaction than among monogamous couples.
4. Interactions between mates of a particular woman were significantly more often agonistic than other male-male interactions.

These results appear to reflect male social motives and emotions that are responsive to cues of rivalry and female fertility and that function to promote sexual exclusivity.

THE PSYCHOLOGY OF JEALOUSY

The state of being concerned that one's sexual exclusivity is or might be violated is what people usually mean when they refer to "jealousy." Social and personality psychologists have recently devoted some attention to the task of characterizing sexual jealousy (and distinguishing it from envy), but in the absence of a strategic understanding of the psyche, they have achieved little clarity.

Romantic or sexual jealousy has been conceived of as a personality characteristic, a particular emotion, a particular set of actions, or anything one feels or does in a particular sort of situation; many discussions begin with one meaning before slipping unwittingly into another.

Since feelings as variable as rage and depression can be considered manifestations of "jealousy," Hupka et al. (1985) argue that someone in the situation of "threat" by a romantic "interloper" is, by definition, jealous, but they belie their own definition by elsewhere calling jealousy "a very intense and potentially destructive emotion" and by considering the intensity of jealousy to vary between people within standard situations. The problem is that the concept of jealousy cannot be captured with a definition that is purely internal (an emotion of a certain quality) *or* purely external (a situation). Sexual jealousy is a complex psychological system whose functioning is inferred from observable combinations of circumstance and response - a system that is activated by a perceived threat that a third party might usurp one's place in a sexual relationship and that generates a diversity of circumstantially contingent responses aimed at countering the threat.

Research papers on sexual jealousy often treat the subject pejoratively. After a nonevaluative introduction, for example, Buunk and Hupka (1987) consider their questionnaire respondents to have a problem if they either agree that "it would bother me if my partner frequently had satisfying sexual relations with someone else" or deny that "it is entertaining to hear the sexual fantasies my partner has about another person." With jealousy thus conceived as a character defect, its social consequences and effectiveness in promoting sexual exclusivity have hardly been explored. An exception is Mathes's (1986) prospective study, in which couples with relatively low jealousy scores were subsequently found to be relatively likely to break up, suggesting either that jealousy is actually effective in maintaining relationships or else that its intensity reflects the value that the jealous party places on the relationship. In this light, the celebrated phenomena of romantic love and the disparaged phenomena of jealousy are functionally linked aspects of individualized sexual bonding and proprietary claim, and it is hardly surprising that lovers sometimes interpret an absence of jealousy not as a sign of selfless love but as a sign of weak commitment.

Jealousy is often found to be associated with "low self-esteem" (Buunk, 1986; Mathes, Adams, & Davies, 1985; Stewart & Beatty, 1985; White, 1981) and with "emotional dependency" (Bringle & Buunk, 1985; Buunk, 1981, 1982a; White, 1981). The researchers who have demonstrated these associations have not considered whether having poor self-esteem or being emotionally dependent might reflect accurate assessments of one's own and one's mate's respective values in the heterosexual marketplace (but see Hansen, 1985) or other cost-benefit considerations relevant to the utility of maintaining the relationship, and hence might be legitimate grounds for jealous concern. (Nor do they ask the more basic evolutionary psychological question of why "self-esteem" exists and is something that people will incur costs to defend.) The impacts of factors that an evolutionist would consider crucial to the domains of mate selection and mate guarding - ages, reproductive condition, joint and separate reproductive histories, aspects of the resource circumstances of the mates and any rivals, and so forth - have yet to be addressed.

Instead, researchers have attempted to account for the domain-specific features of jealousy in terms of inadequate domain-general constructs and processes. Buunk and Bringle (1987), for example, suggest that sexual jealousy arises "in our culture" (gratuitously implying that it does not exist elsewhere) because limited opportunities to compare one's sexual talents with those of others "make the sexual realm very sensitive to insecurity and competition" (p. 130). They maintain that the seeking of privacy for sexual activity is the cause of insecurity and thus jealousy (since "a direct comparison of oneself versus others in this area is difficult", without

noticing that the seeking of privacy then requires explanation. Salovey and Rodin (1986) ask why paper-and-pencil responses to hypothetical scenarios indicate that "threats to romantic relationships have more powerful consequences than not measuring up in social-comparison situations" and suggest as an answer that "the increased affective charge in the romantic situation may be due to the involvement of two other people versus just one in the social-comparison situation" (p. 1111).

As regards sex differences, the sexual jealousy literature is even more in need of an evolutionary overview. Some researchers (e.g., Pfeiffer & Wong, 1989; Salovey & Rodin, 1986) fail to separate men's versus women's responses in their analyses. Where the sexes have been distinguished, there has been something of a controversy about which, if either, is the more jealous. The question is an empty one, arising from the practice of summing item scores to get a "scale" rather than from any theory of the nature of either jealousy or gender. Different researchers ask different things and it is clearly meaningless to simply rank the sexes, since their reactions are qualitatively different. Shettel-Neuber, Bryson, and Young (1978), for example, had students describe their own probable actions in a situation they saw portrayed on videotape: Men considered themselves likely to become angry, drunk, and threatening, women to cry and to feign indifference. Teismann and Mosher (1978) solicited the reactions of dating couples to a hypothetical jealousy-inducing situation and reported that men's concern and distress were focused on possible sexual contact between their partners and male rivals, whereas women were primarily concerned with their boyfriends' expending time, money, and attention on rival females (see also Buunk 1981; Francis 1977).

Results like Teismann and Mosher (1978) are obviously suggestive of strategic differences in sex-typical jealousy algorithms, appropriate to the somewhat different threats to fitness confronting ancestral women versus men. But one should be wary of overinterpreting the sex differences (and/or lack of same) in the social psychological literature, since the ecological validity of the studies is problematic. The bulk of the data are paper-and-pencil responses of captive undergraduates to questionnaire items which may or may not have anything to do with anything they have ever experienced. (Buunk's Dutch research is the principal exception to this excessive reliance on undergraduates, but his use of more representative subject populations does not obviate possible problems of failures of memory, candor, and self-knowledge.) In contrast with the inconclusive results of self-report studies, there is little ambiguity about sex differences in jealousy when one looks at such real-world phenomena as homicide, wife beating, initiation of divorce, and psychiatric cases of "morbid jealousy" (Daly, Wilson & Weghorst, 1982).

The only evolutionarily informed body of self-report research on jealousy is that of Buss (1988) who defined the domain of interest in functional terms, as "mate retention tactics" and set out to characterize them. Buss asked subjects what they and others did in order "to prevent their partner from getting involved with someone else" and constructed a complex hierarchical taxonomy of the answers. His scheme first distinguishes "manipulations" aimed at partner versus rival(s) and then subdivides each. Partner-directed tactics, for example, are classified as "direct guarding" (including various threats, derogation of competitors, etc.), or "positive inducements" (including resource transfers and various behavioral accommodations to the partners tastes). Buss then made a start on the question of what predicts a person's resorting to particular tactics by asking whether gender and the relationship histories of subjects predicted the tactics they

claimed to have used, as well as asking opinions about which tactics actually work. Ecological validity remains a problem in these paper-and-pencil studies, but Buss (1988, 1989) has at least opened the way to an understanding of the tactical richness and strategic organization of the evolved psychology of sexual jealousy.

An alternative approach to the solicitation of introspections from volunteers is the analysis of archives recording manifestations of sexual jealousy. In studies of spousal homicide motives, for example, the leading substantive issue identified by police and psychiatrists is invariably "jealousy," and more specifically jealousy on the part of the man, regardless of which partner ends up dead.⁸ Although the information on many cases is too sparse to attribute them to anything more specific than a domestic quarrel, diverse threads of evidence indicate that the major source of conflict in the great majority of spouse-killings is the husband's knowledge or suspicion that his wife is either unfaithful or intending to leave him (Daly & Wilson, 1988b). Studies of sublethal violence and chronic battering pinpoint the same primary issue.

A small minority of the men who kill their wives are found "unfit to stand trial" or "not guilty by reason of insanity," and many of these are considered to be suffering from a psychiatric condition called "morbid jealousy" (Mowat, 1966), diagnosed on the basis of an obsessive concern about suspected infidelity and a tendency to invoke bizarre "evidence" in support of the suspicion. However, most men who kill in a jealous rage are not considered insane. Quite the contrary: Anglo-American common law specifically deems killing upon the discovery of a wife's adultery to be the act of a "reasonable man" (Edwards, 1954) and deserving of reduced penalty "because there could not be a greater provocation" (Blackstone, 1803). Other legal traditions - European, Oriental, Native American, African, Melanesian - all concur (Daly & Wilson, 1988b; Daly, Wilson, & Weghorst, 1982). Not only is jealousy "normal," but so it seems is violent jealousy, at least if perpetrated by a man and in the heat of passion.

THE AFTERMATH OF RAPE

Reactions to rape provide a particularly revealing window on the psychology of male sexual proprietariness (Thornhill & Thornhill, 1989). Men often reject raped women as "damaged goods," sometimes accusing the victims of having provoked or enjoyed the rape (e.g., Brownmiller, 1975; Burgess & Holmstrom, 1974; Karkaria, 1972; McCahill, Meyer, & Fischman, 1979; Miller, Williams, & Bernstein, 1982; Weis & Borges, 1973). Even where there is no issue of the illicit copulation having been other than coerced, men still seem to perceive the woman as diminished in value: "She was all mine and now she's been damaged," says one participant in a therapy group for American men whose partners have been raped; "Something has been taken from me. I feel cheated. She was all mine before and now she's not," says another (Rodkin, Hunt, & Cowan, 1982).

Blaming the victim is a phenomenon that occurs more widely than just in rape cases (Ryan, 1971), so these examples may simply reflect the operation of domain-general victim-blaming-and-denigration processes (Kanekar, Kolsawalla, & D'Souza, 1981; Smith, Keating, Hester, & Mitchell, 1976). However, rape victims appear to have some special difficulties. According to Rodkin, Hunt, and Cowan (1982), "while the husband, lover, or father would seem to be a most appropriate source of comfort and understanding to whom the victim could (or should) turn, he may, in fact, be the least understanding." Any tendency for men to denigrate rape victims more than do women might be partly due to men's inability to identify with the female

victims (Sorrentino 1974; Weis & Borges, 1973), but this consideration cannot explain the extreme negativity of the reactions of the very men closest to the victim.

Thornhill and Thornhill (1983, 1989) have examined the aftermath of rape from an evolutionary psychological perspective. They argue that a single coerced act of extramarital sex, though representing a threat to the husband's fitness, is less cause for his concern than a more ambiguous act, which might have involved female complicity and might therefore be predictive of further infidelities. Accordingly, they hypothesize that men's jealous concerns in the aftermath of rape will actually be alleviated by evidence of coercion, including even injury to the woman. Postrape emotional trauma and sexual dysfunction are usually interpreted as reflecting the victim's fear or repugnance of men and sex as a result of the rape itself, but the Thornhills' analysis leads to a counterintuitive prediction: Insofar as postrape emotional trauma and difficulties in relations with husbands and boyfriends arise out of men's reactions to rape victims, such problems may be less severe in the more brutal and hence less equivocal incidents. And that proves to be the case. Physical injury during the rape is associated with lesser rather than greater postrape difficulties with male partners. Note that this result is contrary not only to the commonsensical notion that greater injury would produce greater psychological trauma, but also to the idea that the aftermath of rape is an instance of a general tendency to blame victims more the greater their victimization.

Other predictors of postrape difficulties also seem to track correlates of the potential costs of infidelity to the man and hence of expected jealousy (Thornhill & Thornhill, 1989). The aftermath of rape is more problematic for women in marital or common-law unions than for single women, which is again contrary to what one might have expected from a commonsense hypothesis that rape engenders fear that is exacerbated by vulnerability, since single women seem likelier to feel especially vulnerable. Furthermore, the aftermath of rape is more problematic for women of reproductive age than for prepubertal or postmenopausal women, a result predicted by the Thornhills from evolutionary reasoning,

PATERNITY CONFIDENCE AND PATERNAL EFFORT

Parental care is costly, and selection must always have favored those psyches that allocate it discriminatively toward own offspring. But whereas female mammals normally incur no risk of misidentifying their offspring, paternity is mistakable, which partly explains why mammalian paternal care is relatively rare. As we've seen, male songbirds adjust paternal effort in relation to probability-of-paternity cues. It seems likely that the human male psyche is no less subtle, but the subject has not been studied systematically.

A particularly interesting question is whether paternal affection is influenced by the child's resemblance to self in a way that maternal affection is not (uncertain maternity having been no issue in our evolutionary history). People are profoundly sensitive to paternal resemblances of children and relatively indifferent to maternal ones (Daly & Wilson, 1982); moreover, mothers are especially keen to note such resemblances, as would be expected if such

claims function as paternity assurance tactics. But no one has assessed whether paternal investments in putative offspring actually vary in relation to these probability-of-paternity cues.⁹ In fact, no male animal has yet been shown to use phenotypic resemblance to self as a probabilistic paternity cue. Songbirds are apparently incapable of this feat, but men are not.

Although the impact of variations in paternity confidence upon the quality of human paternal solicitude remains unexplored, there is ample evidence of men's reluctance to assume child support obligations to the offspring of other men (Wilson, 1987). Having a child toward whom a new husband will have to assume stepparents duties diminishes rather than enhances a woman's marriageability (Becker, Landes, & Michael, 1977; Borgerhoff Mulder, 1988; Knodel & Lynch, 1985; Volland, 1988; Wilson & Daly, 1987). Moreover, steprelationships, once established, are much less satisfying to all parties than the corresponding genetic relationships (reviewed by Wilson & Daly, 1987), and much more likely to erupt in violence (Daly & Wilson, 1988a, 1988b; Wilson & Daly, 1987). Stepfathers are discriminative in their maltreatment, sparing own offspring in the same household (Lightcap, Kurland, & Burgess, 1982; Daly & Wilson, 1985). The tensions characteristic of steprelationships are cross-culturally ubiquitous (Wilson & Daly, 1987).

Some have suggested that the problems characteristic of steprelationships are incidental consequences of the creation of a "parent-offspring" relationship too late. There is no evidence in favor of this idea and at least one study that speaks against it. Flinn (1988b) found that men who coresided with stepchildren from their births were if anything even more hostile toward them than were those whose steprelationships were established later, and much more so than genetic fathers. One possible implication is that human paternal affection is "cognitively penetrable" by something like conscious knowledge of paternity or nonpaternity. (This need not imply that paternal affection is insensitive to cues like phenotypic resemblance as well, without the man's necessary awareness.)

Children can, of course, be assets regardless of genetic paternity. Their labor can create wealth for their parents, and expanding one's close kin network brings political and social clout. Some social scientists have been so impressed with these proximal utilities of children as to assert that men are not concerned about the genetic paternity of children at all, except insofar as it confers the jural rights of the "pater role." In an extreme version of such arguments, Paige and Paige (1981) proposed that the reason public acknowledgments of paternity exist is to establish paternal entitlements against rival claimants. But children impose economic costs more surely than they provide benefits, and one can find (both in our own society and in the ethnographic record) myriad disavowals of paternity and its attendant obligations for every case in which two or more men maintain that they are the sires of a disputed child. Men are profoundly concerned that the children in whose welfare they invest are their own and are often enraged to discover otherwise (Daly & Wilson, 1987, 1988b).

It does not follow that evolved paternal psyches will be such as to invest selflessly even when paternity is certain. In paternal investment, as in other spheres, creatures allocate resources in the pursuit of their perceived interests. Wherever parental care is essential but biparental care is not, desertion of the joint parental enterprise tempts whichever parent is in a position to abscond first (Maynard Smith, 1977). In mammals (though not in all animals; e.g., see Beissinger & Snyder, 1987), that means the father. Nevertheless, it is a universal apprehension of human beings that although genetic fathers may withhold investment, a man will be more inclined to pay his

share when convinced that the child is his own than when he doubts it (Wilson, 1987). Moreover, people perceive it as just that a man should support his children and as an injustice when paternity is misattributed and support obligations follow.

Two legal "theories" have been proposed to justify the imposition of a child support obligation on reluctant putative fathers: the theory of delict, whereby the father's liability arises from his mere (illicit) sexual access to the mother, and the theory of descent, whereby the father's liability is based on his genetic relationship with the child (Sass, 1977). Both theories are based on the idea that beneficiaries should pay, but they differ in focusing upon benefits of greater or lesser remove from fitness, namely, sexual contact versus parenthood. Where delictual constructions have been tried, they have violated people's sense of justice and have failed (Wilson, 1987). The implication is that people perceive children to constitute benefits to their genetic parents over and above any pleasure had in conceiving them, and over and above any material and social benefits they provide to whomever occupies a parental role.

This is not to deny that patrilineal headship confers power prestige, and resources (e.g. Paige & Paige, 1981). Most human societies are predominantly patrilineal, despite the surer links of the maternal line. This is not so paradoxical as it first appears. The point is not that people define their primary kinship links without regard to genetic relatedness, as some have claimed (e.g., Sahlins, 1976), but rather that patrilineal affiliation follows from responses to the uncertainty of paternity. In extremely patrilineal societies, patriarchal power both provides and is predicated upon confidence of paternity. A man's genetic relatives share and protect his interest in the fidelity of his wife, and patrilineage honor is defined in terms of female chastity (Dickemann, 1979, 1981). But matrilineal societies also exist, in which a man's family of primary identity consists of maternal rather than paternal relatives, and the husband/father has less legal authority over his wife and children. In such societies, there are few cultural institutions that inhibit a woman's sexual autonomy, and men have little economic support obligation to their wives' children. The mother's brother typically plays a prominent "parental" role toward his sister's children, especially her sons, who are their maternal uncles' principal heirs (*avuncular inheritance*). These practices tend to be associated with high rates of divorce and remarriage, maternal custody of children, and a high probability that a woman's children have different sires.

Why such social practices should exist has been called the "matrilineal puzzle" Evolutionarily sophisticated discussions of it have focused upon the lesser paternity confidence in matrilineal as compared to patrilineal societies (Alexander, 1974; Flinn, 1981; Flinn & Low, 1986; Gaulin & Schlegel, 1980; Hartung, 1985; Kurland, 1979). The risk of misattributed paternity is believed to be relatively high in matrilineal societies, and whereas a man's putative offspring may be no relative at all, his sister is at least a half-sister and her children are his kin. A problem with early evolutionary models of the adaptive rationale for avuncular inheritance is that the society-wide incidence of extramarital conception that would be required to make sisters' children closer relatives on average than wives' children, and hence men's preferred heirs, exceeds any plausible estimate for matrilineal societies. This problem is resolved, however, when one considers that rules reflect imposed resolutions of conflicts (Alexander, 1987; Flinn, 1981; Hartung, 1985; Thornhill & Thornhill, 1987). A man might prefer his putative son to his sister's son, for example, and yet be under pressure from both of his parents to prefer the latter, who is, from their perspective, the more certain grandson. The men's threshold for compliance to such

pressure should be affected by cues affecting "paternity confidence," but should not necessarily correspond to the point at which the party with greater expected relatedness to himself switches from nephew to son (Hartung, 1985).

Inheritance rules are not simple expressions of individual men's apprehensions of descent. Instead, they represent the fruits of historical successions of conflict resolutions. Typological summary characterizations of societies (as "matrilineal," "patrilineal," etc.) mask the dynamic processes of conflict resolution out of which rules and ideologies arise. The ethnographies provide countless anecdotes of individuals defying inheritance rules and incurring approbation for bestowing their resources in their own perceived interests. It may well be the case, then, that men ubiquitously adjust paternal investment in relation to paternity confidence cues. Empirical studies are needed to determine to what degree resources actually flow along the lines prescribed by the inheritance "rules" of traditional societies and to determine the correlates and causes of individual testamentary decisions.

MARITAL ALLIANCE

Marriage is a cross-culturally ubiquitous feature of human societies, notwithstanding variations in social and cultural details of the marital relationship (Flinn & Low, 1986; Murdock, 1967; van den Berghe, 1979). What this means is that men and women everywhere enter into individualized reproductive alliances in which there is some sort of mutual obligation and biparental investment in their joint progeny and that the alliance is recognized by people other than the marital partners. Most important, such alliances are characteristic of all known foraging societies. In most human societies, a minority of successful men marry polygynously, but most individual human mate-
ships are, and probably always were, at least serially monogamous."¹⁰ Although many writers have stressed that human marriages are economic unions or even political alliances between lineages, the marital institution has first and most basically to be understood as reproductive.

Marital alliance institutionalizes the sexual and reproductive entitlements of a man vis à vis a woman. Claude Lévi-Strauss (1969) has argued that marriage is a contract between men, whereby one or more men bestow rights in the bride upon the groom. One may quarrel that senior women as well as men often participate in negotiating marital exchanges, but that does not belie the treatment of women and their reproductive capabilities as valued and exchangeable goods. Marriage is predominantly patrilocal, the bride being incorporated into her husband's kinship group (Murdock, 1967), and even more ubiquitous is a proprietary construction of the marriage's significance. In industrial mass society, where the power of kinship has withered, a man vestigially "gives" his daughter in marriage, but in most of the human societies that have been described, getting a bride required a substantial transfer of resources to kinsmen, usually as the explicit price of her reproductive future.¹¹

Strathern (1984) has argued that it is ethnocentric to interpret bridewealth systems as the commoditization of women, because the actors neither equate women with "things" and deny them subjectivity as our conception of "property" implies nor attain individual ownership, the transactions instead occurring between lineages. But people are well capable of feeling and acting proprietarily toward other people while remaining aware of their subjectivity; it may or may not

be accurate to interpret bride-wealth as the commoditization of human reproductive capacity, but it is no more ethnocentric than interpreting slavery as the commoditization of human labor. As for Strathern's point about collective rather than individual entitlements, a man's kinsmen may help him buy a bride, but she becomes only one man's wife (and she becomes part of his inheritance under the practice of levirate).

In the contemporary West, we are inclined to see the mating game as a great marketplace of autonomous actors, but in kin-based societies and where power permits, people take a strong manipulative interest in the marital transactions of other people. The extensive role of kin in the arrangement and conduct of marriages makes the human case unique among animal mateships, and multiplies the potential conflicts among the parties involved. Marriages may be arranged without the principals' counsel, indeed before they are mature, and occasionally even before their births. A particularly striking example of manipulative arranged marriages was the practice of *shim-pua* in Taiwan, in which parents acquired an infant girl as a bride for an immature son, and raised her to the role (Wolf & Huang, 1980). These future brides were often poorly treated as children, and their risk of dying before puberty was severalfold greater than the risk to their "adopting" in-laws' own daughters. Moreover and ironically, *shim-pua* marriages were often barren, apparently because rearing together from infancy had killed sexual interest.

WOMEN AS MEN'S LEGAL PROPERTY

Having acquired a wife, to what is a man entitled? At the least, sexual access and the chance to sire her children, and usually an exclusive right to both. Nothing more clearly reveals these proprietary entitlements than laws concerning adultery: the offense of sexual intercourse between a married woman and a man other than her husband.

Laws were codified by developing civilizations around the Mediterranean and in the Far East, in the Andes and Mexico, in northern Europe and throughout Africa, and although these traditions developed in ignorance of one another, they converged remarkably on this topic (Daly, Wilson, & Weghorst, 1982). All concurred in defining adultery in terms of the marital status of the woman. Whether the adulterous man was himself married was irrelevant.

Adultery is often treated explicitly as a property violation. The victim is the husband, who may be entitled to damages, to violent revenge, or to divorce with refund of brideprice. Where crimes (offenses against the state) are distinguished from offenses against individual plaintiffs, adultery may be criminalized as well; it was a capital crime in seventeenth-century England, for example (Quaife, 1979). Another legal status of adultery is its provision of a grounds for divorce, which is nearly universal in the case of an adulterous wife but much rarer in the opposite direction.

Still another legal status of adultery, and one especially revealing of the folk psychology of the subject, is its standing as a "provocation" mitigating responsibility for otherwise criminal behavior. Throughout the English-speaking world, the common law recognizes three kinds of acts as sufficiently provoking to reduce murder to manslaughter, and they constitute a virtually exhaustive list of fundamental threats to fitness: assaults upon oneself, assaults upon close relatives, and sexual contact with one's wife. Several American states had statutes or rulings that

made killing upon the discovery of wifely adultery no crime at all; although these were finally abolished in the 1970s, jury acquittals and discretionary refusals to prosecute persist. The violent rages of cuckolds constitute an acknowledged risk in all societies, and some sort of diminution of their criminal responsibility is apparently universal (Daly, Wilson, & Weghorst, 1982), regardless of whether the cuckold's violence is deemed a reprehensible loss of control or a praiseworthy redemption of honor (e.g., Safilios-Rothschild, 1969).

Man's ubiquitous resentment of adultery seems clearly to be functionally linked to paternity concern, but how direct are the psychological links? Men can sometimes be violently jealous of postmenopausal wives (and of homosexual partners), suggesting that jealousy is generalized. But men are far from oblivious to reproduction and paternity, and they often articulate their motives in the proprietary transactions of marriage in these terms. The greater success of descent-based than delict-based laws of paternal liability, as discussed earlier, suggests that paternity is an issue with some emotional force. In any case, whether paternity concern has direct psychological links with adultery concern or not, men have often called upon the paternity issue in order to justify adultery law and the double standard therein. A particularly striking example comes from French Revolutionary law, whose authors were much concerned with the abolition of prejudicial discriminations, including those based on sex, and yet retained sexual discrimination in this one sphere, arguing that "it is not adultery per se that the law punishes, but only the possible introduction of alien children into the family and even the uncertainty that adultery creates in this regard. Adultery by the husband has no such consequences" (our translation of Fenet, 1827, as quoted by Hadjiyannakis, 1969, p. 502).

Adultery compensations are institutionalized features of tribal bridewealth societies and were prominent in Anglo-American legal history, too. Since the earliest written codes of the Anglo-Saxons (Attenborough, 1922/1963), we have always had a variety of torts associated with unauthorized sexual relations. (A tort is a lawfully recognized wrong other than a crime or violation of a commercial contract, in which a plaintiff seeks redress from a defendant, usually in the form of monetary compensation.) Torts concerning wrongful sexual contacts include "adultery," "loss of consortium," "enticement," "criminal conversation," "alienation of affection," "seduction," and "abduction" (Arnold, 1985; Backhouse, 1986; Beckerman, 1981; Brett, 1955; Law Reform Commission of Ireland 1978, 1979a, 1979b; Lippman, 1930; Sinclair, 1987).

All these torts concerning sexual transgressions were created with sexually asymmetrical content to deter unauthorized sexual contact. The plaintiffs were typically husbands or fathers or men to whom women were betrothed. The requisites for a successful action make clear that the crucial damage was loss of sexual exclusivity, not lost labor: The woman's prior chastity was crucial, on the logic that a man who steals an already unchaste woman has stolen nothing. Also clearly indicative of men's proprietary construction of the women involved in these cases was the irrelevance of their consent, which did not at all mitigate the wrong against husband or father.

Sexual relations with another's wife can still cost an American man substantial court-ordered compensation. In *Chappell v. Redding* (1984), for example, a North Carolina ophthalmologist was obliged to pay his wife's ex-husband \$200,000 for having alienated her affections. The interesting implication of an award like this is that a contemporary American woman is still not fully free to leave one husband for another. When Dr. Redding went a-

courting, Mrs. Chappell was not fair game. She was already taken.¹²

Besides these entitlements to compensation for infringements of their proprietary rights in their wives, Anglo-American husbands have enjoyed other owners' privileges as well. Until recently, husbands were legally entitled to confine wives against their will and to use force to enjoy their conjugal rights (Dobash & Dobash, 1979, 1981; Edwards, 1985). The origin of the term "rule of thumb" was an eighteenth-century judicial ruling that a husband was entitled to use a stick no thicker than his thumb to control an overly independent wife. Persons who gave sanctuary to a fleeing wife, including even her relatives, were legally obliged to give her up or be liable for the tort of "harbouring," and Englishmen remained entitled to restrain wives intent on leaving them until a 1973 ruling made such acts kidnappings (Atkins & Hoggett, 1984). The criminalization of rape within marriage and hence the wife's legal entitlement to refuse has been established only very recently (Edwards, 1981; Russell, 1982).

The proprietary construction of marriage seems especially bald-faced in the English practice of wife sales at market which ended only about a century ago. The husband would pay the market fee just as if he had a cow to sell, then lead his wife up to the auction block by a halter and call for bids (Menefee, 1981). Contemporary accounts of the practice often make it sound like the most blatant trafficking in women as commodities, but wife sales really constituted customary divorce proceedings; the woman was often--perhaps typically--sold not simply to the highest bidder but to a man who was already her lover. For the estranged husband, the transaction served as a public renunciation of his obligations to the woman and her children. But even if "wife sales" don't quite live up to the marketplace implications of their name, their trappings still provide a dramatic illustration that men conceptualized marriage in proprietary terms.

English matrimonial law evolved out of a bridewealth system. In medieval times, children could be "espoused" as early as 7 years of age, with the Christian church sanctifying the commitment (Helmholtz, 1974; Ingram, 1987; Swinburne, 1686/1985). Bidirectional property transfers were contracted at the espousal stage, and if one family opted out of the planned marriage, the other family had a grievance; although the church did not deem the marriage complete until sexual consummation after puberty, an aggrieved family could launch ecclesiastical court proceedings to recover damages. Disputes between two men who both claimed marital entitlements to the same woman constituted another frequent cause for legal actions, especially as legal powers over children, serfs, and other persons were eroded and the authority to arrange marriages became ambiguous.¹³ Clearly, any recalcitrant bride who eloped with the man of her own choice before her espoused marriage was consummated could cause severe repercussions for her father, who was likely to launch proceedings against his daughter's "abductor." In 1285, the abduction of an heiress for the purpose of marriage was furthermore criminalized, and although the abductor could legalize his marriage in the eyes of the church by paying the marriage price, he might still be imprisoned for two years for his criminal violation of the father's right to bestow his daughter where he pleased; an abductor who could not or would not pay the marriage price was penalized with life in prison. Subsequent legislation stripped eloping daughters of all claims against their families' property. During the reign of Elizabeth I (1558-1603), abducting an heiress was a capital crime.

These legal entitlements of fathers and husbands over women within our own legal

traditions are similar to provisions in stratified patrilineal societies around the world. That men should endeavor to control the sexuality of female relatives, as well as that of wives, follows from the treatment of female reproductive capacity as a valued commodity that men can own and exchange. Chaste sisters and daughters make marketable wives.

CONCLUDING REMARKS

This chapter describes various manifestations of male sexual proprietariness in different societies, but we do not pretend to have reviewed the subject exhaustively or systematically, still less to have accounted for cross-cultural diversity. In some societies, nothing is more shameful than to be cuckolded, and a violent reaction is laudable; in others, jealousy is shameful, and its violent expression is criminal. One would like to better describe and understand such diversity, but the ethnographic record is almost devoid of standardized cross-cultural data--indeed of any sort of quantification--with the result that analyses of the interrelationships among adultery rates, paternal investment, spousal violence, claustration practices, and other relevant variables are not presently possible.

We have stressed the cross-culturally general both because that is the level at which species-typical psychological mechanisms must be discerned and characterized and because the social scientific literature is riddled with exaggerated claims of cultural diversity. Many anthropologists have asserted that there are societies in which jealousy is nonexistent and sexual activity is constrained only by incest prohibitions (e.g., Ford & Beach, 1951; Mead, 1931; Stephens, 1963; Whyte, 1978), but the ethnographies cited in support of these claims explicitly contradict them (Daly, Wilson, & Weghorst, 1982). On the one hand, claustration, inheritance, and other practices relevant to the arguments in this chapter are diversely regulated and institutionalized, and the historical and ecological reasons for such variation are worthy subjects for research; on the other hand, double standards with respect to adultery are apparently universal, the many attempts to document a counterexample notwithstanding (Daly, Wilson, & Weghorst, 1982). On the one hand, rates of violence inspired by sexual rivalry and infidelity vary by orders of magnitude between times and places; on the other hand, male sexual proprietariness is the predominant motivational factor in spousal homicides wherever a sample of cases has been collected (Daly & Wilson, 1988b). Cultural diversity exists, to be sure, but its rationales will not be understood until the cross-culturally general human nature that enables it is elucidated.

ACKNOWLEDGMENTS

Our research on homicide has been supported by the Harry Frank Guggenheim Foundation, the North Atlantic Treaty Organization, the Natural Sciences & Engineering Research Council of Canada, and the Social Sciences & Humanities Research Council of Canada. This chapter was completed while the authors were Fellows of the Center for Advanced Study in the Behavioral Sciences with financial support from the John D. & Catherine T. MacArthur Foundation, the National Science Foundation #BNS87-008, the Harry Frank Guggenheim Foundation, and the Gordon P. Getty Trust, and while M. Daly was a Fellow of the John Simon Guggenheim

Foundation. We wish to thank Jerome Barkow, Leda Cosmides, John Tooby, and Anders Pape Møller for their critical comments.

NOTES

¹ There are animals in which postzygotic care is biparental and both sexes are susceptible to being mistaken about the identity of their own offspring, such as the many species of birds subject to intraspecific brood parasitism (e.g., Yom-Tov, 1980). In such cases, parasitic eggs impose a cost on both partners, and both sexes have evolved tactics for reducing the risk of misdirected parental investment (e.g., Brown, 1984). But though both parents incur "cuckoldry" risk, there is still likely to be the usual sexual asymmetry: Alien insemination of the female imposes a parental burden on the male whereas the fruits of his infidelities are less likely to end up in her nest (but see Gowaty & Karlin, 1984).

² It is interesting to note that whereas neighbors whose own mates were incubating took advantage of the detentions, those neighboring males who themselves had a fertile mate exhibited courtship of the temporary "widows," apparently in response to the social disturbance and intrusions by other males inspired by the detained males' absence.

³ It seems likely that the alpha male's paternity advantage will prove larger than this 18-15 (55%) split once more data are in, since alphas enjoyed a larger 36-14 (72%) advantage over betas in polygynandrous groups, despite the seemingly greater difficulty that an alpha would incur in excluding the beta male from access to two females simultaneously. However, even a 72% paternity advantage would barely pay a monogamous male's cost of taking on a beta as "helper."

⁴ Rather than ask why some animals, including people "conceal" ovulation, we might better ask why some advertise it at a distance. The principal effect, and hence the probable function, of dramatic estrous swellings in animals such as chimpanzees and baboons is apparently the incitation of male-male competition. Conspicuous advertisements of fertilizability seem to be more characteristic of primates than of pair-forming species (as is also true of birds; Montgomerie & Thornhill, 1989).

⁵ If sperm counts fluctuate as an adaptive response to statistical predictors of cuckoldry risk, we would expect men's sexual interest in their mates to do likewise. Observing one's mate interacting with other males, especially sexual, may be even more arousing. Drakes who witness forced copulations of their mates commonly follow suit, thereby getting their own ejaculates into the competition (McKinney, Derrickson, & Mineau, 1983). Finkelhor and Yllo (1985) describe many cases of marital rape, a remarkable proportion of which followed closely upon the wife's having interacted flirtatiously with a man other than her husband (see also Russell, 1982). Whether the sexual arousal and/or insistence of human males is affected by cues of possible cuckoldry warrants investigation.

⁶ Discussions of ancestral human mating systems and their relevance to sex differences have typically stressed effective polygyny and its consequences (e.g., Trivers, 1972; Daly & Wilson, 1983; Alexander, 1979). But two animal species can have identical degrees of effective polygyny even though the females of one species are strictly monogamous in their behavior and inclinations while the females of the other species mate polyandrously. As noted above, the sexual psychologies of men and women apparently reflect an ancestral mating system in which neither sex was strictly monogamous, but males were the more polygamous sex.

⁷ This association between status and claustration may strike readers as paradoxical, both because it implies that women in some ways lose rights and privileges as they rise in status and because it is the women with the poorest mates who would seem to have the greatest incentive to stray. One interpretation is that men simply guard and constrain women as much as they can afford; moreover, there is at least some truth to the claim that guards are there to "protect" women in that highly stratified societies contain many disenfranchised, and therefore dangerous, men (Dickemann, 1979). Furthermore, the wealthiest men have

the most to lose, in misdirected inheritance, from an undetected cuckoldry (Dickemann, 1981).

⁸ We have used homicide archives as a sort of a assay of interpersonal conflict in various analyses of the determinants of the variable intensity of such conflict (Daly & Wilson, 1988a, 1988b). Homicides are extreme, of course, but for that very reason they are surely valid manifestations of conflict and moreover are relatively free of reporting biases. We do not assume that killing is adaptive in its own right. Rather, homicide risk varies as a result of variations in the strength of human passions whose more typical and less extreme consequences are often clearly utilitarian, and this latter variation has an adaptive logic.

⁹ Ideally, such a study should correlate paternal solicitude with resemblance within a sample of father-child pairs confirmed by DNA fingerprinting. Otherwise, a correlation might be obtained because weak resemblance actually reflects nonpaternity and the fathers might be responding to other correlated cues thereof (e.g., detected infidelity) rather than to non-resemblance per se.

¹⁰ About 4% of human societies have institutionalized polyandrous marriage, an arrangement that seems to work only--and even then with some tension--when the cohusbands are brothers (Hiatt, 1980; Levine, 1987; Tambiah, 1966).

¹¹ It may strike the reader that such exchanges can go either way, with dowry the mirror image of brideprice. But it is not. Dowries (which are much rarer than brideprices) usually remain with the bride for the benefit of her children (Goody & Tambiah, 1973; van den Berghe, 1979), whereas brideprice is typically a direct payment to the bride's parents without obligation that the monies will be deployed for the newlyweds or their progeny.

¹² Women who are already "taken" are often marked accordingly, so an adulterer can hardly plead ignorance. In a cross-cultural study, Low (1979) showed that women are much more often obliged to display marital status markers such as wedding rings than are men; modes of address (e.g., "Mrs." versus "Miss") and the assumption of husbands' lineage names also mark women as to ownership.

¹³ Though bigamy had long been illegal, English marriages were not registered by a central authority until 1753 (Trumbach, 1984).

REFERENCES

- Alatalo, R.V., Gottlander K., & Lundberg A. (1987). Extra-pair copulations and mate-guarding in the polyterritorial pied flycatcher, *Ficedula hypoleuca*. *Behaviour*, 101, 139-155.
- Alexander, R. D. (1974). The evolution of social behavior. *Annual Review of Ecology & Systematics*, 5, 325-383.
- Alexander, R. D. (1979). *Darwinism and human affairs*. Seattle, WA: University of Washington Press.
- Alexander, R. D. (1987). *The biology of moral systems*. Hawthorne, NY: Aldine de Gruyter.
- Alexander, R. D., & Noonan, K. M (1979). Concealment of ovulation, parental care, and human social evolution. In N. Chagnon & W. Irons (Eds.), *Evolutionary biology and human social behavior* (p. 436-453). North Scituate, MA: Duxbury.
- Arnold, M. S. (Trans. & Ed.) (1985). *Select cases of trespass from the King's Courts, 1307-1399*. London: Selden Society.
- Atkins, S., & Hoggett, B. (1984). *Women and the law*. Oxford: Blackwell.
- Attenborough, F. L. (1922/1963). *The laws of the earliest English kings*. New York. Russell & Russell.
- Backhouse, C. (1986). The tort of seduction: Fathers and daughters in nineteenth century Canada. *Dalhousie Law Journal*, 10, 45-80.
- Baker, R. R., & Bellis, M. A. (1989). Number of sperm in human ejaculates varies in accordance with sperm competition theory. *Animal Behaviour*, 37, 867-869.
- Bateman, A. J. (1948). Intra-sexual selection in *Drosophila*. *Heredity*, 2, 349-368.

-
- Becker, G. S., Landes, E. M., & Michael, R. T. (1977). An economic analysis of marital instability. *Journal of political Economy*, 85, 1141-1187.
- Beckerman, J. S. (1981). Adding insult to *Iniuria*. Affronts to honor and the origins of trespass. In M.S. Arnold, T.A. Green, S.A. Scully, & S.D. White (Eds.), *On the laws and customs of England*. Chapel Hill, NC: University of North Carolina Press.
- Bedford, J. M. (1977). Evolution of the scrotum: The epididymis as the prime mover? In J. H. Calaby & C. H. Tyndale-Biscoe (Eds.), *Reproduction and evolution* (pp. 171-182). Canberra: Australian Academy of Science.
- Beecher, M. D., & Beecher, I. M. (1979). Sociobiology of bank swallows: Reproductive strategy of the male. *Science*, 205, 1282-1285.
- Bessinger, S. R., & Snyder, N.F.R. (1987) Mate desertion in the snail kite. *Animal Behaviour*, 35, 477-487.
- Benshoof, L., & Thornhill, R. (1979). The evolution of monogamy and concealed ovulation in humans. *Journal of social and Biological Structures*, 2, 95-106.
- Betzig, L. L. (1986). *Depotism and differential reproduction: A Darwinian view of history*. Hawthorne, NY: Aldine de Gruyter.
- Birkhead, T. R. (1988). Behavioral aspects of sperm competition in birds. *Advances in the study of Behavior*, 18, 35-72.
- Birkhead, T. R., Atkin, L., & Møller, A. P. (1987). Copulation behaviour of birds. *Behaviour*, 101, 101-138.
- Bjorklund, M., & Westman, B. (1983). Extra-pair copulations in the pied flycatcher, *Ficedula hypoleuca*: A removal experiment. *Behavioral Ecology & Sociobiology*, 13, 271-275.
- Bjorklund, M., & Westman, B. (1986). Mate-guarding in the great tit: Tactics of a territorial forest-living species. *Ornis Scandinavica*, 17, 99-105.
- Blackstone, W. (1803). *Commentaries on the laws of England* (St. G. Tucker, Ed.). Philadelphia, PA: William Young Birch & Abraham Small.
- Borgerhoff Mulder, M. (1988). Kipigis bridewealth payments. In L. Betzig, M. Borgerhoff Mulder, & P. Turke (Eds.), *Human reproductive behavior*. Cambridge: Cambridge University Press
- Boserup, E. (1970). *Woman's role in economic development*. New York: St. Martin's Press.
- Bradley, K. R. (1984). *Slaves and masters in the Roman Empire. A study in social control*. Collection Latomus. (Vol. 185). Bruxelles: Latomus Revue d'Études Latines.
- Brett, P. (1955). Consortium and servitium: A history and some proposals. *Australian Law Journal*, 29, 321-328, 389-397, 428-434.
- Bringle, R. G., & Buunk, B. (1985). Jealousy and social behavior: A review of person, relationship, and situational determinants. *Review of Personality and Social Psychology*, 6, 241- 264.
- Bringle, R. G., & Buunk, B. (1986). Examining the causes and consequences of jealousy: Some recent findings and issues. In R. Gilmour & S. Duck (Eds.), *The emerging field of personal relationships* (p. 225-240) Hillsdale, NJ: Erlbaum.
- Brown, C.R. (1984). Laying eggs in a neighbors nest: Benefit and cost of colonial nesting in swallows. *Science*, 224, 518-519.
- Brownmiller, S. (1975). *Against our will*. New York: Simon & Schuster.
- Burgess, A. W., & Holmstrom, L. L. (1974). *Rape, crisis and recovery*. Bowie, MD: Brady.
- Burke, T., Davies, N.B., Bruford, M.W., & Hatchwell, B.J. (1989). Parental care and mating behaviour of polyandrous dunnocks *Prunella modularis* related to paternity by DNA fingerprinting. *Nature*, 338, 249-251.
- Burley, N. (1979). The evolution of the concealment of ovulation. *American Naturalist*, 114, 835-858.
- Busnot, F. D. (1715). *The history of the reign of Muley Ismael, the present king of Morocco, Fez, Tafilet, Sous, &c.* (Trans.) London: A. Bell. (Original work published 1714.)

-
- Buss, D.M. (1988). From vigilance to violence: Tactics of mate retention in American undergraduates. *Ethology & Sociobiology*, 9, 291-317.
- Buss, D. M. (1989). Conflict between the sexes: Strategic interference and the evocation of anger and upset. *Journal of Personality & Social Psychology*, 56, 735-747.
- Buunk, B. (1981). Jealousy in sexually open marriages. *Alternative Lifestyles*, 4, 357-372.
- Buunk, B. (1982a). Anticipated sexual jealousy: Its relationship to self-esteem, dependency and reciprocity. *Personality & Social Psychology Bulletin*, 8, 310-316.
- Buunk, B. (1982b). Strategies of jealousy: Styles of coping with extramarital involvement of the spouse. *Family Relations*, 31, 13-18.
- Buunk, B. (1986). Husbands jealousy. In R.A. Lewis & R.E. Salt (Eds.), *Men in families* (p. 97-114). Beverly Hills, CA: Sage.
- Buunk, B., & Bringle, R.G. (1987). Jealousy in love relationships. In D. Perlman & S. Duck (Eds.), *Intimate relationships* (p. 123-147). Beverly Hills, CA: Sage.
- Buunk, B., & Hupka, R.B. (1987). Cross-cultural differences in the elicitation of sexual jealousy. *Journal of sex Research*, 23, 12-22.
- Carlson, A., Hillstrom, L., & Moreno, J. (1985). Mate guarding in the wheatear *Oenanthe oenanthe*. *Ornis Scandinavica*, 16, 113-120.
- Chappell v. Redding, 313 S.E.2d 239 (N.C. App. 1984).
- Daly, M. (1978). The cost of mating. *American Naturalist*, 112, 771-774.
- Daly, M. & Wilson, M. (1982). Whom are newborn babies said to resemble? *Ethology & Sociobiology*, 3, 69-78.
- Daly, M., & Wilson, M. (1983). *Sex, evolution and behavior*. Boston, MA: Wadsworth.
- Daly, M., & Wilson, M. (1985). Child abuse and other risks of not living with both parents. *Ethology & Sociobiology*, 6, 197-210.
- Daly, M., & Wilson, M. (1987). The Darwinian psychology of discriminative parental solicitude. *Nebraska Symposium on Motivation*, 35, 91-144.
- Daly, M., & Wilson, M. (1988a). Evolutionary social psychology and family homicide. *Science*, 242, 519-524.
- Daly, M., & Wilson, M. (1988b). *Homicide*. Hawthorne, NY: Aldine de Gruyter.
- Daly, M., & Wilson, M. (1990). Killing the competition. *Human Nature*, 1, 83-109.
- Daly, M., Wilson, M., & Weghorst, S. J. (1982). Male sexual jealousy. *Ethology & Sociobiology*, 3, 11-27.
- Daniels, D. (1983). The evolution of concealed ovulation and self-deception. *Ethology & Sociobiology*, 4, 69-87.
- Davies, N. B. (1983). Polyandry, cloaca-pecking and sperm competition in dunnocks. *Nature*, 302, 334-336.
- Davies, N. B. (1985). Cooperation and conflict among dunnocks, *Prunella modularis*, in a variable mating system. *Animal Behaviour*, 33, 628-648.
- Davies, N. B. (1986). Reproductive success of dunnocks, *Prunelia modularis*, in a variable mating system. I. Factors influencing provisioning rate, nestling weight and fledging success. *Journal of Animal Ecology*, 55, 123-138.
- Davies, N. B. (1989). The dunnock: Cooperation and conflict among males and females in a variable mating system. In P. Stacey & W. Koenig (Eds.), *Cooperative breeding in birds* (pp. 457-485). Cambridge: Cambridge University Press.
- Davies, N. B., & Houston, A. I. (1986). Reproductive success of dunnocks, *Prunelia modularis*, in a variable mating system. II. Conflicts of interest among breeding adults. *Journal of Animal Ecology*, 55, 139-154.
- Davies, N. B., & Lundberg, A. (1984). Food distribution and a variable mating system in the dunnock, *Prunelia modularis*. *Journal of Animal Ecology*, 53, 895-912.
- Davis, D. B. (1966). *The problem of slavery in Western culture*. Ithaca, NY: Cornell University Press.

-
- Dickemann, M. (1979). The ecology of mating systems in hypergynous dowry societies. *Social Science Information*, 18, 163-195.
- Dickemann, M. (1981). Paternal confidence and dowry competition: A biocultural analysis of purdah. In R.D. Alexander & D.W. Tinkle (Eds.), *Natural selection and social behavior* (pp. 417-438). New York: Chiron Press.
- Dobash, R. E., & Dobash, R. P. (1979). *Violence against wives: A case against the patriarchy*. New York: Free Press.
- Dobash, R. P., & Dobash, R. E. (1981). Community response to violence against wives: Charivari, abstract justice and patriarchy. *Social Problems*, 28, 563-581.
- Edwards, J.L.I.L. (1954). Provocation and the reasonable man: Another view, *Criminal Law Review*, 1954, 898-906.
- Edwards, S. (1985). Male violence against women: Excusatory and explanatory ideologies in law and society, In S. Edwards (Ed.), *Gender, sex and the law* (pp. 183-213). London: Croom Helm.
- Edwards, S.S.M. (1981). *Female sexuality and the law*. Oxford: Martin Robertson.
- Finkelhor, D., & Yllo, K. (1985). *License to rape: Sexual abuse of wives*. New York: Holt, Rinehart & Winston.
- Finley, M. I. (1980). *Ancient slavery and modern ideology*. London: Chatto & Windus.
- Flinn, M. V. (1981). Uterine vs. agnatic kinship variability and associated cousin marriage preferences. In R. D. Alexander & D. W. Tinkle (Eds.), *Natural selection and social behavior* (pp. 439-415). New York: Chiron Press.
- Flinn, M. V. (1988a). Mate guarding in a caribbean village. *Ethology & Sociobiology*, 9,1-28.
- Flinn, M. V. (1988b). Stepparent and genetic parent offspring relationships in a Caribbean village. *Ethology & Sociobiology*, 9, 335-369.
- Flinn, M. V., & Low, B. S. (1986). Resource distribution, social competition, and mating patterns in human societies. In D. I. Rubenstein & R. W. Wrangham (Eds.), *Ecological aspects of social evolution: Birds and mammals* (pp. 217-243). Princeton, NJ: Princeton University Press.
- Ford, C. S., & Beach, F. A. (1951). *Patterns of sexual behavior*. New York: Harper & Row.
- Francis, J. L. (1977). Toward the management of heterosexual jealousy. *Journal of Marriage & Family Counseling*, 3, 61-69.
- Frederick, P. C. (1987). Extrapair copulations in the mating system of white ibis (*Eudocimus albus*). *Behaviour*, 100, 170-201.
- Fujioka, M., & Yamagishi, S. (1981). Extramarital and pair copulations in the cattle egret. *Auk*, 98,134-144.
- Gaulin, S.J.C., & Schlegel, A. (1980). Paternal confidence and paternal investment: A cross-cultural test of a sociobiological hypothesis. *Ethology & Sociobiology*, 1, 301-309.
- Goody, J., & Tambiah, S. J. (Eds.). (1973). *Bridewealth and dowry*. Cambridge: Cambridge University Press.
- Gowaty, P. A., & Karlin, A. A (1984). Multiple maternity and paternity in single broods of apparently monogamous eastern bluebirds (*Sialia sialis*). *Behavioral Ecology & Sociobiology*, 15, 91-95.
- Grossbard-Schechtman, A. (1984). A theory of allocation of time in markets for labour and marriage. *The Economic Journal*, 94, 863-882.
- Hadjiyannakis, C. (1969). *Les tendances contemporaines concernant la répression du délit d'adultère*. Thessalonika: Association Internationale du Droit Pénal.
- Hamilton, W. D. (1964). The genetical evolution of social behaviour. I and II. *Journal of Theoretical Biology*, 7, 1-52,
- Hansen, G. L. (1985). Perceived threats and marital jealousy. *Social Psychology Quarterly*, 48, 262-268.
- Harcourt, A. H., Harvey, P. H., Larson, S. G., & Short, R. V. (1981). Testis weight, body weight and breeding system in primates. *Nature*, 293, 55-57.

-
- Hartung, J. (1985). Matrilineal inheritance: New theory and analysis. *Behavioral and Brain Sciences*, 8, 661-688.
- Hatch, S. A. (1987). Copulation and mate guarding in the northern fulmar. *Auk*, 104, 450-461.
- Hatchwell, B. J. (1988). Intraspecific variation in extra-pair copulation and mate defence in common guillemots *Uria aalge*. *Behaviour*, 107, 157-185.
- Helmholtz, R. H. (1974). *Marriage litigation in medieval England*. London: Cambridge University Press.
- Hiatt, L. R. (1980). Polyandry in Sri Lanka: A test case for parental investment theory. *Man*, 15, 583-602.
- Hicks, E. K. (1986). *Infibulation: Status through mutilation*. Alblasterdam: Offsetdrukkerij Kanter B. V.
- Holmes, W. G., & Sherman, P. W. (1982). The ontogeny of kin recognition in two species of ground squirrels. *American Zoologist*, 22, 491-517.
- Hosken, F. P. (1979). *The Hosken report. Genital and sexual mutilation of females* (2d rev. ed.). Lexington, MA: Women's International Network News.
- Houston, A. I., & Davies, N. B. (1985). The evolution of cooperation and life history in dunnocks, *Prunella modularis*. In R. Sibly & R. H. Smith (Eds.), *Behavioural ecology: The ecological consequences of adaptive behavior* (pp. 471-487). Oxford: Blackwell.
- Hrdy, S. B. (1981). *The woman that never evolved*. Cambridge, MA: Harvard University Press.
- Hupka, R. B., Buunk, B., Falus, G., Fulgosi, A., Ortega, E., Swain, R., & Tarabrina, N. V. (1985). Romantic jealousy and romantic envy. *Journal of Cross-Cultural Psychology*, 16, 423-446.
- Ingram, M. (1987). *Church courts, sex and marriage in England, 1570-1640*. Cambridge: Cambridge University Press.
- Kanekar, S., Kolsawalla, M. B., & D'Souza, A. (1981). Attribution of responsibility to a victim of rape. *British Journal of social Psychology*, 20, 165-170.
- Kaplan, H., & Hill, K. (1985). Hunting ability and reproductive success among male Ache foragers: Preliminary results. *Current Anthropology*, 26, 131-133.
- Karkaria, B. J. (1972, June 18). Raped women of Bangladesh, *Illustrated Weekly of India*, pp. 14-17.
- Karras, R. M. (1988). *Slavery and society in medieval Scandinavia*. New Haven: Yale University Press.
- Kenagy, G. J., & Trombulak, S. C. (1986). Size and function of mammalian testes in relation to body size. *Journal of Mammalogy*, 67, 1-22.
- Knodel, J., & Lynch, K. A. (1985). The decline of remarriage: Evidence from German village populations in the eighteenth and nineteenth centuries. *Journal of Family History*, 10, 34-60.
- Kurland, J. A. (1979). Paternity, mother's brother and human sociality. In N. A. Chagnon & W. Irons (Eds.), *Evolutionary biology and human social behavior* (pp. 145-180). North Scituate, MA: Duxbury Press.
- Law Reform Commission of Ireland (1978). *The law relating to criminal conversation and the enticement and harbouring of a spouse. Working paper no. 5*. Dublin, Ireland: Law Reform Commission of Ireland.
- Law Reform Commission of Ireland (1979a). *The law relating to seduction and the enticement and harbouring of a child. Working Paper No. 6*. Dublin, Ireland: Law Reform Commission of Ireland.
- Law Reform Commission of Ireland (1979b). *The law relating to loss of consortium and loss of services of a child. Working paper No. 7*. Dublin, Ireland: Law Reform Commission of Ireland.
- Levine, N. E. (1987). Fathers and sons: Kinship value and validation in Tibetan polyandry. *Man*, 22, 267-286.
- Lévi-Strauss, C. (1969). *The elementary structures of kinship*. Boston, MA: Beacon Press.

-
- Lightcap, J. L., Kurland, J. A., & Burgess, R. L. (1982). Child abuse: A test of some predictions from evolutionary theory. *Ethology & Sociobiology*, 3, 61-67.
- Lippman, J. (1930). The breakdown of consortium. *Columbia Law Review*, 30, 651-673.
- Low, B. S. (1979). Sexual selection and human ornamentation. In N. A. Chagnon & W. Irons (Eds.), *Evolutionary biology and human social behavior* (pp. 463-487). North Scituate, MA: Duxbury Press.
- Lumpkin, S. (1983). Female manipulation of male avoidance of cuckoldry behavior in the ring dove. In S. K. Wasser (Ed.), *Social behavior of female vertebrates* (pp. 91-112). New York: Academic Press.
- Mathes, E. W. (1986). Jealousy and romantic love: A longitudinal study. *Psychological Reports*, 58, 885-886.
- Mathes, E. W., Adams, H. E., & Davies, R. M. (1985). Jealousy: Loss of relationship rewards, loss of self-esteem, depression, anxiety, and anger. *Journal of Personality & Social Psychology*, 48, 1552-1561.
- Maynard Smith, J. (1977). Parental investment: A prospective analysis. *Animal Behaviour*, 25, 1-9.
- McCahill, T. W., Meyer, L. C., & Fischman, A. M. (1979). *The aftermath of rape*. Lexington, MA: Lexington Books.
- McKinney, F., Derrickson, S. R., & Mineau, P. (1983). Forced copulation in waterfowl. *Behaviour*, 86, 250-294.
- Mead, M. (1931). Jealousy: Primitive and civilised. In S. D. Schmalhausen & V. F. Calverton (Eds.), *Woman's coming of age: A symposium* (pp. 35-48). New York: Liveright.
- Menefee, S. P. (1981). *Wives for sale*. Oxford: Basil Blackwell.
- Miller, W. R., Williams, A. M., & Bernstein, M. H. (1982). The effects of rape on marital and sexual adjustment. *American Journal of Family Therapy*, 10, 51-58.
- Møller, A. P. (1985). Mixed reproductive strategy and mate guarding in a semi-colonial passerine, the swallow *Hirundo rustica*. *Behavioral Ecology & Sociobiology*, 17, 401-408.
- Møller, A. P. (1987a). Behavioral aspects of sperm competition in swallows (*Hirundo rustica*). *Behaviour*, 100, 92-104.
- Møller, A. P. (1987b). Extent and duration of mate guarding in swallow *Hirundo rustica*. *Ornis Scandinavica*, 18, 95-100.
- Møller, A. P. (1987c). Mate guarding in the swallow *Hirundo rustica*. *Behavioral Ecology & Sociobiology*, 21, 119-123.
- Møller, A. P. (1987d). Advantages and disadvantages of coloniality in the swallow, *Hirundo rustica*. *Animal Behaviour*, 35, 819-832.
- Møller, A. P. (1988a). Ejaculate quality, testes size and sperm competition in primates. *Journal of Human Evolution*, 17, 479-488.
- Møller, A. P. (1988b). Female choice selects for male sexual tail ornaments in the monogamous swallow. *Nature*, 332, 640-642.
- Møller, A. P. (1988c). Paternity and paternal care in the swallow, *Hirundo rustica*. *Animal Behaviour*, 36, 996-1005.
- Møller, A. P. (1988d). Testes size, ejaculate quality, and sperm competition in birds. *Biological Journal of the Linnean Society*, 33, 273-283.
- Montgomerie, R. D. (Ed.). (1988). Symposium 3: Mate guarding. *Acta XIX Congressus Internationalis Ornithologici* (Vol. 1)(pp. 409-453) Ottawa: University of Ottawa Press.
- Montgomerie, R., & Thornhill, R. (1989). Fertility advertisement in birds: A means of inciting male-male competition? *Ethology*, 81, 209-220.
- Morton, E. S. (1987). Variation in mate guarding intensity by male purple martins. *Behaviour*, 101, 211-224.
- Mowat, R. R. (1966). *Morbid jealousy and murder*. London: Tavistock.
- Murdock, G. P. (1967). *Ethnographic atlas*. Pittsburgh: University of Pittsburgh Press.

-
- Paige, K. E., & Paige, J. M. (1981). *The politics of reproductive ritual*. Berkeley: University of California Press.
- Patterson, O. (1982). *Slavery and social death*. Cambridge, MA: Harvard University Press.
- Pfeiffer, S. M., & Wong, P.T.P. (1989). Multidimensional jealousy. *Journal of Social and Personal Relationships*, 6, 181-196.
- Quaife, G. R. (1979). *Wanton wenches and wayward wives*. London: Croom Helm.
- Ridley, M. W., & Hill, D. A. (1987). Social organization in the pheasant (*Phasianus colchicus*): Harem formation, mate selection and the role of mate guarding. *Journal of Zoology*, 211, 619-630.
- Rodkin, L. I., Hunt E. J., & Cowan, S. D. (1982). A men's support group for significant others of rape victims. *Journal of Marital & Family Therapy*, 8, 91-97.
- Røskaft, E. (1983). Male promiscuity and female adultery by the rook *Corvus frugilegus*. *Ornis Scandinavica*, 14, 175-179.
- Russell, D.E.H. (1982). *Rape in marriage*. New York: Macmillan.
- Ryan, W. (1971). *Blaming the victim*. New York: Pantheon.
- Safilios-Rothschild, C. (1969). 'Honor' crimes in contemporary Greece. *British Journal of Sociology*, 20, 205-218.
- Sahlins, M. D. (1976). *The use and abuse of biology*. Ann Arbor: University of Michigan Press.
- Salovey, P., & Rodin, J. (1986). The differentiation of social-comparison jealousy and romantic jealousy. *Journal of Personality and Social Psychology*, 50, 1100-1112.
- Sass, S. L. (1977). The defense of multiple access (*exceptio plurium concubentium*) in paternal suits: A comparative analysis. *Tulane Law Review*, 51, 468-509.
- Sawyer, R. (1986). *Slavery in the twentieth century*. London: Routledge & Kegan Paul.
- Sherman, P. W., & Morton, M. L. (1988). Extra-pair fertilizations in mountain white-crow sparrows. *Behavioral Ecology & Sociobiology*, 22, 413-420.
- Shettel-Neuber, J., Bryson, J. B., & Young, L. E. (1978). Physical attractiveness of the "other person" and jealousy. *Personality and Social Psychology Bulletin*, 4, 612-615.
- Short, R. V. (1977). Sexual selection and the descent of man. In J. H. Calaby & C. H. Tyndale-Biscoe (Eds.), *Reproduction and evolution* (pp. 3-19). Canberra: Australian Academy of Sciences.
- Sinclair, M.B.W. (1987). Seduction and the myth of the ideal woman. *Law & Inequality*, 3, 33-102.
- Smith, R. E., Keating, J. P., Hester, R. K., & Mitchell, H. E. (1976). Role and justice considerations in the attribution of responsibility to a rape victim. *Journal of Research in Personality*, 10, 346-357.
- Smith, R. L., (Ed). (1984a). *Sperm competition and the evolution of animal mating system*. Orlando, FL: Academic Press.
- Smith R. L. (1984b). Human sperm competition. In R. L. Smith (Ed.), *Sperm competition and the evolution of animal mating systems* (pp. 601-659). Orlando, FL: Academic Press.
- Smith, S. M. (1988). Extra-pair copulations in black-capped chickadees: The role of the female. *Behaviour*, 107, 15-23.
- Sorrentino, R. M., & Boutilier, R. G. (1974). Evaluation of a victim as a function of fate similarity/dissimilarity. *Journal of Experimental Social Psychology*, 10, 84-93.
- Stephens, W. N. (1963). *The family in cross-cultural perspective*. New York: Holt, Rinehart & Winston.
- Stewart, R. A., & Beatty, M. J. (1985). Jealousy and self-esteem. *Perceptual & Motor Skills*, 60, 153-154.
- Strassmann, B. I. (1981). Sexual selection, parental care, and concealed ovulation in humans. *Ethology & Sociobiology*, 2, 31-40.
- Strathern, M. (1984). Subject or object? Women and the circulation of valuables in Highland New Guinea. In R. Hirschom (Ed.), *Women and property--women as property* (pp. 158-175). London: Croom Helm.

-
- Swinburne, H. (1686/1985). *A treatise of spousals, or matrimonial contracts*. London: Garland.
- Symons, D. (1979). *The evolution of human sexuality*. Oxford: Oxford University Press.
- Tambiah, S. J. (1966). Polyandry in Ceylon--with special reference to the Laggala region. In C. von Fürer-Haimendorf (Ed.), *Caste and kin in Nepal, India and Ceylon: Anthropological studies in Hindu-Buddhist contact zones* (pp. 264-358). New York: Asia Publishing House.
- Teismann, M. W., & Mosher, D. L. (1978). Jealous conflict in dating couples. *Psychological Reports*, 42, 1211-1216.
- Thornhill, R., & Alcock, J. (1983). *The evolution of insect mating systems*. Cambridge, MA: Harvard University Press.
- Thornhill, R., & Thornhill, N. W. (1983). Human rape: An evolutionary analysis. *Ethology & Sociobiology*, 4, 137-183.
- Thornhill, R., & Thornhill, N. W. (1987). Human rape: The strengths of the evolutionary perspective. In C. Crawford, M. Smith, & C. Krebs (Eds.), *Psychology and socio-biology* (pp. 269-291). Hillsdale, NJ: Erlbaum.
- Thornhill, R., & Thornhill, N. W. (1989). The evolution of psychological pain. In R. J. Bell & N.J. Bell (Eds.), *Sociobiology and the Social Sciences* (pp. 73-103). Lubbock, TX: Texas Tech University Press.
- Tooby, J., & DeVore, I. (1987). The reconstruction of hominid behavioral evolution through strategic modeling. In W. G. Kinzey, (Ed.), *The evolution of human behavior: Primate models* (pp. 183-237). Albany, NY: State University of New York Press.
- Trivers, R. L. (1972). Parental investment and sexual selection. In B. Campbell (Ed.), *Sexual selection and the descent of man 1871-1971* (pp. 136-179). Chicago: Aldine.
- Trivers, R. (1985). *Social evolution*. Menlo Park, CA: Benjamin/Cummings.
- Trumbach, R. (1984). *Marriage, sex, and the family in England, 1660-1800*. New York: Garland.
- Turke, P. W. (1984). Effects of ovulatory concealment and synchrony on protohominid mating systems and parental roles. *Ethology & Sociobiology*, 5, 33-44.
- Van den Bergh, P. L. (1979). *Human family systems*. New York: Elsevier.
- Voland, E. (1988). Differential infant and child mortality in evolutionary perspective: Data from late 17th to 19th century Ostfriesland (Germany). In L. Betzig, M. Borgerhoff Mulder, & P. Turke (Eds.), *Human reproductive behavior: A Darwinian perspective* (pp. 253-261). Cambridge: Cambridge University Press.
- Weis, K., & Borges, S. S. (1973). Victimology and rape: The case of the legitimate victim. *Issues in Criminology*, 8, 71-115.
- Westneat, D. F. (1987). Extra-pair copulations in a predominantly monogamous bird: Observations of behaviour. *Animal Behaviour*, 35, 865-876.
- White, G. L. (1981). A model of romantic jealousy. *Motivation & Emotion*, 5, 295-310.
- Whyte, M. K. (1978). *The status of woman in preindustrial societies*. Princeton, NJ: Princeton University Press.
- Wilson, M. (1987). Impacts of the uncertainty of paternity on family law. *University of Toronto Faculty of Law Review*, 45, 216-242.
- Wilson, M., & Daly, M. (1987). Risk of maltreatment of children living with stepparents. In R. J. Gelles & J. B. Lancaster (Eds.), *Child abuse and neglect: Biosocial dimensions* (pp. 215-232). Hawthorne, NY: Aldine de Gruyter.
- Wolf, A. P., & Huang, C. S. (1980). *Marriage and adoption in China, 1845-1945*. Stanford, CA: Stanford University Press.
- Yom-Tov, Y. (1980). Intraspecific nest parasitism in birds. *Biological Reviews*, 55, 93-108.