

The Testing of a Bond

The bond is the special social relationship which exists between certain individuals. Ethologists have described social bonds between members of a sexual pair, between parents and offspring, and among individuals of certain social groups, such as group territory birds or packs of wolves. Lorenz (*On Aggression*, London: Methuen 1966) suggested that 'doubtless the personal bond, love, arises in many cases from intraspecific aggression by way of ritualization of a redirected attack or threatening'. 'This interpretation is based upon the observation that in many animals behaviour patterns of threatening strengthen the bond with the partner and are made use of as greeting rites' (I. Eibl-Eibesfeldt, *Love and Hate*, London: Methuen 1971). The bonding behaviour according to Lorenz has not only evolved from aggressive behaviour 'but even in its present form is partly motivated by aggression'. It has changed 'into a means of appeasement and further into a love ceremony which forms a strong tie between those that participate in it'. Lorenz even considered that because of the need to be aggressive toward other conspecifics the bond members cannot afford to lose their aggressive responses toward one another since their images are similar to conspecifics, and the loss of aggression toward a bond member may decrease the adaptive aggression toward a conspecific. Indeed, the mixture of aggressive elements and sexual elements in the reproductive behaviour of vertebrates which have been studied is so universal that it became customary to analyse postures in terms of the aggression and sex drives which activate them (R. A. Hinde *Animal Behaviour*, London: McGraw-Hill 1966), and to consider the aggression involved in sexual display as an inevitable fact. I shall try to argue that the mixture of aggression and sex, of love and hate found universally in the behaviour of bonded individuals need not be interpreted from its phylogeny nor from the inability of mates to be selective in their aggression. I suggest that the aggression and other stressful behaviour involved in the bonding mechanism may function as a test for the strength of the bond. The observed effect on bonding may result from the information acquired from the test rather than from the performance of the behaviour as such.

A bond may be considered as an agreement between individuals to form a coalition. An individual should decide to form a coalition according to his own interests. But he should also take into consideration the readiness of others to have him inside the coalition, e.g. it is no use selecting a sexual partner who is unwilling to reciprocate. The readiness of a potential partner to form a coalition cannot be easily determined. A bond partner may gain an advantage over others by feeding false information. Therefore the information an individual needs about the tendency of other individuals to bond with it, should be as reliable as possible.

An assessment of the strength of a bond may be arrived at through observation per se. But it may be easier and quicker to discriminate between an individual which is likely to form a bond and another which is not, by imposing a test which will be accepted by the one and rejected by the other. An easy way to perform such a test is to inflict a stress on the tested individuals. The stress will be a condition for the formation or maintenance of the bond. Under these circumstances an individual which is not interested in the bond may not be ready to sustain the stress, while one which intends to maintain the bond will do so. It is also reasonable to assume that the reaction to the test should be a measure of the readiness of the individual to bond.

An individual with a tendency to exploit another (cheat) may also be willing to bear the stress of the test; hence it may not be easy to avoid cheating. But a test which contains a stress may be better at weeding out cheats than one which contains no stress at all. A male which sings for a female to join it on its breeding territory may improve its choice if it can distinguish a female making a brief feeding visit, from a female which intends to breed there. Aggressive behaviour may be a useful test.

Only a female which intends to stay and breed will be ready to tolerate the aggressive male with the prospects of being bitten from time to time. Only a male who is truly ready to be her mate will bear with the stress of a female encroaching on his individual distance, interfering with his daily activities and even demanding food. The stress involved in the test is costly, sometimes to both members of the bond, but both gain from the transfer of the information in which they are interested. The cost involved in such a test ensures the reliability of the information, since generally the cost of information validates the reliability of the information passed between individuals (A. Zahavi, In: *Evolutionary Ecology*, Ed. Stonehouse & Perrins, London: Macmillan 1977. In press).

The bonding behaviour among members of social groups, like group-territorial birds, is very similar to sexual bonding in the sense that aggression is high in newly formed groups and is often very hard to detect in well established groups (Zahavi pers. obser. on Babblers). The same reasoning suggests that aggression toward a new potential member of a group may be a practical way to test its intentions.

Among well-established bond members, activities which signal love, like leaning, embracing, caressing, allogrooming and allopreening, kissing, etc., are often still mixed with genuine aggression as manifested by a reaction which often signals unpleasant feelings from the passive participant. A bout of allopreening among Babblers often terminates when the preened bird moves its head away as if it was hurt. Embraces and the leaning of one member of a couple on another, are often terminated when one cannot stand any more the physical stress involved. These stresses are very appropriate if such an activity is meant to test the bond. The readiness of an individual to stand the physical stress involved in the test is likely to be proportional to the strength of its feeling. The individual who seeks the information should continue to impose the stress until he gets the reaction which will tell him the feelings of his bond partner.

Similar physical stresses are involved in the love signals passed between offspring and their parents. Kissing, embracing and leaning are common. Offspring of many species may inflict on their parents much physical stress by jumping and crawling over them and by the manipulation of parts of their body (pulling, biting, etc.) to the extent that it hurts. The jumping of a child on the lap of an exhausted parent coming home from his daily work, is a signal of love and affection. Why should a signal of love involve a stress? These observations are understandable when it is accepted that parent-offspring relations involve both a common interest and a conflict (R. L. Trivers, *Am. Zool.*, 14, 249-264, 1974). Under such a conflict there is a need to test the reliability of the information transferred (Zahavi loc. cit. 1977). My hypothesis requires that a reliable test of love should be stressful.

It is interesting to note that the same testing strategy is used in communication across species. Dogs jump on their masters when greeting them until they are stopped. Dogs and cats come to lean on their masters. My dog approaches me often, slowly, to put some weight on my leg and then gradually increases its weight until it is stopped. If it is not stopped it may end with most or all of the weight of its body on me.

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