

**FAITH**

**1975**

**and**

**vol. 102**

**THOUGHT**

**No. 1**

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A Journal devoted to the study of the inter-relation of the  
Christian Revelation and modern research  
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## Human and Animal Aggression

**Human and animal aggression are often considered in the same context and even identified. Is this defensible? Mr. Barnes, Senior Lecturer in Zoology at Chelsea College, University of London, points out that the word "aggression" is used in at least four different senses and that, despite exceptions, we do not usually use the word in the same sense when speaking of animals and men. He argues that man is unique in the kind of aggression he exhibits.**

In recent years both ethologists and also popular science writers have written extensively on the relation between human and animal aggression. We are indebted to the authors of two of the papers read at the Institute's Symposium in May 1973 for two outstandingly able introductions to some of this literature.<sup>1,2</sup>

In such writings we frequently encounter the word *aggression* used in such a wide and imprecise way that it can easily lead to erroneous conclusions in the comparative study of man and animals. This paper, which may be regarded as a postscript to last year's Symposium, is an attempt to clarify the uses of the word, not by producing an all-embracing definition (probably an impossible task in our present state of knowledge) but by examining the logical categories in which the word has been employed, and then enquiring about the nature of resemblance between animal and human behaviour as described within any appropriate category. I am concerned here, not with describing

different types of behaviour — Dr. Poole's paper has surveyed these — but with discussing inferences that can be drawn from and about them.

It is perhaps significant that the Conveners of the Institute of Biology's Symposium in 1963 on *The Natural History of Aggression*<sup>3</sup> wrote in their introduction to the published proceedings, "We did not attempt to define 'aggression', nor, with the exception of Veness, did our contributors. Nevertheless, at least in relation to aggression by individuals, it became clear that they were all talking about the same thing." That fourteen out of fifteen major contributions made no attempt to define the term highlights the difficulty in using the concept of aggression. That they were 'all talking about the same thing' is, I regret, less clear to me than it was to the Symposium Conveners.

As a starting point for this discussion I shall use Poole's definition that "aggression is any activity which is directed towards the discomfiture of another individual".<sup>2</sup> No one would claim, least of all Poole, that this is an entirely satisfactory definition: it does not cover all that is regarded as aggressive (many psychologists regard suicide as a form of aggression), and some of the words (e.g., 'directed towards' and 'discomfiture') are somewhat vague. Yet their very vagueness permits useful discussion within the framework of the definition.

Dr. Young<sup>1</sup> in his paper at last year's symposium likened comparative ethology to comparative anatomy; and I think the analogy is helpful. Anatomists have always recognized that the same name (particularly if it is a word of common parlance) may be given to different structures for different reasons. Thus the wings of a bird and of a bee are both so called only because they have rather similar functions; they are totally different in structure and origin (such organs are described as *analogous*). The wing of a bird and a human arm, however, are both called forelimbs because, although they have totally different functions, they have a common structural plan and origin (such organs are described as *homologous*). Further, it is possible for the same popular name to be given to two things which have neither

structure nor function in common; the leg of a table and the leg of a sloth (which hangs 'upside-down') are neither analogous nor homologous. An early task, therefore, in any comparative anatomical study is to distinguish between analogies and homologies. Until this is done, general conclusions regarding phylogenetic relationships or adaptive significance are worthless.

Similar considerations apply to comparative ethology, a discipline which has borrowed several words from human behaviour and applied them to animal behaviour without always making clear whether the relation is one of analogy or homology. 'Courtship' is such a word. If, ignoring for our present purpose the moral and spiritual aspects, one compares human courtship with that of other primates, it is obvious that they are homologous: although there are many differences in the behaviour of the two, the same reproductive organs are involved and the same hormones and similar nervous responses control the behaviour. If, however, one compares human courtship with that of an insect or a spider, it is equally obvious that the relation here is purely one of analogy; different organ systems are involved and different hormones are in control. Further, one cannot press the analogy very far — the courtship of certain insects and spiders induces the female to cannibalize her mate during or after copulation!

The word *aggression* requires similar enquiry: is animal aggression homologous or analogous with human aggression? Or is it neither; and are we being misled by our thoughtless use of the word? (It may be, of course, that there is no simple answer; but that some aggressive behaviour patterns are homologous, some analogous, and some neither.)

To answer these questions we must ascertain what is usually meant by 'aggression' in man and animals, i.e., what are the criteria by which it is recognized.

A specific instance of human behaviour can, in principle, be described in four different ways: (a) by giving a purely objective account of what a man actually did (e.g., *A* picked up a loaded rifle, pointed it at *B*, and pulled the trigger); (b) by

describing objectively the effect of the action (e.g., *A* mortally wounded *B*); (c) by stating the intention of the activity (e.g., *A* intended to kill *B*); and (d) by evaluating the intention (e.g., *A* feloniously, or with malice aforethought, killed *B*).

Now descriptions (a) and (b) are clearly in the same logical category, because, given sufficient objective information about the rifle, the relative positions of *A* and *B*, a knowledge of ballistics, etc., one could predict the effect of *A*'s action on *B*. Description (c), however, is not in the same logical category, because no amount of objective information about *A* would enable one logically to infer anything about *A*'s intention. To do this one would have to know something about *A*'s subjective experience: e.g., whether he knew anything about rifles, whether he knew it was loaded, etc. Lastly, description (d) is not in the same category as (c); for *A*'s intention to kill *B* would have different evaluations according to the moral or legal code by which it is judged (many would regard *A*'s action in self or national defence as justified, but a conscientious objector may regard all killing of humans as evil). Thus we have four types of description of behaviour which may be regarded as occupying three different logical levels.

Now different words used descriptively of the same activity may embrace, by implication, all of these types of description, or fewer than all. Thus the statement '*A* killed *B*' is purely a type (b) description: it indicates the consequence of *A*'s behaviour but tells us nothing about what *A* actually did (he might have shot, stabbed, poisoned, strangled, or starved, *B* to death). The statement '*A* shot *B*' is a mixture of types (a) and (b); while the statement '*A* murdered *B*' is a mixture of types (b), (c), and (d), for it implies the consequence, the intention, and a moral or legal judgment, of *A*'s behaviour.

In contrast to human behaviour, animal behaviour can be described only in type (a) or type (b) terms (as the ethologist cannot impute intention or moral value to it), and of the two the latter is the important one for diagnosing aggression. It is not the objectively-observed character of the behaviour which

identifies it as aggression but its consequence (the 'discomfiture', to quote Poole) for another individual. If the same behaviour pattern were normally followed by mating it would be described as courtship behaviour; but if it usually leads to the withdrawal or a submissive posture of another individual it is called aggressive. Of course, once a behaviour pattern has been recognized as aggressive from its type (b) description it could thereafter be defined by a type (a) description. Thus one can quite correctly say that aggressive behaviour in the domestic cat involves the arched back, the raised hackles, the bared teeth, the deflected tail, the outwardly-rotated ears, and the high-pitched howling; but one can say this only because of its observed effect on other individuals.

In order to identify aggression (as this word is commonly used) in man, however, we need more than types (a) and (b) descriptions, which, in fact, may be irrelevant. To recognize what is usually meant by 'aggression' we need type (c) and probably type (d) descriptions. Thus, if a dirty, smelly, and possibly verminous, tramp were to come regularly on summer evenings and sit on a particular park bench and start a conversation with whoever was there, the latter might well experience discomfiture, which could be shown by such behaviour as his movement along the bench or even getting up and walking away. We should not, however, describe the tramp's behaviour as aggressive — unless, of course, we had some reason to believe that he came to the bench with the intention of causing discomfiture; and even then we might feel that 'aggression' is too strong a word if he was merely hoping to have the bench to himself for his night's sleep. It seems we may have to know the purpose of the intended discomfiture, and thus pass a moral or legal judgment upon the intention, before we can agree to call the behaviour aggressive. In other words, we need types (c) and possibly (d) descriptions.

If, then, aggressive behaviour in man and animals is recognized by criteria representing different logical categories, it follows that the two types of behaviour may be quite different, in the sense that they are neither homologous nor analogous.

This, however, is only a possibility and not a certainty, for two things may be normally recognized by, or defined in terms of, features of different logical categories and yet have concomitant features in the same logical category such that the two things are undoubtedly recognized as homologous or analogous. Hunger is an example. When this word is used of man it usually denotes "the uneasy or painful sensation caused by want of food" (to quote the Oxford English Dictionary), which is, of course, a subjective experience; but when the ethologist uses the term with respect to other species it connotes those objectively-discerned patterns which together constitute feeding behaviour (feeding itself, and the exploratory behaviour which leads to feeding). Yet the human sensation and the feeding behaviour of rats are both correlated with physiological changes (violent stomach contractions, reduced blood sugar concentration, etc.) sufficiently similar as to suggest that hunger in man and rats is homologous. On the other hand, the physiological accompaniments of hunger in those insects where it has been investigated (e.g., *Phormia*, a blowfly, and *Rhodnius*, a blood-sucking bug) are so different from the mechanisms in man that hunger in insects and man can be regarded as no more than analogous.

I therefore come to two conclusions: (a) that aggression in man and animals is commonly recognized by, or defined in terms of, aspects relating to different logical categories, so that the common use of the word 'aggression' tells us nothing about the relation between this behaviour in man and animals, and (b) that, in order to ascertain this relation (whether it be homologous, analogous, or neither), we must carefully examine each aggressive behaviour pattern of man or animal for *objective features* which it shares with the other. Then only shall we have a satisfactory basis for comparative studies and phylogenetic inferences.

#### *Animal vis-à-vis Human Aggression*

It is generally accepted by ethologists that, if we exclude predation from our definition of aggression, then the latter is largely restricted to defence of territory and attainment of or

maintenance of status within the group. Both of these have human counterparts which frequently serve similar biological ends. This is not surprising, since man is biologically a mammal and has physiological needs similar to those of other animals — mammalian and indeed non-mammalian also.

An animal's territory is a defended area in which it can 'mind its own business' without molestation or interference from others of its species. The business itself varies from species to species; so territory may be a private feeding area (thus ensuring the individual's food supply), an area for courtship and mating (which in mammals, and probably in other vertebrates, are physiologically incompatible with emergency measures required in self-defence, as being under the control of antagonistic parts of the autonomic nervous system), a nursery in which the young are reared (thus providing protection for them) or, in the case of that mobile territory called 'social space' or 'individual distance', an area in which the animal can do anything else or just rest in peace. Where territory is related to courtship and mating it serves as a means of population control, because it limits the number of animals that can mate in any area. This no doubt helps to maintain a healthy stock.

Human territory serves parallel functions, although the uses to which territory is put by man are much more varied than in the case of animals. The nature of territory also varies enormously. It may be a family farm which directly provides the family's food as, for example, in Central Africa, or it may be a vast Canadian wheat belt farm which indirectly, through the economic processes of marketing, again supplies the food of the owner, his employees, and their families. Such territories are functionally similar to an animal's feeding territory. Another type of human territory is the homestead, which may be a collection of mud huts in an African compound or a three-bedroomed semi-detached house in a London suburb. Such territory provides, amongst other things, an environment for reproduction and rearing of young: and it may be, at least in some cultures, that this provides a check on population growth for many young married couples having to live with parents choose not to produce children



until they have acquired territory of their own. Thirdly, as Poole points out, social space is a phenomenon readily observed when one watches human behaviour, although it may have no special function. Perhaps it has just the general function of permitting freedom of posture or movement, and thus contributing to comfort. Man, of course, has many other types of territory, ranging from the goal area on a football pitch to national and colonial territories; but these appear to be without parallel in animal behaviour, and are therefore irrelevant to comparative ethology.<sup>5</sup>

The concept of social status or rank in animal groups reflects the fact that certain individuals are dominant over others. The dominance is shown in various ways. A dominant male in a monkey group, for example, takes precedence in selecting its resting site, subordinate ones giving place: if a dominant animal approaches a subordinate the latter moves away and keeps its distance: a dominant male may have priority in mating with a female on heat: a dominant animal may 'discipline' a subordinate that 'breaks the rules', and may even drive an unruly member out of the pack. The social hierarchy is not always imposed by the aggressive behaviour of the boss; it may be established, as T. E. Rowell<sup>6</sup> discovered in captive baboons, by the submissive behaviour of the lower ranks. The biological value of such a hierarchy is that it tends to minimise internal group conflicts, achieve group cohesion, co-ordinate the activities of the members of the group, and lead to a certain degree of division of labour.

Again, human parallels are obvious, indeed so obvious as not to warrant listing; but it is of interest that the parallels are closer in primitive societies than in complex ones. For in the primitive society the head of the family, or the village chief, is likely to be dominant in all the activities of his respective group as is a dominant male in a monkey pack; whereas in the complex society a different hierarchy will probably be set up for different activities — the captain of the factory football team may be a labourer on the shop floor, while the managing director, if he is in the football club, may be a reserve player.

The question now arises whether the similar behaviour patterns in animals and man are homologous or merely analogous. That they are analogous seems incontrovertible since, as we have seen, they serve the same functions; but before they can be regarded as homologous it must be shown that the same fundamental behavioural processes are involved.

An animal usually acquires its territory by searching for a suitable area and, on finding one, occupying it and thereby staking its claim. It is very unusual for an animal to win it from another by aggression, because a territory-holder is much more strongly motivated to defend its territory than an intruder is to attack. It is in defence of territory that aggression becomes important. High social status, on the other hand, is normally both achieved and maintained by aggressive behaviour. Factors other than aggression may be, and in fact usually are, involved in the establishment of dominance: very frequently a low-ranking animal wins promotion because a higher-ranking individual falls sick or becomes senile and therefore can no longer counter the aggression of the subordinate. There are thus three areas in which animals show aggression and which have human counterparts: defence of personal and small-group territory, achievement of social status, and maintenance of social status; and we have to enquire whether, and in what sense, man shows aggression in these areas.

Although a man may make his territory, or more usually a small part of it (his house and his farm buildings, etc.), not easily intrusible, by locking the door and bolting the windows, most personal territory is, in fact, defended by social convention. A fence, a five-barred gate, a hedge, or a mud wall, is no impregnable barrier against an intruder, for the fence can be scaled and the gate opened. These things, like the verbal announcements that sometimes accompany them — 'Private: keep out' or 'Trespassers will be prosecuted' — are symbolic of territory ownership and, as such, are analogous to the threatening displays of territory-occupying animals. They cannot be regarded as anything more than analogous because they obviously make use of entirely different organs and physiological mechanisms.

Furthermore, the response to the symbol is much more complex in man than in animals. The would-be animal intruder into the territory of a conspecific is normally deterred by a relatively simple and stereotyped behaviour pattern sometimes called a 'sign stimulus' (e.g., display of the red breast in the robin, or head-up posture of the great tit). But the potential human intruder into human territory is put off not by the pattern of the symbol but by its significance, so that a fence, a hedge, a railing, a wall, a written notice, would all be equally effective.

Now an animal exhibiting its threat display to an intruder would be described by an ethologist as showing aggression; but I doubt if anyone would describe as aggressive a farmer who grew a hedge round his farm or a suburban householder who erected a garden fence. Even if the message of the farm hedge failed to get across, as that of the animal's threat posture occasionally does, and the farmer chased the scrumpers out of his orchard I suspect he would still not be charged with aggression, provided the persuasive measures he used were no greater than were required to protect his property. If he used unnecessarily violent measures one would suspect that his primary motive was not just to defend his territory but to cause harm to the trespasser. Such behaviour would be morally and legally wrong, and would, I suggest, undoubtedly constitute aggression. So, as far as territory-defence is concerned, animal behaviour which the ethologist, on the basis of type (a) or type (b) description, would call aggression has a human counterpart which is merely analogous and which, on the basis of type (c) and type (d) description, would not be so called.

To examine fully the place of aggression in the achievement and maintenance of social status in human societies would clearly extend this paper beyond reasonable length, because, as pointed out earlier, status can take so many different forms in various human activities. But a rapid survey will, I think, show that aggression, analogous or homologous with that shown by animals, does not play a comparable role in the majority of human hierarchies.

In some circumstances high rank is determined on a hereditary basis. The rules governing the line of inheritance may vary from one example to another, but the status is determined by rules and not by the behaviour of the individual (although unconventional behaviour may prevent high status, as in the case of the abdication of King Edward VIII). This operates in many royal dynasties, and tribal, area, and village chieftaincies. These rulers may in turn bestow slightly subordinate but nevertheless still relatively high status as favours upon their friends or as rewards upon their faithful servants (peerages, etc.). In many societies and cultures age determines status (village elders, heads of extended family compounds, etc.). In most hierarchies (e.g., in industry, commerce, government, armed forces, the church, education) in Western culture status is determined roughly by merit, which is compounded of such factors as knowledge, skill, variety of experience, ability to work amicably with others of various ranks in the hierarchy. In all these situations aggressive behaviour is likely to be either irrelevant to status or more frequently inhibitory to promotion, because aggression produces antagonistic responses in others; either superiors who are therefore less likely to promote or subordinates who are less likely to work well.

It may be thought that political revolution is an instance of status acquisition by means of aggression. It is certainly true that revolutionary leaders adopt aggressive attitudes towards the established rulers, and equally true that if their revolutions are successful the leaders achieve a higher social status. But even here the analogy with animal aggression is far from close. The aggression of animals that leads to higher rank is essentially an individual encounter between the aggressor and its superior, an encounter which is settled by the greater strength, courage, or persistence of the aggressor. It is doubtful if a revolution could occur in this way. If a revolutionary were successfully to challenge an established leader personally, the latter's loyal subjects would almost certainly defeat the aggressor. The success of a revolution depends on its leader's ability to gather a large following by persuading people that his cause is just or expedient; and he will not be able to do this by adopting aggressive behaviour. He may preach aggression against the establishment, but he must

woo his followers by showing reason for his policy and concern for them. When the challenge to the establishment actually comes, the revolutionary leader may well keep in the background.

Once status in human society has been established, it is maintained by a large variety of methods of communication. An announcement that Mr. X has been appointed Deputy Manager, the bestowal and use of a title (e.g., mayor, colonel, professor), conventional forms of address (Bloggs, Mr. Bloggs, or Dr. Bloggs, according to rank), are all forms of verbal communication. But many other factors (e.g., size of office, cost of car, type of dress, badges of office or rank) can communicate status. In fact, 'status symbol' has become a part of everyday speech. Now none of these is normally regarded as aggressive.<sup>7</sup> From time to time, however, an individual may behave in a manner deemed inappropriate to his status, and disciplinary action ensues. This may well be directed to his discomfiture, either mental or physical, but even in these circumstances I doubt if the administrator of the discipline would be regarded as aggressive, unless the measures taken were incommensurate with the fault committed.

There is, however, one type of social status that I can think of where there is a very marked similarity between animal and human aggression, and that is in schoolboy communities. The class bully achieves his dominant status and defends it by threatening postures (the pugilistic stance and the facial glare), or actual fighting, in personal encounters. He uses similar muscular mechanisms to those used by animals, and his aggressive behaviour, like that of other mammals, is associated with increased adrenal secretion. Here seems to be a clear case of homology. But the advantages conferred upon an animal group by its having a dominant male are sadly lacking in the classroom society.

### *Human vis-à-vis Animal Aggression*

Our definition of 'aggression' included the words 'directed towards the discomfiture of another'. We have already seen that

the 'directedness' of behaviour is recognized in animals on the basis of types (a) and (b) descriptions but in man commonly on the basis of type (c) and sometimes type (d) descriptions. Now the only way, therefore, of discovering whether any behaviour of an animal is directed towards the discomfiture of another is by observing a correlation between that behaviour and the behaviour of the other. Such a correlation must be demonstrated by repeated observations. In other words, an ethologist can recognize aggressive behaviour only when an animal shows an oft-repeated pattern which elicits an oft-repeated response in others. A unique piece of behaviour could not logically be identified as aggressive.

In man this is not so, for intention can often be communicated in a single event. This is because human communication mechanisms are vastly more complex than those of animals. Man uses not only his innate simple sign stimuli but also his range of acquired signals in the forms of facial expressions, gesticulations, postures, and, above all, verbal language. In addition, each single display of aggression may take an objectively different form: the same man could beat his child, throw his dinner at his wife, kick his cat, swear at his secretary, and quite calmly speak damaging insinuations to his colleagues. By the same token, the victim of aggression can communicate his discomfiture in a great variety of ways: and that discomfiture may not be physical or even have obvious physical concomitants — it may be largely mental. Man's powers of verbal communication, particularly when aided by modern technology, also enable large numbers of individuals to combine in a concerted act of aggression against equally large numbers of victims simultaneously over large areas of the earth.

It follows then that man has an unequalled repertoire of what can be recognized as aggressive behaviour, ranging from heated arguments, through dirty play in games, over-harsh disciplinary measures, 'bitchiness' in the typing pool, various forms of racial discrimination, rape, malicious wounding, murder, religious persecution, civil war, to global nuclear warfare; and any one of these could take many objective forms.

To what extent do these have animal counterparts; and where counterparts exist are they analogous or homologous? Of course it is impossible to answer these questions in general terms: one would need to look carefully at each event to ascertain its biological significance and its anatomical and physiological features before the questions could be answered.

As far as warfare is concerned, it seems to be generally agreed by ethologists that animals do not engage in any comparable activity. It is also very unlikely that animals have an equivalent of rape, since before copulation is attempted a male needs the responses of female courtship behaviour, and these a female does not exhibit unless she is in a receptive physiological state. Malicious wounding and murder present greater problems. In discussing human aggression one has to use such words to distinguish intentional from accidental injuring and killing, which would not be regarded as aggression. That injury and death do occasionally result from animal aggression is undeniable; but how can one tell whether they are accidental or intentional? Perhaps, as a suggestion, it is reasonable to assume that they are accidental if (a) they occur as a result of aggressive behaviour which usually causes merely submission or withdrawal, or (b) if they occur as a result of the more violent behaviour (e.g., fighting) which follows the failure of the usual threats to produce submission or withdrawal, and (c), in the case of injury, if that injury is followed by submission or withdrawal. Such circumstances would suggest that the biological significance of the aggression relates to status or territory and not injury of the victim, but that injury is an accident due to failure of the normal agonistic communication. If, on the other hand, the wounding or killing occurs in circumstances which appear to be irrelevant to status or territory, then perhaps one is justified in tentatively accepting the injury or death as the goal of the behaviour. In this case it could be taken as an animal equivalent of malicious wounding or murder. In actual fact such an animal equivalent appears to be virtually unknown in the wild state. In captivity intra-specific fighting leading to injury and death has been reported, but when similar behaviour has been studied in the wild it has been found that it is normally concerned with status or territory

and that the victim of the aggression submits or escapes before injury occurs. Harrison Matthews<sup>3b</sup> makes the same point in a different way: "Intra-specific fighting has been divided into two kinds, ritual and overt, the first a formalized sparring match with strict rules, the second a fight to the death with the gloves off and nothing barred. In preparing this paper the more I have sought examples of such intra-specific overt fighting in mammals the less I have succeeded, and I doubt that it normally occurs in nature." He is referring here only to mammals, but they are the animals of greatest relevance to this discussion. In so far then as one can speak of accident or intention in animals, it seems as if animal injuring and killing must be regarded as accidental in the sense that it is not an end in itself but results from a breakdown of normal communication in agonistic behaviour.

It is impossible to examine all possible forms of human aggression even in this superficial manner. But my impression is that in most cases it would be difficult to find animal counterparts; but even if true homologies could be found, I think it very unlikely that the biological function of the aggression in man would be related to social stability, as is that of most animal aggression. If it has any positive biological function at all it is much more likely to be concerned with the relieving of 'psychological tension' in the aggressor.

### *Conclusions*

The foregoing survey of aggression in man and animals is not intended to be exhaustive and it might even fairly be deemed superficial. It serves merely as a basis for discussion of the logical problems involved in comparing the two; and from it I draw the following conclusions:

(A) Animal and human aggression are usually recognized by different criteria. Ethologists identify animal aggression by means of objective criteria — type (a), what an animal does, and type (b), the concomitant response of another individual — while,



in everyday usage, aggression in man is identified by a subjective criterion — type (c), what a man intends — and possibly by a moral or legal criterion — type (d), whether the behaviour is justified. Hence we find in the literature on aggression either a lack of definition or the use of definitions which are ambiguous or imprecise. There is obviously a need for rigorous definition to avoid confusion.

(B) Animal aggression usually takes the form of the display of relatively simple, often stereotyped, signals involving postural, vocal, colour, or other configurations. It is only when these fail to produce the appropriate response in the victim that more violent aggression, such as biting, fighting, chasing, ensues.

In man with his much more versatile communication system stereotyped patterns become relatively unimportant, and aggression is recognized by the meaning, and not the objective features, of his behaviour.

(C) Animal and human aggression are not, therefore, necessarily the same thing, and the question needs to be raised of the relation between the two: are they analogous (i.e., serving the same biological ends, but of different origin, structure, and mechanism) or homologous (i.e., of similar origin, structure, and mechanism, but possibly serving different ends) or neither?

(D) Animal aggression in the contexts of territory and status does have human counterparts; but they appear to be purely analogous — and are not normally regarded as aggression.

(E) Most human aggression appears to have no animal counterpart, either homologous or analogous; although the aggressive behaviour of the class bully seems to be an exception. But although this behaviour has mammalian homologies it appears to serve biological ends quite different from theirs.

(F) Amongst animals aggression is, in the ultimate analysis, a form of communication which serves to stabilize communities by determining territorial limits and social status. Man, on the

other hand, because of his powers of reason and the versatility of verbal language, does not need to the same extent the simple displays or the overt fighting of aggression. He could, in principle, relatively easily solve the problems of equitably sharing the world's territory and other resources, agree rank order for responsibility in society, settle differences of opinion by investigation and logical discussion, control population by limiting conception (and thus removing any biological reason for war), and in love discipline children and guide subordinates. But the undeniable fact is that he does not. Instead he employs his own unique types of aggression, in which intention plays a large part, and in which he himself sees moral evil.

## NOTES AND REFERENCES

1. D. Young, this JOURNAL, 101, 17.
2. T. B. Poole, this JOURNAL, 101, 209.
3. J. D. Carthy and F. J. Ebling (eds.) *The Natural History of Aggression* (Institute of Biology Symposium, No. 13, Academic Press), 1964. (a) T. Veness, pp. 77-82; (b) L. H. Matthews, pp. 22-32; (c) J. Laver, pp. 101-108.
4. It is worth pointing out that 'aggression' is sometimes used of man in a different sense from that covered by this definition. As Veness<sup>3a</sup> says in her paper to the above-mentioned Symposium, "it is used to refer to assertiveness where there is no direct implication of social interaction. For example, a man may be said to have an aggressive personality if he is generally energetic and determined in adopting and pursuing goals and if he is not easily daunted by obstacles of any kind. 'Aggressive' so used is virtually equivalent to 'active'." In the present paper I am excluding this secondary use of the word 'aggression' although it has been a further source of confusion.
5. R. Ardrey (*The Territorial Imperative*, 1967, Chap. 6) has, in fact, maintained that national territory is equivalent to small group territory in animals. He writes, "The biological nation, as I define it in this work, is a social group containing at least two mature males which holds as an exclusive possession a continuous area of space, which isolates itself from others of its kind through outward antagonism, and which through joint defense of its social territory achieves leadership, co-operation, and a capacity for concerted action. It does not matter too much whether such a nation be composed of twenty-five individuals or two hundred and fifty million." But this concept seems confused. An animal group may hold an 'exclusive possession' in the sense that the group *occupies* or *uses* the area while conspecifics not belonging to the group are excluded. This does not apply to human nations, which do not prevent non-nationals (except for a few *personae non gratae*) from entering their territory. On the other hand, some human nations do prohibit foreigners from having *legal ownership* of land in their territory: in this sense only they have 'exclusive possession'. This is clearly not applicable to animal societies. Furthermore, human nations do not necessarily isolate

themselves through outward antagonism. I do not know if there ever has been a nation which has completely excluded all foreigners from its territory and kept itself completely isolated; but if such has existed it is exceptional.

6. T. E. Rowell, "Hierarchy in the Organization of a captive Baboon Group", *Animal Behaviour*, 1966, 14, 430.
7. Laver<sup>3c</sup> entitled a paper "Costume as a means of social aggression", but he did not define 'aggression', and I find it difficult to know what he means by the term. I suspect his thought took the line: (a) animal status is maintained by aggression, (b) dress serves to maintain status, therefore (c) dress is aggressive. But one has only to set the argument out in this syllogistic form to demonstrate its falsity. But I may be maligning the author in guessing his line of thought.

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*Author's Addition*

I am not an ethologist, and cannot pretend to be familiar with the rapidly increasing body of research literature in this field. For this reason I am very grateful to Prof. R. A. Hinde and Dr. T. B. Poole who kindly read and criticized, from the ethologist's point of view, the manuscript of this paper. Their comments saved me from some serious ethological blunders.

A few of their philosophical comments, however, I had difficulty in accepting on epistemological grounds, so they would not agree with some of my statements: if these prove to be erroneous I take full responsibility. I realize that one or two of my philosophical assertions are debatable; but the purpose of this paper is to stimulate discussion in an area which was, for lack of time, largely by-passed in the discussion at the Institute's Symposium. I hope therefore that others will take up the debate in the pages of this Journal.