

Altruism in human and non-human animals

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Altruism in non-human animals

It is called altruistic any behaviour that increases the chances of survival and/or reproduce of the receiver, to the disadvantage of the altruist. Altruism is an interesting theoretical problem because, apparently, it appears to be in contradiction with the Darwinian theory of natural selection. As a matter of fact, this theory suggests that for each individual those characters, including behavioural ones, which improve the individual's chances to survive and reproduce are favoured (individual fitness). How then is it possible that behaviours which penalise the individual displaying them, and favour other individuals, can be positively selected?

There exist in nature different examples of altruistic behaviours in different zoological taxa. For example, altruistic behaviour can be found in different species of birds nesting on the ground: in these species when a potential predator approaches the nestlings in the nest, the adults move away and, faking a physical handicap, attract the attention of the predator away from the nestlings. Another example come from male baboons, that form temporary alliances to overcome another male interested in a female in oestrus.

Different hypotheses have been formulated to explain the apparent evolutionary paradox represented by altruistic behaviour. The first hypothesis can be labelled as "kinship selection", which explains altruistic behaviours aimed at relatives. The social insects, the hymenoptera, represent the classic example. Hamilton has originally proposed this hypothesis in the early '60s, in the effort of finding a gene-based theory,

which could explain the existence in these insects of sterile castes (Hamilton, 1964). Then, this theory has been expanded to different kinds of animals as well, in the cases in which an altruistic behaviour allows the survival of a number of individuals genetically related with the altruist, and therefore carrying part of the same genes (inclusive fitness). Among other ideas, this theory was also one of the fundamental pillars of a new discipline called "sociobiology", which developed in the second half of the 70's (Wilson, 1975).

Altruism in non-human primates

Non-human primates, being phylogenetically closer to humans than any other animal, represent very interesting and promising subject for the study of altruistic behaviour. These animals, perhaps, are the ones that can help us to better elucidate possible evolutionary paths, that lead to the manifestation of some human behavioural traits. We have mentioned above examples of altruistic behaviours in different animal, but in the cases mentioned the altruist appears, directly or indirectly, to be rewarded in some way for his altruistic act. We can think of examples in humans of true altruistic behaviours, that is, completely unselfish acts for somebody else's benefit. Do cases of "true altruism" exist in non-human primates? Studies carried out, for example, in chimpanzees can provide us with elements for discussion. In a study by Warneken and colleagues, semi-wild chimpanzees helped unfamiliar humans to reach a stick, with no apparent reward (Warneken *et al.*, 2007).

A possible interpretation of the results observed could be that captive chimpanzees associate humans with food rewards, as a result of a generalised experimental protocol. However, Warneken carried out another experiment, in which chimpanzees had to choose whether to help or not unrelated chimpanzees to unchain a door. The results showed that chimpanzees significantly choose to help their conspecifics. These results were in contrast with results obtained in other laboratories, where chimpanzees did not help each other. Therefore, chimpanzees appear to be able to engage in altruistic behaviours similar to those we would expect in the case of true altruism, but the possibility for these behaviours to be shown depends on individual differences, context and history of that particular group of animals. For example: how the experimental history of that particular colony of captive primates do influence its behaviour, in relation to the expectation of obtaining care and rewards?

Obviously, data from natural populations are needed. Frans de Waal, rightly so, affirms that in captivity animals display more spontaneous altruistic behaviours because they are relatively freer from the necessities and perils of life in the wild. We could also add that in captivity, as mentioned before, there is more opportunity to learn the association between a certain act and the consequent reward. Having said that, data do exist of what seems to be true altruism in nature, but they could have to do with the reward of improving the altruist's social status and reputation within a social group (de Waal, 2006). So, is this true altruism?

The evolution of altruism in the human primate

What are the implications of the study of altruism in animals for the understanding of altruistic behaviours in humans? We feel that it very much depends on how we want to interpret our behaviour. The study of cooperation and altruism in humans is an area

of research where, potentially, the personal belief and the point of view of the researcher on how society should be can potentially detract from the objectivity of the scientific results.

As a matter of fact, as de Waal indicates, two are the major theories regarding human nature. The first one, called "the veener theory" regards humans as inherently selfish, where ethics helps humans to keep the nastiness of the evolutionary process at bay (Huxley, 1894, reprinted in 1989). The other theory sees humans as naturally inclined toward cooperation and altruism. The reason beyond the latter theory is that cooperation is considered an essential part of a functioning social system. Non-human and human primates are both characterised by highly complex social system, which can better function when cooperation plays an important role in the relations among its members. The mechanism which allows the onset of cooperation and altruism is considered to be "empathy" (de Waal, 2006), that is, the possibility to perceive the state of difficulty or negative condition in which a conspecific find itself in a particular moment. This need to keep together the members of a complex social system through cooperation and altruism, mediated by empathic capabilities is, in our opinion, a convincing argument in favour of an evolutionary continuity between humans and non-humans for what concerns altruistic behaviours. In other words, it appears to us that the existence of cooperative behaviours and altruism in our social ethogram could have a long evolutionary history. But, again, an important question is: "Does true altruism really exist?"

Conclusions

The study of altruism in animals is a very interesting area of study, from an evolutionary point of view. It is a powerful tool in understanding the origin of part of human behaviour. Cooperation and reciprocal altruism, for example, are essential part of humans' behaviour, and their origins can be tracked down in other animals, with a special

emphasis on non-human primates. Such approach is in accord with an evolutionary framework, characterised by a continuity of forms and behaviour between humans and other animals. However, a word of caution should be said about the influence of the researcher's personal point of view in interpreting data regarding inherently cooperative or non-cooperative nature of human behaviour (and this goes also for who's writing here).

Finally, we also think that the recognition of common aspects of altruistic behaviour between human and non-human animals should not be taken as a shortcut to affirm the existence of behaviours guided by a sense of morality among non-human animals.

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