

THE NATURE OF AGGRESSION AND DOMINANCE SYSTEMS

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Introduction

Like many psychological constructs "aggression" is a term which has been poorly understood. This lack of understanding has produced numerous theories leading to a popular concept that aggression is a *drive*, which impels a person to commit acts of aggression without cause. Active physical exercise, for example, has often been designated as an ideal means of working off "aggressive instincts", as though individuals had a variable capacity of aggressive feelings that could become bottled up and burst forth at unexpected moments. This view always considers aggression as *negative*, and is part of the heritage of Christian morality that deems man is inherently sinful or evil.

Before putting this myth to rest, it is important to untangle the terms drive and instinct which are so often used interchangeably in the literature. Drives emanate from endogenous stimulation due to an underlying chemical change in the endocrine or metabolic system. Drives urge the organism to seek resolution from a heightened state of discomfort—common drive states are hunger and thirst. Distress ensuing from such internal stimulation leads to a general behavioral activation which increases until there is either a return to a chemical status quo or the organism becomes exhausted.

Instincts, on the other hand, are characterized by highly stereotypic, often species specific behaviors that are triggered by exogenous stimuli. A Greylag gosling follows the first moving organism it sees after birth. Excessive fear in the form of a threatening predator produces crouching, shivering, and huddling at one level, but can

and pair-bonding primates, males will not necessarily respond to such threats. Further, other triggers from an aggressive attack operate at a much lower threshold for males than females. Females are more likely to withdraw than fight. Even in the human, females are more inclined to use appeasement to reduce tension than to escalate it, both in verbal and non-verbal interactions (Frodi et al, 1977). However, both sexes in all mammals will become aggressive if provocation is severe enough, and life is threatened.

Type II. Intra-Species Aggression

It is in Type II aggression that a consistent pattern is found which separates males from females nearly exclusively. Here is included Moyer's categories of sexual and inter-male aggression.

Females do not exhibit aggression in sexual encounters, whereas this can be common in males of certain species like the macaque or Hamadryas baboon—though by no means universal to the primates. Gorillas who it is claimed have an inordinately low sex drive (Schaller, 1963) have never been observed to inflict pain on females during a sexual encounter. Sexual aggression in non-human primates appears to be the only form of aggression directed to females by males and in general this occurs when a female is in estrous.

Human males are immensely variable in their expression of aggression to females. Because aggressive acts directed towards females occur more often outside sexual acts than during them, it is difficult to categorize this behavior. Some have suggested that the price a woman might pay for continuous receptivity is the possibility of violence directed towards her at any time—but more likely male violence to the female is due to misplaced aggression from some other cause—real or imagined. The battered wife syndrome is much more widespread than is realized, and these wives commonly describe their husband's attitude as one of "showing who's boss." Dominance, therefore, appears to be involved and will be discussed in the next section.

The epitome of sexual violence in humans is the act of rape, curiously defined in this country by the female's *overt resistance* to

her sexual assailant. This definition holds in some states whether or not she is threatened with a knife or a gun. It is impossible to make any valid comparison between the human act of rape and non-human sexual violence. In the latter case physical abuse of the female more often occurs during or following the act than preceding it. Similarly, threats by use of lethal weapons are impossible. A further distinction is that the posture required of the non-human primate female during the sex act is complex in a species that adopts a ventral-dorsal mating position. Females who will not present to a male cannot be "raped."

Rape is also a culturally defined act. A review of the literature of crosscultural studies on rape revealed that most primitive societies have no word in their language for rape (Mack, 1979). It is difficult to determine whether this is because rape is nonexistent, or is considered to be part of acceptable sexual behavior.

The remaining category of intra-species aggression is *inter-male* aggression. Because of the importance of this form of aggression to human warfare and the formation of male dominance systems, it has received an enormous amount of attention by primatologists—unfortunately with a bias to believing that dominance stems only from violent encounters.

The number of aggressive acts between males increases in a variety of situations. A prime target is a strange male of the same species (Moyer, 1976). A stranger has not established a position in the existing male dominance hierarchy and is always a potential source of threat. A further constraint affecting a male's behavior is the number and availability of females in the troupe—but this may be less relevant than strangeness per se.

The reason for this conclusion is that inter-male aggression increases with any novel change in the environment, such as unusual movement, or coloration or posturing. Males are particularly disturbed by unusual visual stimulation, and this is strikingly evident when there is a gross change in locale. Southwick (1969) has reported that when a monkey colony is moved to a new location, outbreaks of inter-male fighting occur from 5-10 times more often than normal. Stability is clearly important to males because aggression can be minimal or absent in long standing colonies living in a constant environment.

The evidence from a number of studies in which whole primate

colonies were uprooted and relocated provides a great deal of insight to the problem raised by Moyer about how to define territorial aggression. As the males already have a fixed dominance system, why should this break down in a new location? The only valid explanation is that males have two kinds of territoriality, one that is extensive and includes all troupe members but no outsiders, and a second mini-territory where spacing and location of individual males is important. If this explanation holds at the human level, it would suggest that following slum rehousing, or transferring children to a new school building, escalation in male-female fighting would be expected to occur.

Two further major causes of inter-male aggression are a dwindling food supply and overcrowding. These two factors are related. When the food supply is abundant a certain degree of overcrowding is tolerated, though this reciprocal relationship ultimately breaks down. High overcrowding despite available food leads ultimately to outbreaks of fighting. Overcrowding is another factor in mini-territoriality because it leads to a destruction of spacing patterns.

Inter-male fighting is therefore triggered by three basis situations:

- 1) A strange male of the same species;
- 2) Insufficient territory for food gathering and spacing; and
- 3) Instability and unpredictability of the environment.

In human societies these factors are all clearly in evidence. Unique to man, however, is the capacity to delay immediate aggression and turn inter-male fighting into a predatory form. Premeditated murder and large scale warfare are planful and time-consuming operations seldom if ever found in other species. Man has an overwhelming capacity to delay the gratification of a goal for good or for ill, and to turn ideals and beliefs into excuses for aggressive action. The mechanisms are, however, the same. Only the rationalizations and time-course are different.

Aggression undoubtedly has survival value—but only up to a point. When aggression is directed outwards to a different species or to a real source of threat, its positive aspects are obvious. However, aggression directed towards members of one's own species—especially to one's own social group is more difficult to comprehend. It appears that a primary function of intra-specific aggression is

population control. This is evident from the rise in inter-male aggression when food is scarce and overcrowding occurs. However, it is somewhat more difficult to determine why males alone respond in this fashion and further to understand how inter-male aggression does not run out of control and leave only one or two males to service the females in the troupe. This is the case, for example, in lion prides.

With respect to these last two questions, it seems a universal principle in non-human mammals that population control with respect to available food supply must be the task of the males. Were this not the case, then it is possible that infanticide might become common and the population, growing ever more elderly, would cease to reproduce. Infanticide would also occur as a secondary consequence of inter-female aggression through the loss of a lactating mother.

The distinction between a species like the lion and the primate is a social distinction. Primates are social animals and live in troupes. Specific to primate social organization is the affiliation between females. Whatever the mechanism engendering female social behavior, males also share these affiliative instincts. The problem arises in the balance that must be achieved in the male between the need to participate in a social interaction and their tendencies to respond aggressively. This problem has been resolved biologically by the process of establishing dominance rituals.

Male Dominance Systems

Dominance, and the establishment of dominance hierarchies is a highly complex affair. A dominance order has as its basic function a major role in the reduction and containment of aggression, and secondly in the selection process for the male population. Rituals of dominance insure that a sufficient number of males contribute diversity to the gene pool. The same rituals permit the strongest and most agile to survive. Not only this, but studies reviewed by Jane Lancaster (1979) have shown that the dominance order in the primate is determined by adaptability. An alpha male is not necessarily the

strongest, but a mature and wily individual who adapts well to the behavior of others, maximizing gain in all encounters.

Further evidence from the Oregon Primate Research Center (Eaton, 1976) shows that dominant males are frequently the sons of "dominant" females. Dominant females are classified as those mothers who best protect the interest and well-being of their offspring from interference by other mothers. Protection at certain critical times for the male by his mother may allow the development of specific knowledge about participation in physical combat and confidence in these interactions.

One of the mechanisms which operates as a training ground for subsequent tests of dominance is rough and tumble play. This form of play behavior is universally male and is seen in all primate species (Mitchell, 1979). Rough and tumble play, a self-explanatory term, is characterized by mock fighting in which no one is ever seriously hurt. Its function seems to be to promote competence in the organization and coordination of physical skills with respect to one's own body in space and to establish knowledge of one's physical strength and endurance. Unless a male has been through this period of play behavior, he is unable to gauge later on whether an attack on a troupe member would be successful or not. A mistake in judgment therefore could result in severe maiming and death. To avoid this, a host of ritual appeasement gestures has evolved.

The mechanism of rough and tumble play is a familiarization process—allowing one firstly to evaluate the potential danger of one's playmates, and secondly to extend this aptitude later to trials against older juveniles. The meaning of the tension produced when a stranger appears is undoubtedly that this new member has never been anyone's playmate and hence is a totally unknown quantity. In situations of this sort, it has been observed that males will act *cooperatively* to drive out the stranger. Visual gestures, such as looking back and forth between the stranger and one's cohort operate to enlist cooperative action.

The outcome of an effective dominance hierarchy is the control of aggression. However, the relationship between aggression and dominance is complex. As noted earlier, animals are not "innately aggressive" without cause. When environmental stressors triggering male aggression become severe, the dominance order begins to

crumble. The need for individuals to survive means that they must challenge the old order in the event that they are successful, and can then have access to food, space, and females. Once a balance is achieved, a renewed order is established and aggression diminishes. Note that in this process it is the *males* who are reduced in number, driven out or killed, in order that the females and their infants survive. In one sense, the males function altruistically, albeit unwillingly, with respect to the troupe as a whole, while female altruism is directed toward her infant.

Female Dominance Systems

The most universal statement about the organization of any mammalian social order is a negative one; no female has ever been observed to be isolated in an all male group. With the exception of the pair-bonding members of the species, there are always more females than males in every social organization of non-human primates. In earlier research by primatologists this was inevitably interpreted as an outcome of dominant males organizing and herding females (DeVore, 1965). The problem with some of the earlier field work was its brief duration. Scientists who spent no longer than a few months in the field failed to determine the kinship relationship between troupe members and the movement of animals between troupes.

Subsequent work, specifically by Japanese and American primatologists, revealed that the picture was exactly the reverse. Females constituted the socially cohesive group and were often related. Grandmothers, aunts, infant and juvenile offspring comprised the colony. Males were occasionally permitted to remain or to join the group from the outside. In extensive studies of rhesus, langur, and baboon it has been reported that adult males were permitted to join a female troupe often after a consensus had been taken. Females have often been observed to form coalitions to drive out males. (These data are reviewed by Lancaster, 1979).

The characteristic patterns of many non-human primates is one

in which adolescent males are driven out. Frequently they forage for food in isolation, or more commonly in all male packs. The dominance hierarchy of the remaining males shifts constantly as members come and go. Further, intensive observations revealed that there was a dominance order among the females, and this was usually formed along kinship lines. The dominant female was often the oldest or the one with the largest number of living offspring. Infant mortality in the wild is extremely high. Successful mothers are regarded with respect.

Thus, there is a direct relationship between female dominance and female choice in determining male dominance *within* the social group. For example, Tutin (1975) observed that female chimpanzees prefer males who groom them, and who share food. Dominant females, despite age and appearance, had the most suitors.

These recent discoveries by primatologists suggest that females are selecting for males with low aggressivity and that highly aggressive males will not be tolerated in a social sphere.

The key to the ability to survive the extraordinary high death rate among adolescent males is indicative of a host of factors, sociability being primary. Sociable males are considerably more likely to reproduce.

In a concluding statement to a review of the literature on primate sexual behavior, Jane Lancaster comments:

Perhaps one of the most significant generalizations for the development of evolutionary theory is the relationship of dominance to reproductive success in complex social systems—it seems probable now that the elusive quality of "dominance" correlates with full social maturity and length of tenure in a social group and not with aggressive potential per se.... Competition between males for access to females is based mainly on the ability to survive, and not on anything so stark as physical intimidation. (Lancaster, 1979, p.75)

Lancaster might well add that a social group is defined by a cohort of *females*.

Implications

This brief overview provides a compelling picture of the uniformity of situationspecific initiators of aggressive action. Males are consistently the more aggressive, however, in all species (Moyer, 1976) not only because of a difference in kind, the nature of the environmental triggers, but because the threshold for the initiation of overt *action* is considerably lower in the male than the female. Does this make males "innately" more aggressive? If one abides by Moyer's definition of "intent to harm another"—then action is implied and the answer must be *yes*—not only in terms of the *extent* of the harm from the resulting action, but in terms of the *frequency* of occurrence of such actions.

What lessons can be learned from such evidence, and how well do these findings represent what is known about the operation of dominance systems in human societies or how males and females might organize social systems to best contain unnecessary aggression? These are enormous questions and have extremely paradoxical and problematic solutions.

For example, scarce resources and overcrowding escalate inter male aggression. We live in a world where is overwhelming evidence for such factors. We have already seen that these situations put into operation a mechanism for population control. If we want to eliminate or de-escalate aggressive encounters, then of course the diminution of population is the answer: War is the solution. Here is the first and primary paradox: Aggression ultimately reduces aggression.

But human beings distrust and dislike natural or biological solutions. Our forebears have circumvented one such solution by increasing longevity nearly threefold through methods of sanitation and medicine. In so doing, they have faced humanity with the opposing solution—two world wars and a host of lesser scale conflicts all in the space of one century. Indeed, this may be called a socio-biological imperative if we ascribe to the belief that we are shackled by our genes.

Before we despair, let us first explore some evidence concerning the nature of the givens in terms of male and female predispositions

in human groups. These provide a perspective on ways we might attempt to shift society's aims. Apart from anything else, *knowledge* of one's innate predisposition is of enormous consequence in how we rationalize our actions.

PART II: AGGRESSION AND DOMINANCE IN THE HUMAN

Human Dominance Systems

The first piece of evidence concerns male and female dominance systems. Do they really exist in human societies? In a most provocative unpublished doctoral thesis Mary Knudson (1973) investigated preschooler's dominance interactions in schools in three geographic locations in the western states of America. Her operational definition of dominance was straightforward. In any dispute over possession of an object, food, or space did the child retain possession or give it up? When she tallied her data from several hundred hours of observations what she uncovered was startling. Males were found to promote a *linear dominance system* in which child A was found to submit to no other male, child B to submit *only* to child A, child C *only* to child A and B, and so on. This held absolutely in all three schools. Furthermore, in an analysis of "requestives" produced by the children, dominant males never *asked*—they *took*.

The females' behavior was equally intriguing. Females organized themselves into *dominance clusters*. The clusters were arranged approximately hierarchically, but within the cluster (consisting of 3-6 members) there was complete equality and no dominance order could be determined. What is more, male and female dominance systems did not interact. That is, there was no way one could predict from knowledge of an individual child's dominance position what would transpire in male-female interactions.

The fact that dominance hierarchies are set up in children as young as 3-4 years is convincing evidence that we need to take them into account in understanding all subsequent forms of human interaction. Anecdotes abound concerning the dynamics of committees, of the cut and thrust of politics in organizations, but perhaps the

most telling example is that of President Carter's failure to govern well, not because he has poor ideas or a weak intellect, but because he has failed to establish his position near the top of a dominance tree. His failure in "leadership," therefore, may only be a highflown way of stating that he is not sufficiently "alpha" in an arena of alpha males. Recall that Lancaster's major definition of the alpha male quality is *survival*—wiliness is the key.

Part of the problem of the integration of women into the political arena, whether politics directly, or the politics of organizations, is that women adopt very different strategies in groups than men. Females and males not only are not aware of how the opposite sex functions in dominance relations, but they are also unconscious of the within-sex dynamics of such encounters. It is not surprising therefore that considerable confusion is generated in mixed-sex groups. Militant feminists who attempt to be "aggressive" or "assertive" ("just-like-men") misunderstand the subtle cues picked up unconsciously by the male members of a group in which dominant males get their way *without* appearing to do anything remarkable or untoward. Overt aggression—verbal or otherwise—is considered extremely bad form. As yet, we know next to nothing about these cues and how they operate. Obviously, posture, manner, tone of voice, all play a part. However, unless we bother to understand the mechanism of dominance systems, we will never understand how decisions are taken, and we will never be able to integrate the sexes effectively in any political arena.

Crowding and Aggression

We have been informed by sociologists that the rising crime rate is due to overcrowded cities where the individual loses direction and self-respect because he is anonymous (anonymous: without name—*anomie*: lawlessness). However, this may be a better explanation for depression and suicide (Duckheim's *anomie*) than for aggression. The following evidence illustrates the point.

In 1972, Freedman et al began a series of studies which investigated crowding or density on aggressive behavior. They put college

students in a large or small room and asked them to participate in social game playing, such as portraying jurors in a mock trial. Independent judges rated the competitive and hostile remarks that occurred. In all male groups, hostility and competitiveness was significantly elevated in the small room over the large room. In females, the situation was exactly the reverse. Furthermore, when mixed sex groups were studied, male hostility and punitiveness diminished. Sex difference research has often suffered from a now-you-see-it, now-you-don't phenomenon. This finding is one of the few exceptions. Ross et al (1973) replicated the result using similar parameters. Self-ratings of aggressive feelings in small or large rooms show the same sex effects (Stokols et al, 1973). Epstein & Karlin (1975) found male competitiveness escalated in game-playing in crowded conditions, whereas females became more cooperative. Baum and Koman (1976) found that even creating an *image* of degrees of social density was sufficient to elevate hostile feelings in males. When Loo and Kennelly (1979) tested preschool children in crowded and open spaces, acting-out, destructive and angry behavior increased noticeably among the boys in crowded conditions. Female behavior did not alter noticeably in either condition.

Because of the complex effects between and within sex, social theories fare badly in explanatory power. They fail to deal with mixed-sexed phenomena for example. Biological theories, however, are more persuasive. The primate data show that males react aggressively to overcrowding and that females form the socially cohesive group. Some primatologists have gone so far as to conclude that in the absence of grooming behavior no social colony can be said to exist, and females are almost the exclusive groomers in many primate species (Mitchell, 1979). Further, Marler and Hobbett (1975) record that in the chimpanzee a peculiar vocalization called a "pant-hoot" emitted only by females operates to calm troupe members. Males are more aggressive in the wild when they roam in packs than when they are with females in a colony (Mitchell, 1979). Males are more aggressive in cultures where women are suppressed than when women can *choose* their husbands and lovers. (Martin and Voorhies, 1975). Together, the data suggest that at a micro-level in diplomatic confrontations, decision making committees, etc., the formula (odd as it may seem) is *large rooms* and the presence of females to en-

gender the maximum cooperation from males. But for all female committees, maximum cooperation arises in *small* spaces. Once again, we have no knowledge of the relevant cues involved—whether eye-contact operates differently between the sexes, or the impact of physical contact between and within sex, and so on.

At the macro level of course, the implications are enormous: less density in our cities, more male-female interaction at every level, and from the cross-cultural data overwhelming evidence for increased nurturance and reduced hostility in males in societies where females choose their mates and where males spend time with wives and children (West and Konner, 1976).

Scarcity and Values

The primate data have shown the large effect of scarcity—food, water, females, etc., on escalating inter-male violence. But scarcity turns out to be as much in the eye of the beholder as a definable reality. Goodall's (1968) banana station experiment resulted in generally calm and amiable chimpanzees squabbling, screeching, and biting while contesting who could carry away the most bananas. There are indeed many theories that propose that *surplus* of food, material goods, etc., operates against cooperative action in the same way as does scarcity (Martin and Voorhies, 1975; Fisher, 1979). Surplus puts into play a host of inheritance regulations whereby families fall or rise in the hierarchical scheme and females come inevitably under the dominance of males (Goody, 1976).

In a provocative book, *Falling Apart* (1976), Elaine Morgan tackles the issue of what is "ENOUGH." ENOUGH is the middle ground between scarcity and surplus. It appears from cross-cultural data that aggression escalates in a u-shaped function the greater the deviation from ENOUGH. Unfortunately, there is no mathematical equation for ENOUGH, such as a useful rule of thumb measurement of: -oz of bananas/Kg of body weight, or lbs of fuel to maintain 98.6° of F body temperature. Scarcity and surplus, unless one is starving, are psychological constructs, not economic fact. One man's scarcity is always defined in terms of another man's surplus. As societies

become increasingly more complex, more and more categories of goods constitute somebody's scarcity. There is in fact no scarcity of oil. We don't eat oil. We don't need to drive cars. We could reduce our reliance on oil overnight by instigating State-run bus systems such as exist in many communist countries. However, we would feel extremely deprived to be crowded onto buses, to suffer the inconvenience of walking to bus stops, waiting in line, transferring from one bus to another, etc.,etc.

The irony of the efficiency of modern life in terms of the time saved for leisure was pointed out by Johnson (1978) in his study on leisure time in a hunter-gatherer society, which as it turns out is significantly greater than our own. What then are the reasons behind this state of affairs? It seems that as soon as one invents a better method of doing something, the unforeseen problems that arise from the new method come to generate more demands so that the original savings is lost. In fact, the more humans try to outwit the environment, the more it bites back in one way or another.

Surplus food began to be produced as an accident of plant availability and climate in regions where people had access to wild grain. Grain is eminently collectible and storable. With an understanding of how seeds generate plants it became possible to increase production through a rudimentary horticulture in order that the food supply would become predictable. In the regions north of the Tigris and Euphrates delta people depleted the land, and as population increased, tribes were forced to move further south where the rains were less propitious and the irrigation of lands became essential. Instead of irrigating ENOUGH land or growing ENOUGH food, however, massive irrigation works were established, slaves imported—and in fact, instead of being more efficient, early agriculture resulted instead in an overweening hierarchical social system where the few benefited from the labors of the many, instead as is commonly believed: The many benefiting from the labor of the few. The span of life in that period was reduced in the slave population to almost 17-18 years. This transitional process is meticulously documented by Fisher (1978). Although we have ultimately reaped the benefit of efficient food production, we have inherited the cost of a social organization which moved away from small group egalitarianism to a gross imbalance in power derived via male dominance

systems, and operating through male ownership of goods, male ownership of property, male ownership of slaves, and male ownership of women. This is not just feminist cant—but fact. The byproduct of this surge to hoard, own, and contain was almost incessant military conflict, border disputes, sacking of whole cities, massacres of entire populations, and so forth. The irony is that the conflict was inevitably over the control of surplus, and surplus again was defined as one city's wealth in terms of another city's scarcity. The conflicts were as often about stealing gems and gold from the sides of temples as over water and irrigation rights.

In ancient Mesopotamia, we see the essence of the banana station experiment. In modern Mesopotamia we witness two "civilized" nations hard at work destroying one another's surplus: Tanks of oil and oil refineries. Five thousand years or more have passed and nothing has changed!

What is the message therefore? In one sense we have some insights into the means to de-escalate aggression and these have been suggested above. In the case of surplus, greed and envy—these are old enemies—but we need reminding more often about human failings and a better understanding of how cultural patterns predict overt aggression in social groups. To read the daily newspaper is to participate in a morning feast of male dominance rituals and interactions. When this is recognized, the world indeed becomes a preposterous place. The earnestness and humorless way these are portrayed by the media suggests that male dominance rituals are indeed a serious, intellectual and meaningful business. If they result in wholesale destruction, then this is true. If, however, they are seen instead as irrational, even absurd, especially by the males themselves, then perhaps we can progress.

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