Natural Theories of Morality

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Most religions believe that God endowed humans with the qualities of altruism and morality and provides us with the authority for values and meaning. Otherwise, they see humans as basically selfish and sinful. These qualities raise us above animals, but it is feared that they can easily be lost. Therefore much religious practice is directed at preserving this veneer of goodness and morality less we fall into all sorts of barbaric and sinful behavior. The question that I want to address is: does science provide an alternative, naturalistic explanation of how we acquired these qualities. And if so, what guidance does it give us in dealing with the perplexing issues that often arise in these areas.

Science has increasingly provided convincing natural explanations of phenomena formerly understood only in terms of religious precepts, and that understanding has allowed us to find solutions to many long-standing problems. But, science has never been able to replace the religious orientation of the majority of the world's population. Apart from the widespread ignorance of science, much of the rejection of science is due to people being turned off by the seeming purposeless of the universe depicted by science. Indeed, Steven Weinberg, a Nobel laureate in physics, famously said: "The more we know of the cosmos, the more meaningless it appears." Because love, altruism and morality are at the heart of our value system, any natural explanation of how we acquired these characteristics must reinforce this system if it is to be accepted.

Let's look at the problem. While it is clear that we all are better off when everyone cooperates with everyone else, and to some degree sacrifices his own interests for those of the group, it is difficult to see how biology could have created such behavior. Darwin's theory of natural selection makes altruism difficult to explain because "survival-of-the-fittest" implies that the traits that get passed on are those that are good for the individual, not necessarily for the group. From this perspective, there is never a reason for an individual to risk his/her life for another. However noble the motives, such individuals would be less likely to survive to have children and hence an altruism trait, even if it could even get started, would eventually disappear from the population.

Nevertheless, in the past 50 years major progress has been made in the understanding of the origins of altruism and morality. There have been many studies of animal behavior, evolutionary theory, psychology and brain structure. I shall mostly talk about the first two.

Some of you may have seen the article entitled "The Moral Instinct," by Stephen Pinker, that appeared last week in the New York Times Magazine. He is primarily interested in how and why we make moral judgments on a wide variety of social issues. This talk is more focused on altruism and interpersonal morality, subjects that are much better understood and can be covered in a short talk. I should also mention that there are at least a dozen good books on the subject. They mostly agree on the basic findings, but emphasize different aspects, of which there are a lot.

The first breakthrough was made in 1964 by William Hamilton. He looked at altruism from the perspective of the propagation of any genes that might lead to it. Because close relatives share a large fraction of our genes, altruistic acts toward those relatives also will aid in the propagation of our genes. This can be true even to the point of self sacrifice. The genetic math behind such behavior is that each parent shares half of his/her genes with each child and so saving a child is a

major benefit to the propagation of the parent's genes and worth considerable risk to the parent. This, of course, leads to the legendary heroism that mothers exhibit in protecting their children. One also expects to see strong altruism between siblings because they also share half of their genes. Altruism is seen, but it is somewhat subverted by their competition for parental attention.

But how can we understand why people often sacrifice themselves or put themselves at risk to save people not related to them and hence do not share their genes? There are innumerable stories about people risking their lives to save the lives of friends, or in war time, soldiers sacrificing themselves to save other members of their platoon.

In order to understand altruism to non-kin, we must make the distinction between proximate and ultimate goals. While our ultimate goal under natural selection is to propagate our genes, our bodies achieve it by giving us a spectrum of urges. Satisfying these urges becomes our proximate goals. One of these urges is to help our relatives. But of course, this only works if we are able to distinguish relatives from others. It turns out that nature uses some rather simple mechanisms. For example, it has been found that many birds and animals are programmed to assume that their mother is the first moving thing they see or smell after they are born. The ethologist, Konrad Lorenz, was able to make himself the surrogate mother of many ducklings by removing the hen and arranging to be present when the eggs hatched. Without hesitation, the ducklings loyally followed him wherever he went about the grounds of his institution. So it is easy to trick this mechanism into a ridiculous outcome, but it works very well under normal conditions.

Because humans evolved in small hunter-gatherer bands in which nearly everyone was related, our ancestors brains appear to have become wired to assume that anybody that they interacted with on a daily basis was a relative. This was doubly true for anyone we were close to as a child. Emotionally, we still make this assumption, even when we know that an individual is not related to us. There's lots of evidence supporting this theory. To mention one, studies of children raised on a Kibbutz found that there was very little sexual attraction between teenagers raised there, despite the fact that most of them were unrelated.

The emotion we call love was probably evolved to make kin altruism work. But, once the neural mechanisms for love were established, they could be transferred to other people and used for other purposes such as bonding with a potential mate.

Empathy and reciprocity are other major building blocks of altruism and morality.

Consider a couple of situations. You are driving your new car down a country road, when you encounter a young girl, who has had a accident on her bicycle that has left her with a broken leg and a nasty gash; she needs immediate medical attention. Do you take her to the hospital, or pass her by and save the expense of replacing your new, white leather seats? I think most of us would take her to the emergency room and pray that the blood would come out of the seats. Contrast this with your reaction when you open a mailing from UNESCO that asks for $50 for vaccines to save the lives of 10 children in an African village. If you are like the vast majority of people, the appeal ends up in the wastebasket. The difference is that we humans evolved our facility for empathy when we dealt with others in one-on-one relationships, and before we had written language.

Why do we have such feelings? There are several lines of reasoning leading to the conclusion that empathy is an essential element to our existence as a social species. The most important is that human infants, along with those of many other primates, are completely incapable of surviving on their own. They depend on caregivers being responsive to their needs as expressed through their

smiles and cries. All mammals and birds display empathy, at least to the extent of providing parental care to the young; social animals, especially those with large brains, display much more empathy. So it would be surprising if human empathy was not closely related to that of other mammals and especially other primates..

To give some examples: a study of rhesus monkeys employed a variation on the standard test method where a monkey has to pull a chain to get some food. The experimenters arranged it so that, in addition to giving the food, a pull on the chain also delivered a small shock to a monkey in an adjacent cage. After the monkeys realized what was happening, they refused to pull the chain even it meant going hungry. One monkey stopped pulling for five days and another for 12 days.

There are many examples of one primate coming to another's aid in the fight or putting an arm and around round the shoulder of a loser of an attack. A particularly poignant example of empathy was observed in the chimpanzee colony at the Arnhem Zoo:

> "After cleaning the hall and before releasing the chimps, the keepers hosed out all the rubber tires in the enclosure and hung them one by one on a horizontal log extending from the climbing frame. One day, Krom (an old and low status female) was interested in a tire in which water had stayed behind. Unfortunately, this particular tire was at the end of the row, with six heavy tires hung in front of it. Krom pulled and pulled at the one she wanted but couldn't remove it from the log. Krom worked in vain on this problem for over 10 minutes, ignored by everyone except Jackie, a seven-year-old that Krom had taken care of as a juvenile. Immediately after Krom gave up and walked away, Jackie approached the scene. Without hesitation he pushed the tires off the log one by one. When he reached the last tire, he carefully removed it so none of the water was lost, carrying it straight to his aunt and placing it upright in front of her. Krom accepted this present without any special acknowledgment, and was already scooping up the water with her hand when Jackie left."

Social animals have developed several forms of cooperation that have helped groups of them to prosper. Often, one individual may provide a great benefit to another at little cost to itself. This help may be extended as favors from one individual to another, but most often these favors are repaid at a later date. This process was named "reciprocal altruism" by Robert Trivers in 1971, and numerous examples of it have been observed amongst animals and even plants. A classic example is grooming amongst our primate relatives; one monkey or ape will spend considerable time picking lice and other parasites off of another. The favor is usually reciprocated a later time. Besides improving health through the removal of parasites, this process builds friendships and the trust needed for more important reciprocal exchanges.

It's doubtful whether this process should be called altruism, because it is usually expected that the favor will be repaid, and those who don't reciprocate are usually discriminated against, and even ostracized in extreme cases. Cheating is not a problem in small communities, because everyone knows everyone else; cheaters quickly get a bad reputation and become shunned. In larger communities, people have become very skillful at detecting potential cheaters. It has been postulated that, as humans lost their hair, but acquired language skills, they substituted gossip for mutual grooming. Although there is no hygienic benefit, gossip does build friendships and is very effective at sharing information about the reliability of their associates.

Indirect altruism is when an individual provides services or favors with no expectation of reciprocal acts; usually because the beneficiary is the group as a whole, or is someone who is in no position to return the favor. What the altruistic individual gets out of it is the goodwill of his fellows, which may serve him well in the future. To quote Shakespeare: "The purest treasure mortal times afford is spotless reputation."

Nature provides some evidence of cases where physical characteristics or behaviors have evolved despite their being a liability to survival. An example is the peacock's beautiful, but huge and unwieldy tail. It is believed that peahens prefer such mates, because it shows that the cocks must have great health and strength in order to overcome such a major liability. This is known as the "handicap principle." It has been documented for a number of species including a very social species of bird called the Arabian Babbler. What is striking about Babblers is that certain of the birds seem positively eager to help, jostling to act as sentinels, thrusting food upon unwilling recipients, etc. The researchers concluded that these individuals are attempting to raise their prestige within the community in order to attract mates and deter rivals.

Now some of you may be thinking that this is a very cynical perspective. One critic said: "Scratch an altruist, and watch a hypocrite bleed." My response is that you have to recognize how evolution works; when a strategy is effective, structures or mechanisms evolve to strengthen that strategy. Then, as I mentioned before, once structures or mechanisms are established, they may serve purposes that are quite different than the ones that led to their creation. Our lungs and vocal chords are examples. The lungs are an elaboration of a fish's swim bladder and our vocal chords evolved from a device that kept food from entering our lungs. So in a similar way, true altruism probably arose out of what was once self-serving behavior.

Humans are also very good at mutualism, a form of cooperative behavior observed in many social animals. “Mutualism” is the term given to the cooperation of several animals who join forces to accomplish something that they cannot do individually. One of the best examples is where predators, such as lions or wolves, form a pack to bring down large or especially agile prey. What surprised researchers who have studied wolf packs is how extremely gentile wolves are when dealing with each other in the pack. Although they do compete for dominance, they rarely harm one another. Because they are so efficient at killing, yet need each other, they have had to develop extremely strong inhibitions against harming one another. This characteristic is reflected in our great trust in our dogs, who have inherited their wolf ancestors' inhibitions and transferred them to their relations with humans.

So it is pretty clear that altruism is something we share with a number of other species, and is something that evolved to make us an effective social species. But, morality is not the same as altruism, and it has been found difficult to pin down. The problems in deciding where our moral sense comes from is that it is all mental and verbal. We have no way of comparing it with animals because we have no way of learning about animals' mental states and of course they cannot speak. We can only observe their behavior. In his studies of chimpanzee behavior, Frans De Waal found that they do have prescriptive social rules in that there are accepted and unaccepted behaviors. He is not to saying that they make moral judgments, but only that they do respond strongly in a positive or negative way to certain types of behavior by their peers. For example: in fighting with females, chimpanzee males do not normally use their rather deadly canine teeth. On the few occasions where a male was observed to use them, the female made a characteristic cry to which the whole colony responded with barks of complaint; sometimes a group of females would even join forces to drive off the aggressor.

To get a handle on the concept of morality, Richard Joyce asks us to: "imagine a community of people all of whom have the same desires: they all want to live in peace and harmony, and violence is unheard of. Everywhere you look there are friendly, loving people, oozing prosocial emotions.... They wouldn't dream of killing, stealing, etc.; they just don't want to do them." He then points out in that these people, while very praiseworthy, are not exercising moral judgments.

Morality establishes standards of behavior. Webster's defines it as the capability of making distinction between right and wrong in conduct. Frans De Wall is more specific; for him the moral domain is limited to actions which help or hurt others and usually involve trade-offs between helping one person and hurting another. He says that anything outside of helping or hurting is outside the scope of morality.

Intuitively, we make moral systems that set priorities such as weighing the degree of risk involved. For example, it is generally considered immoral not to throw a readily available life-ring to a drowning man, but not immoral to refrain from diving into a raging torrent to save him. We invariably favor our in group. The most important, of course, is the self, followed by family, community, nation, humanity and all other life forms. For example, our children will always be given preference over strangers, and the life of a human is usually considered more important than the life of an animal. Our circle of concern is elastic; it expands when times are good and contract in times of stress. Times have been good in the United States for many years, and so we hear a lot about animal rights. But, in war-torn areas such as Sri Lanka, Iraq and Palestine, people's concerns and loyalties tend to be restricted to their families and clans. Soldiers under the stress of combat usually restrict their loyalty and moral sense to their units, and many wartime atrocities are carried out by soldiers who lash out in misdirected moral outrage against those they think are responsible for the deaths of their friends.

It is most likely that morality arose as a way of ensuring the smooth functioning of reciprocal and other forms of altruism. Chimpanzees, like most social animals, exhibit altruism, but they are very impulsive and do not appear to be able to adjudicate between selfish and altruistic urges. This leads to breakdowns in cooperation, often resulting in conflict. In his book "Peacemaking among Primates," De Wall describes elaborate peacemaking efforts that are used by them to resolve the conflicts. Chimps' social abilities are adequate to hold together small groups of chimps, but are not strong enough for them to form coalitions between groups or create larger organizations. It is clear that humans have developed much better self-discipline, allowing them to live in large communities and form powerful organizations. They have also reduced the homicide rate within small groups to less than one one-thousandth of the rate observed in chimpanzees. But, humans do less well in inter-group relations, where warfare, genocide and terrorism can lead to killing on astronomical scales.

Our moral sense has many similarities to language. It appears to be universally present in all cultures, but like language, there is considerable variation in the specific content from culture to culture. And, it evolves over time. Terrence Deacon has made the case that humanity's principle uniqueness is their ability to think symbolically. Instead of directly linking, say cause and effect, we take the indirect route of the first linking the cause and the effect to symbols, then manipulating the symbols until we reach a conclusion and finally translating the results back to the real world. Although this may seem unduly complex, it has proven effective and given humans the power to understand and master the world. This symbolic capacity is usually thought of as a language skill, but words are not our only symbols; we also use musical symbols and visual symbols–flags, icons, etc.

In most other ways, our mental facilities are very similar to those of our primate relatives. We have retained the primate thinking skills, and usually refer to them collectively as our emotional intelligence. It is this commonality that makes chimps seem so human.

Clearly, both types of thinking are involved in our moral sense. We have used our symbolic capabilities to debate about right and wrong for thousands of years. And our legal system is founded on principles, i.e., symbols. But in most situations, people make moral judgments in a flash; they know right from wrong, or at least they are convinced they do. This speed is the hallmark of emotional thinking.

Most of the time, our rational/symbolic and emotional processors are in agreement, but when they don't we are left in a quandary. One classic example of this is the trolley dilemma. Five hikers are walking down a track unaware of a runaway trolley bearing down on them. They will certainly be killed unless you, who have control of a switch, throw it and divert the trolley onto an adjacent track. The problem is that there is a single hiker on the adjacent track, who will be killed if you throw the switch. Is it morally acceptable to throw the switch? Most people say yes, and when asked why, say something like: "it's the greatest good for the greatest number of people." Now, consider an alternative scenario. Five patients are dying in a hospital because they need transplants which are unavailable: a heart, two lungs and two kidneys. A nurse suggests to the distressed doctors that a suitable donor is downstairs; a healthy young man who came in for some blood tests. Harvesting his organs would of course kill him, but it would save the lives of the other five patients. How many of you would think that's the right thing to do? Not many! But exactly the same logic applies as in the trolley case. The difference is in the way our emotional logic rejects the hands-on killing of another human.

To sum up my talk: there is very good evidence that human altruism and morality are well rooted in our mammalian and primate ancestry and are essential to our evolutionary success as a social species. They evolved, however, to facilitate small-group cohesion and cooperation. Because we have outgrown this level of social organization, we often encounter situations where our moral sense does not provide good guidance. For these, we employ our rational, symbolic thinking and check back to see if the answer feels right. Sometimes this works and sometimes it doesn't.

References

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