The Evolution of Morality and Religion

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Contents

1 Concepts and codes of living

1.1 CONCEPTS OF MORALITY AND RELIGION

Something is *moral* if it *pertains to right rather than wrong*. The question of what is right, or good, or beneficial is discussed further in Chapter 4, Section 1 but, as Midgley (1994 pp. 13–14) has emphasised, morality should not be thought of as a topic which is obscure and difficult to comprehend. We each have many clear ideas about actions which are good or not good. Planalp (1999 p. 161) states that:

> To behave morally is to judge right and wrong, good and bad, and to behave accordingly.

Hence decisions about moral issues are taken many times during every day. People 'behave morally' most of the time and often discuss questions of what is right or wrong. In doing this they express an interest in *ethics* which is *the study of moral issues*.

Most people who refer to moral acts are considering a circumstance where there is some interaction with other individuals. These individuals that are the subject of moral acts are often, but not necessarily, of the same species. They are usually alive at the time of the act but the action may affect individuals at a later time or may affect those as yet unborn. The idea that another individual is affected by a moral action is clear in Rottschaefer's (1998, p. 42) statement:

> Moral actions and intentions can be discussed either in terms of providing benefits or in terms of refraining from harming.

The benefits and harms are effects on other individuals. These may actually accrue to the individuals or they may be potential effects which would result if an intended or planned act were carried out. Individuals could have moral intentions even if the act was not followed by

the expected beneficial effect on another. Actions which would never affect another individual are not moral or immoral.

Moral actions form part of moral systems within societies. Alexander (1987 p. 1) writes:

> Moral systems are societies with rules. Rules are agreements or understandings about what is permitted and what is not, about what rewards and punishments are likely for specific acts, about what is right or wrong.

He considers that moral behaviour consists of following rules and not cheating. These and many other authors are referring to actual or potential impacts on others when they consider what is moral.

In order to act in a moral way, some degree of responsibility for actions is needed. Aristotle (330 BC in Sections 1109 b30–1111 b5) proposed that the six kinds of knowledge requisite for being responsible are to know: what you are doing, who you are, what or whom you are acting on, and to what end and to what degree you are doing it. Fischer and Ravizza (1998 p. 25) extend this argument by saying:

> A person can be morally responsible for his behavior. Moral responsibility, however it is understood, appears to require some sort of control.

The question of control is explained further in Section 2 of this chapter. If individuals had no control over their actions, they would not be responsible for them, so a brain which enables them to have some degree of control is a prerequisite for moral behaviour.

An individual with the capacity to be responsible must have some ability to think and hence to behave in a rational way. Kant (1788) argued that rationality is a foundation for morality and conversely (according to Porter 1995 p. 9):

> Kant's own work is largely motivated by a desire to show that morality has a central place in rational discourse.

Bentham (1781) also drew parallels between discussions about morality and rational investigation. Some recent definitions of morality include reference to rationality; for example, Gert (1988 p. 6) states:

> Morality is a public system applying to all rational persons governing behavior which affects others and which has the minimization of evil as its end, and which includes what are commonly known as the moral rules at its core.

The reference to a 'public system' could be misleading here as it might imply that the morality would not apply in situations involving two or three individuals. Gert (1998, p. 5) also says that some people 'define morality as the code of conduct that would be adopted by all rational persons' and 'morality is a system that all rational persons advocate that other people adopt, whether or not they adopt it themselves'. As soon as there are references to control, thinking and rationality in an explanation of morality, a proportion of people will stop thinking of any individuals, except those humans who have developed such abilities, when considering moral behaviour. However, each ability is present to some extent in young children and in animals of other species.

The description and elucidation of moral problems has long been a subject of great discussion. Kant (1788) advocated analytical debate about moral issues and he thought that this could determine the uniquely correct answer to any moral question. However he did not believe that it is possible to devise moral principles, for he said:

> Who would want to introduce a new principle of morality and, as it were, be its inventor, as if the world had hitherto been ignorant of what duty is or had been thoroughly wrong about it.

Some modern philosophers have gone much further than this; for example, Williams (1985) considered that there should not be attempts to develop theories about morality. The argument that some prohibitions of actions are central tenets of moral dogma which should

not be questioned is presented and discussed by many authors, e.g. Anscombe (1958).

Every major religion includes widely known positions on a variety of moral questions (see Chapter 5). However, definitions of religion often include statements about belief which are difficult to verify objectively. The following definition is more descriptive. *A religion is a system of beliefs and rules which individuals revere and respond to in their lives and which is seen as emanating directly or indirectly from some intangible power*. The power may be considered to be either an individual deity or a profound consortium of interests. These beliefs and rules form the basis for individuals' attempts to conform with their own evaluation of what the power would construe as right. There are very many statements of what particular religions are, an example being that of Sykes (1984, p.246):

> Christianity from the Christian standpoint is the response appropriate to the undeviating goodness of God.

If the words Islam, Muslim and Allah were substituted in this sentence, it would probably be acceptable to a further large section of the world.

1.2 THE COMPLEXITY OF BRAIN CONTROL

In every aspect of human functioning we can usefully look for parallels and origins in other species. As a biologist, it seems to me entirely normal to say that we humans are animals, to include humans as one of the animal species and to refer to 'humans and other animals', and not to 'humans and animals' as if these were fundamentally different categories. However, many people do not think in this way. In order to counteract this view Midgley (1978) felt the need to state in the introduction to *Beast and Man: the Roots of Human Nature*:

> We are not just rather like animals, we are animals.

It will be assumed, throughout this book, that humans are animals. This does not mean that humans are identical to any other animal.

The extent of similarity is explored further in Chapter 2, Section 1 and some human views of other species are discussed in Chapter 7, Section 3.

In order to be able to appreciate the extent of control exerted by individuals who may or may not act in a moral way, we have to consider the functioning of the brain in man and other social animals. When attempting to describe and understand the extent of control over their behaviour which individuals have and their interactions with their environment, including other individuals, biologists have often been afraid to postulate the existence of complex mechanisms. Many people who discuss non-human species are reticent about referring to their purposive behaviour, the cognitive ability of the individual, the existence of complex concepts in the brain, or the degree to which terms such as aware, conscious, or moral can and should be used. Theories about these aspects of the functioning of the brain and attitudes to them have been considerably affected by zealous adherence to the use of Occam's razor and Lloyd Morgan's canon. William of Occam (1285–1347) presented a principle of parsimony which commended a bias towards simplicity in the construction of theories. This principle, which was utilised specifically in relation to brain function and the control of behaviour by Lloyd Morgan (1896), has been held as an axiom by those who argue that no complex mechanism should be accepted as the explanation for observations if a simple mechanism is an alternative explanation. In several aspects of biology where the underlying mechanisms are complex, this approach can lead to false conclusions. Crick (1989, p. 138) stated that the use of Occam's razor is dangerous in biology and referred to physicists looking for the wrong kind of simple generalisations. The brain is extremely complex in its function and it is my view that progress in understanding thought processes and the control of behaviour has been slowed down considerably by an excessive desire to use simple theories. Erroneous ideas which are a consequence of this way of thinking include: animals are automata; much of behaviour is controlled by 'instincts' or by mechanisms involving only simple stimulus–response links; habituation is

always a simple process; learning is an occasional event in life rather than a very frequent event; human babies and non-human animals do not feel pain; the systems controlling interaction with the environment of an individual operate exclusively by negative feedback rather than by more demanding feed-forward control; anxiety, boredom and intellectual pleasure are confined to a small proportion of gifted humans. These ideas are now refuted by many, including the author (Broom 1981 p. 13, 1998, Broom and Johnson 1993, p. 25). The investigation of more complex mechanisms has often been blocked, or not seriously contemplated, because of the pressure on scientists and others to look for and investigate the simplest explanatory mechanisms. Papers and other scientific writings have been criticised or ridiculed because serious consideration was given in them to an explanation of brain function and behaviour which was not the most parsimonious available. In some cases, the more parsimonious explanations have been found to be correct and there is a danger associated with moving too rapidly to the conclusion that an individual has some elaborate ability or controlling system. However, where complex mechanisms may exist, they should be investigated in a balanced way.

Since the writings of Sechenov (1863), most scientists have accepted that behaviour is controlled by the brain and that thoughts, decisions, hopes and beliefs are located in the brain and in no other organ. These views have been gradually accepted by others in society but it is still not uncommon to hear people referring erroneously to feelings, hopes, beliefs or even decisions as being located in the gut or heart. An underlying implication of distinguishing between brain functions and the supposed heart or other body functions is that analytical thinking is different in some fundamental way from the more important and less calculated processes in life. People may feel uncomfortable if the seat of their decisions about what should or should not be done, and of their aspirations, desires and reverences is said to be the mechanistic organ which they perceive the brain to be. Those who have moved away from referring to the heart or other body parts as being the alternative site to the brain have often found solace in

making a distinction between mind and brain. The brain does not act in isolation from the body for we now know that most body control systems involve complex interactions between the brain and cells and organs in the rest of the body. Information of various kinds is stored outside the brain, for example in the cells of the immune system (Dantzer 2001), and new information comes into the brain from many sources in the body. However, the complex analysis of the available information is carried out in the brain.

There is discussion amongst philosophers about this distinction between mind and brain but whilst this discussion might occasionally raise an interesting point about brain function, I believe it to be a sterile argument. It is my view that the mind is part of the brain and all of the processes attributed to the mind are a part of brain function. It is not useful to view the brain as consisting of two separate parts, one of which is the mind (see Chapter 3, Section 4). The substantial literature on this subject is not reviewed here as I have found no need to use the word mind in the remainder of this book.

The systems in the brain involve processes which range from relatively simple to very complex. An example of a simple decision taken in the brain is that which leads to the cessation of all movement for a few seconds when a sudden loud noise is detected. This clearly involves a different complexity of processing from that which occurs when deciding what kind of communication to initiate with another individual about a delicate subject in a circumstance where several slowly changing social factors must be taken into consideration. There are many kinds of interaction with the environment of an individual which are complex and involve difficult and wide-ranging analysis in the brain. However, amongst the most complex are those which occur in a long-lasting social group. Within groups of free-living individuals, each of which can behave in a wide variety of ways, the prediction of the optimal way to act is very challenging for every group member. Chance and Mead (1953) argued that the enlargement of the neocortex of the primate brain had occurred because of the complexity of the social situation with which the individuals had to contend. Jolly

(1966) was more specific in proposing that group living would lead to selection for intelligence. The idea was taken further by Humphrey (1976) who stated, firstly, that primates have intelligence which is surplus to that required for normal daily maintenance and, secondly, that social complexity might have been the significant selection pressure promoting primate intelligence. Byrne and Whiten (1997), in a book which explores primate intelligence in social situations much further, explained (p. 2) that Humphrey referred to:

> social manipulation to achieve individual benefits at the expense of other group members, but without causing such disruption that the individual's membership of the group is put in jeopardy. Particularly useful to this end would be manipulation in which the losers are unaware of their loss, as in some kinds of deception, or in which there are compensatory gains, as in some kinds of cooperation.

Although the idea of complex intellectual processes having evolved as a result of long-lasting social living was developed by those who study primates, it is clear that these abilities are also present in socially living ungulates such as cattle, sheep and pigs, carnivores such as wolves, cetaceans such as dolphins, birds such as jays, ravens, parrots, babblers and fairy wrens and probably in some fish, bees and ants.

Attempts to relate brain size to intellectual ability in mammals and birds (e.g. Jerison 1973) have been shown to be worthwhile only when comparing rather diverse animals. Within taxonomic groups of animals, diet and ranging behaviour are not consistently related to brain size (Harvey and Pagel 1988, Harvey and Krebs 1990, Barton and Dunbar 1997). Positive correlations have been found between the size of the hippocampus, a part of the brain which is involved in learning and memory, and the practice by birds (Krebs 1990) and rodents (Jacobs *et al*. 1990) of storing food in hidden caches. There is also clear evidence that the neocortex ratio (neocortex volume divided by the volume of the rest of the brain) is larger in those group-living primate species that live in larger rather than smaller groups and hence, presumably, have more complex relationships (Sawaguchi and Kudo

1990, Dunbar 1992). Similarly, carnivores living in larger groups have a larger neocortex ratio than those living in small groups and the vampire bat, which lives in stable groups and shows reciprocal grooming and feeding (Wilkinson 1990), has a larger neocortex ratio than *Phyllostomus discolor*, a less social frugivorous bat (Barton and Dunbar 1997).

The control by individuals of their interactions with their environment during life, which is important for survival, involves motivational systems (Broom 1981, Chapter 4, Broom and Johnson 1993, Chapter 4). The effective functioning of motivational systems depends on the quality of the input to the decision-making centres in the brain. In a very complex environment, such as one which includes many social group members, adequate control requires good quality input and effective decision-making processes. One form of control is that which occurs by negative feedback; for example, when an action is taken and the consequences are monitored and have some corrective effect on the way in which that action is continued. Another form of control, which can result in greater stability of the system, is feed-forward control, in which destabilising events are predicted before they occur and actions are taken to prevent the disturbance of the stable state. The utilisation in feed-forward control of experience, memory and other information to predict and prevent possible perturbations of state requires more brain processing capability than that which is needed for most negative feedback control systems.

An ability to control is important for moral actions. Blum (1980, p. 3) states that 'morality must involve self control' and the importance of control in all aspects of moral responsibility is emphasised by Fischer and Ravizza (1998). The subject of control in social and other situations has been investigated during much ethological and psychological research. Dennett (1984, p. 51) says:

> We want to be in control, and to control both ourselves and our destinies. But what is control, and what is its relation to causation and determinism? Curiously, this important question has scarcely been addressed by philosophers.

The subject of free will and the relationship between the concept and our knowledge of brain function is one which is also worthy of discussion by neurobiologists. Even though some responses of humans and other species have a partly automatic component, there is much scope for the actions of individuals to be modified following thought and hence to involve free will. Many actions that can have a significant impact on other members of a social group, carried out by mammals, birds and probably other vertebrate animals, involve free will. Even those which are wholly or largely involuntary, such as startle responses when danger is perceived or movements required to obtain a food item, have some potential for deliberate modification and in some species can be mimicked in order to deceive a watcher.

1.3 IDEAS ABOUT THE ORIGINS OF MORALITY

For many people in the past and in recent years it has been impossible to disentangle morality from religion and hence to consider an origin for morality except as coming from a deity. This point is developed further in Chapter 5. Midgley (1994, p. 109) says:

> Until quite recently, this whole range of questions about the source of morals was answered in our culture by a series of powerful myths.

As a consequence of religious or traditional explanations, many people did not expect to think much about the basis of moral actions. Those who did think and write about the issues referred to external guidance and sometimes to intrinsic human qualities. Adam Smith did both: in 1776 (p. 423) he described human intentions and actions as being guided by an invisible hand to promote an end which is in the interests of society whilst in 1759 (p. 9) he said that Man possesses capacities:

> which interest him in the future of others, and render their happiness necessary to him, though he derives nothing from it, except the pleasure of seeing it.

For many people in the past and some now, moral guidelines have been considered to exist and to be usable without any human intellectual contribution or questioning being necessary or desirable. Such people are referred to as transcendentalists by Wilson (1998, p. 265) who contrasts them with empiricists who think of moral guidelines as contrivances of the brain. Wilson summarises the transcendentalist view and then presents his own empiricist view as if religion had little part in it. The view presented in this book follows many of Wilson's evolutionary arguments but extends them to explain that religion should be viewed as within the structure which has evolved and not outside it (Chapter 5, Section 4). Wilson's emphasis of this dichotomy impedes understanding in my opinion (Chapter 6, Section 2.2).

T. H. Huxley, the great champion of Darwin's theories, thought of morality as a weapon to be used against human nature. This view, which is quite contrary to the arguments in this book that morality has evolved, is nicely summarised by de Waal (1996, p. 2) as follows:

> Viewing nature as nasty and indifferent, he depicted morality as the sword forged by *Homo sapiens* to slay the dragon of its animal past.

Huxley (1894, p. 83) said:

> The ethical progress of society depends, not on imitating the cosmic process, still less in running away from it, but in combating it.

Some philosophers have been disturbed by any attempt to explain scientifically any aspect of morals. Indeed, the influential philosopher G. E. Moore (1903) went so far as to state that it is illegitimate to argue from the facts of nature to human values, a view which had a stifling effect on the development of this area of philosophical theory for generations (Johnson 1993, p. 140). During the first two-thirds of the twentieth century, there was a strong tendency for philosophers, psychologists and anthropologists to speak as if human culture and its moral structure was either divinely inspired or arose out of

nothing. In recent years, the opinions of philosophers interested in ethics about how to use biological information concerning man and other species have often been to ignore all of it completely or to dismiss it as irrelevant. In some cases, this is because parts of the information are irrelevant and the key aspects appear not to be fully understood. Rottschaefer (1998, p. 14) states, after some mention of cognitive capacities and motivation:

> What we seem to want to know is the meaning of our lives and, perhaps most important, the meaning of ourselves as moral agents. All the biological and psychological information in the world about our moral agency and its sources doesn't seem able to give us that answer.

Some evolutionary biologists have also differentiated sharply between morality and characteristics which have evolved. In the midst of a strong argument about the importance of evolution by natural selection in social life, Dawkins (1976, p. 215) says:

> We, alone on earth, can rebel against the tyranny of the selfish replicators.

with the implication in subsequent text that morality is not a part of evolved characteristics. Alexander (1979, p. 276) presents the view that evolution has nothing to say about normative ethics, about what people ought to be doing. A rather confusing argument from Williams (1988) is:

> I account for morality as an accidental capability produced, in its boundless stupidity, by a biological process which is normally opposed to the expression of such a capability.

As explained in the next section of this chapter and in Chapter 4, Section 4, confusion between true morality and sexual customs may account for some statements of this kind by Alexander, Williams and others.

The importance of cooperative behaviour and the fundamental virtue of Man are the central themes of the writings of Kropotkin (1902). Until recent years, this book has had little influence. Some of those who sought a basis for ethics emphasised that scientific information must be taken into account. One, whose approach was called naturalistic, was Sellars whose view of what is important included connections between what he called the manifest and scientific images of humans (Sellars 1963). Such general statements did not encourage careful thought about any biological basis for morality. A much stronger, if somewhat tactless, encouragement in this direction came from Wilson (1975, p. 562):

> the time has come for ethics to be removed temporarily from the hands of philosophers and biologicized.

The idea that consideration of the biological basis of morality is at odds with the concept of humans being able to take important ethical decisions was criticised by Midgley (1978, p. xviii):

> The notion that we 'have a nature', far from threatening the concept of freedom, is absolutely essential to it. If we were genuinely plastic and indeterminate at birth, there is no reason why society should not stamp us into any shape which might suit it.

Midgley goes on (p. 174) to argue that more careful consideration of the biological basis for morality means 'philosophising better'. It was thought by Dennett (1995, p. 468) that ethics must be based on 'an appreciation of human nature' and Brandt's theory of ethics is based on 'spontaneous beliefs' (1996, p. 174). Detailed expositions of the biological basis of morality are presented by Ridley (1996) and de Waal (1996) who (p. 2) says:

> Given the universality of moral systems, the tendency to develop and enforce them must be an integral part of human nature.

The widespread occurrence of cooperative behaviour and its particular value are described in Chapter 2, Section 2 and arguments for the evolution of altruism and morality are presented in Section 7 of this Chapter, Chapter 2, Section 4 and Chapter 4, Section 7.

1.4 MORALITY DISTINGUISHED FROM SEXUAL AND OTHER CUSTOMS

The argument that is introduced in this Section and developed in Chapter 4, Section 4 is that there are some actions which might be criticised by some or many in human society but which are to do with sexual or other customs rather than with true morality. Many sexual taboos serve a mate-guarding function for males rather than being in the general interest of the members of a social group. A straightforward example is the view that it is morally wrong for women to derive pleasure from the act of copulation, and, as a consequence, the practice of clitorectomy. Once such a practice exists, there can be an argument that its continuation helps to maintain stability in the social group because women are less likely to be unfaithful to their husbands. However, there are counter arguments: one is that an individual should not be deprived of body tissue and a particular sensory capability and another is that sexual pleasure may help to strengthen pair bonds and hence social group stability (Broom 1998).

In an attempt to describe what is good for every individual, J. Griffin (1986, p. 67) lists:

(1) personal accomplishment,
(2) freedom to decide what to do, by one's own rights, without constraint,
(3) having the basic capacities (to move one's limbs, the minimum material conditions required for life, freedom from pain and anxiety),
(4) understanding of oneself and the world,
(5) enjoyment, and
(6) having deep personal relations.

This list has close parallels with the list of five freedoms which Brambell (1965) said should be provided for farm animals and which has been used by the UK Farm Animal Welfare Council. For socially living animals, including humans, Griffin's list might be augmented, or specified, to include acting in such a way as to remain in the social group and to maintain group stability. In compiling his list, Griffin did not include any reference to sexual behaviour.

Some actions are always wrong, in my view, and can never be justified by a beneficial consequence. However, in considering what is bad for every individual, the lists produced by many people would include certain kinds of sexual activities. Some of such lists would state that any kind of sexual interaction between most possible pairs of individuals in a society is wrong. However, I consider that sexual acts are not in themselves wrong and advocate the consequentialist argument that moral judgements about sexual activity should concern whether or not there are harms to individuals as a consequence of it. In any sexual interaction, it is the consequence, rather than the interaction itself, which may mean that the interaction is wrong. Sexual behaviour is wrong if it: produces offspring who will not receive adequate care, or damages a relationship, or results in abnormalities during development in the young, or creates false and damaging expectations, or causes other harms such as disease in the individuals involved. This argument can be applied when considering all sexual customs in order to determine whether or not, and how, they might be related to questions of morality.

There are other actions, or failures to act, which are really customs but might be regarded as morally wrong by some people. Conventions about ways of eating or dressing are not in themselves moral issues, as emphasised by Brandt (1996 p. 61), but the consequences of failing to abide by them do have to be considered. If the consequence of such a failure was that the person who did not carry out the appropriate act lost some esteem in the eyes of others, that is clearly no moral issue. However, if that failure caused severe distress to a third party, and this distress was predictable by the person acting,

the failure would have moral connotations. Some religious practices might be considered to be customs which are not, or not necessarily, associated with moral issues. As Gert (1988, p. 256) puts it, 'people may fail to distinguish between a religious support for morality and a religious support for its own particular rules or ideals' and the latter need not be equated with morality. The religious practices may serve a useful function in helping to strengthen social bonds in the community, or in providing comfort for individuals, but failure to conform with them would not in itself be morally wrong. Again, the consequences, for individuals and the group as a whole, of not conforming need to be assessed when deciding whether there is a moral issue.

Care must be taken and all kinds of possible consequences considered when deciding whether a custom has moral consequences or not. For example, van Schaik *et al.* (1999, p. 222) describe various aspects of the behaviour and physiology of female monkeys which minimise the risk of infanticide by males. One of these is variability in the strength of signals that ovulation is occurring, such as sexual skin colour and mating calls, and another is the occurrence of sexual activity outside periods of regular ovular cycles. These are the kinds of physiological changes and behaviours which might be taken to indicate undesirable coquettishness or promiscuity and which might in human society be the subject of sexual customs, but which have a biological function in helping to increase the number of offspring which survive.

1.5 CODES OF CONDUCT

Codes and rules of conduct, which include issues of great importance, are widespread in human society. Midgley (1978, p. 298) said that: 'rule formation is a universal human characteristic' whilst Wilson (1978, p. 185) proposed:

> To counteract selfish behavior and the dissolving power of high intelligence and idiosyncracy, each society must codify itself. Within broad limits, any set of conventions works better than none at all.

Some of these codes are specified as laws, for example those to prevent murder, theft, rape and fraud. Other selfish acts are the subject of sanctions which, although social rather than legal, are important nonetheless. Indeed Ridley (1996, p. 38) refers to 'a taboo against selfishness'. Codes of conduct have been written down in many societies, for example The Ten Commandments of the Jews and Christians, in the Bible (Exodus, 20: 3–17 and Deuteronomy, 5: 7–21) and the Greek Rules of Conduct (see Brandt 1996, pp. 78–79). This moral core of religion is expanded upon in Chapter 5, Section 1. Bischof (1978, p. 50), considering a variety of human societies, presents a list of moral norms based on:

(1) those which protect against the unbounded self-interest of others, e.g. murder, theft, witchcraft, slander, adultery;
(2) marriage rules which proscribe partners who are so closely related that there would be incest or are so distantly related that a racial taboo would be involved;
(3) spiritual rules honouring gods, ancestors or totems;
(4) those which establish and corroborate personal maturity, e.g. moderation, asceticism and abstinence;
(5) rules to spare society from observing sexual intercourse, defaecation, menstruation, birth and death.

Some of these rules are customs, as discussed in Section 1.4 rather than always being morally important. A list of moral rules relating to impacts on other persons (Gert 1988, p. 98) forbids killing, causing pain, disabling, depriving of freedom and depriving of pleasure whilst enjoining others to obey the rules.

Some of these rules would seem to be relevant to any society whilst others are most relevant to societies with particular characteristics. The rules which minimise the likelihood of serious harm being caused to another individual come into the first category and, as Brandt (1996, p. 71) points out, they include a moral obligation not to cause an accident to another individual. Society condemns, albeit to different degrees, those who injure another deliberately, those who cause injury by careless contact with another such as a push which

leads to a head injury, and those who are negligent with the consequence that an injury is caused to another, for example leaving a large hole in the ground uncovered in the dark or giving a child a dangerous weapon. There are also rules relating to the use of important resources. If plentiful quantities of food are occasionally obtained by individuals in a social group, there is likely to be an expectation within the group that it will be shared. Ridley (1996, p. 115) argues that humans were hunter gatherers with intermittently plentiful food for a large proportion of their existence as a species so the code that windfalls of food should be shared evolved. Even as agriculturists, there were periods of plenty when the harvest might be shared and periods of severe need when those with much stored food might give to those without. Such situations still exist today and there is a parallel with the Lottery winner who is expected to share with their family, with members of their immediate social group and with the deserving in the wider community. An example of a society with particular characteristics requiring different rules is one which encourages retribution for harmful acts remembered from the past or favours returned after a long time-lag. An example of this, the largely obeyed code which requires children to care for elderly parents, is discussed by Alexander (1987, p. 89).

It is of value for individuals to abide by their society's rules and codes because of sanctions if they do not and because of increased stability in the society in which they live if they do. Kummer (1978, p. 42) discusses this issue:

> In a moral society, the individual respects the norms not only in order to avoid sanction and to seek the reward of acceptance but also to weigh his value of himself by the degree to which his conduct during life matches the ideal which his culture has set up for an individual of his class. Approaching the ideal is at the same time a third kind of incentive for moral behaviour and a new, non-biological 'function' of morality: the meaning of the subject's life to himself.

The advantages of having some rules, codes or norms in a society apply to all societies.

As explained in Chapter 4 there will be much variation in the customs of societies but little or no variation in true moral codes. Whilst de Waal (1996, p. 36) cautions that variability in moral codes must not be ignored, the real meaning of moral codes and the important distinction between these and sexual and other customs should be borne in mind. Gert (1988, p. 4) explains that differences between codes of conduct in different societies 'often mask essential similarities'. However, Gert appears to be considering sexual customs when stating that the work of anthropologists shows 'that there is no universal morality'. Midgley (1978, p. 37) derides the description of various peoples encountered by European explorers and colonisers as savages because they were unfitted for society. These people had different customs which were emphasised in the explorers' categorisation as savages but the similarity of the latter's true moral codes was often ignored. Indeed, such peoples were often assumed to have no moral code. To some extent, this was because the colonisers did not wish to show to them the same moral obligations that they would be obliged to show within what they regarded as their own society. Midgley (1978, p. 30) points out the savagery of the white hunter in Africa as compared not only with indigenous peoples, but with other social species there. When good quality anthropological studies of supposedly primitive peoples have been conducted, they have demonstrated the existence of moral codes as well as various customs. There have been reports of apparent contradictions to this but some were subsequently shown to be the result of calculated misinformation by the supposedly primitive subjects, in order to deceive the stupid foreigners. Others, such as Turnbull's (1972) study of the Ik people, seem likely to have been much affected by the fact that the whole world of those people was being destroyed. The extent to which there are codes of conduct in other species is discussed in Chapters 2 and 3.

1.6 CONSEQUENCES OF SOCIAL EVOLUTION

Each cell in an animal or plant is a result of collaboration in that the chloroplasts in plants and the mitochondria in both animals and plants are thought to have originated as free-living organisms which were

more successful when they functioned within the cell milieu than outside it. There is also collaboration between different cells with different functions in a body. Although these cells share the same genes, they differ in that genes are expressed to different extents in different cells. The genes compete with one another for bodily resources but the functioning of most depends on effective collaboration. Multicellular individuals may also cooperate and one may remain in contact with another, sometimes living colonially. In some colonial animals, such as corals, the individuals are very similar to one another but in the complex free-swimming Siphonophora, such as the Portuguese man-of-war, different zooids have different functions in a free swimming colony. Colonial and social animals dominate much of the world. The shallower waters of the tropics are dominated by corals and the seas generally are exploited especially well by shoaling species of fish and squid. Much of the land is dominated by ants, social herbivorous ungulates, rodents and primates. The most successful birds spend part or all of their lives in social groups. The fact that the social species are so successful indicates that, although there will always be competition as well as collaboration, the latter is more important in many aspects of life.

The various functions of social behaviour are discussed in detail by Broom (1981, p. 176). Animals can create a more favourable micro-environment by grouping, and some, such as termites, ants and humans, can do this particularly effectively by building structures in which to live. Food finding is important at all times but especially so when food is scarce. Birds which roost communally at night and flock during the day may survive periods of low food availability because they use the knowledge of others to obtain some food at these times (Ward and Zahavi 1973). Animals living in groups can learn new feeding methods by watching others and may be able to collaborate in acquiring, handling and defending food.

Many of those who have considered the functions of group living in humans or other primates have described the increased chances of predator avoidance which it confers. One example of a study of