

9 Biology and the cultural gap

The first part of this chapter will discuss how other Darwinists view altruism. These are people who hold Darwinism in high regard as an explanation for human behavior, but who have reached other conclusions than our own concerning normative ethics. The next section comments upon criticism of a Darwinistic approach to social issues. This has to do with people who usually present themselves as critics, not of Darwinism as such, but of sociobiology; for them, evolution has stopped at a substantial distance from modern mankind. In the third part, we shall examine rules from the natural world that can also be applied in the world of culture.

9.1 Biologists and moral debate

Sociobiology refers to the study of the evolutionary development of social behavior. Obviously, the evolution of physical characteristics is closely related to the behavior they make possible, facilitate, or hinder. In other words, physique and behavior have gone hand in hand through evolution. This must be true for social behavior as well; a queen ant's reproductive capacity and the ant colony's social structure are coordinated. Thus, it is standard evolutionary theory whose application in a particular area, that of mankind, becomes especially sensitive. The connections between social behavior and evolution for animals are only a step away from the guarded area of human culture. Yet the very thought of drawing parallels between animal and human behavior has seemed repulsive to many.

When sociobiology began to study human behavior, reactions were strong if not hysterical. A taboo had been challenged; there is a widespread belief that man is, and should remain, a mystery not to be analyzed or dissected. Some social scientists, who would be expected to shun so hostile an attitude to knowledge, joined in the attacks upon sociobiology. A leading motive was defense of their own intellectual territories and hypotheses. This initial campaign took many unworthy forms, but the taboo could not be sustained, and sociobiology has established itself as a scientific discipline. In the journal "Trends in Ecology and Evolution" it was observed that, at a congress held in London in 1993 by the Center for the Philosophy of Natural and Social Sciences, ideological opposition to the sociobiological analysis of human behavior was strikingly absent.<1>

There are numerous ideas about the change from primitive to modern man. Perhaps the commonest impression is of a qualitative revolution from "low savages" to contemporary humanity with its higher needs and behavior. A brutal beast has been civilized and refined. Now and then, however, we are reminded that the beast may not have been

civilized completely.

Another familiar idea is that of the "noble savage". Rooted in the works of Rousseau, this daring vision has influenced many thinkers, including Marx, and modern anthropologists have looked for such a creature with all the eagerness of medieval chemists seeking the secrets of alchemy, though with no more success.

The low savage and the noble savage recur in a combined theory. We have previously encountered various "positron principles", and this is a further example. Skeptics can be accused either of looking down upon mankind by improperly associating it with primitive lowness, or else of lacking respect for natural nobility--while advocates stand for both uplifting progress and noble savageness at once. Since these views are based on contradictory ideas, they are well suited to telling whatever tale is convenient for the occasion.

These two views of undeveloped man also share certain features: he is governed by emotions, either bestially bad or naturally good. Modern man differs sharply from him and has become dominated by intelligence. Sometimes the portrait is of a wise being who has raised himself above low instincts. Supporters of the noble savage criticize, instead, the intelligent human being - he has lost contact with his feelings, his soul, and so on.

Nonetheless, in modern life, it is difficult to recognize oneself or one's surroundings in the intelligence-governed man. Our interests seem surprisingly like those of savages: food, sex, children and status. Nor do our feelings appear to be disengaged; most of us are largely guided by emotions such as attraction and sympathy, when it comes to both events and social relations. The time we devote to genuinely higher intellectual work - for instance, reflecting on the theory of relativity or on proofs of God's existence - is small by comparison.

As regards human feelings and instincts, it is useful to reason from an adaptive hypothesis, namely that individuals benefit from the guidance supplied by an emotion or instinct. This influence must also be seen in the environmental context of the society of hunters and gatherers in which our ancestors lived for a couple of million years. The hypothesis of sociobiology is that those conditions shaped our behavior fundamentally. During that long period, there was a selective pressure toward the special habits which led to successful reproduction. Psychological mechanisms such as feelings of revenge, loyalty, gratitude, love, and suspicion were aids to make us act correctly in diverse circumstances.<2> In the last millennia, great changes have occurred on the cultural level, but not great and radical enough to exert an essential selective pressure for behavioral change. Our adrenalin does not dry up because we need it less; it has already been selected, and can be eliminated only by a clear reproductive advantage in secreting very little adrenalin. What indicates, for example, that peacefulness or high intelligence results in having many more children?

AIDS may influence the frequency of homosexuality in the future, to the extent that homosexuality has a genetic component, if the

disease affects this group very badly. But if the disease becomes quite common, it will have a neutral effect on the proportion of homosexuals to heterosexuals, since there are scarcely grounds for believing that the former are more vulnerable to the virus than the latter. Resistance to the virus is most plausibly random, in the sense of not being correlated with any other inherited behavior. When the Black Death raged during the fourteenth century, its toll was enormous, amounting to an estimated 25 million people in Europe alone. Probably it changed the proportion of mankind with resistance to it, yet had no impact on other traits. It is unlikely that the species changed in terms of characteristics such as cooperativeness or abstract thinking.

All new human generations begin with very similar biological programming. They are somewhat differentiated by the many variations between cultures, but not basically; when culture loses its grip and social control falters, the distinctions between us and savages are inconspicuous. Civilization's goal is not the impossible task of transforming a savage and creating a new human being, but to fashion a new society in which conflicts can be confined and the savage can live a good life.

Thus far, sociobiologists are unanimous. Man is a part of evolution, not due to a separate budding-off or genesis. Where sociobiologists are less in agreement is over the question of which rules, which normative principles, can give modern savages a good life.

The reasoning and proposals advanced in the present study are not typical of ideas from a biological perspective. Many famous authorities say a great deal about the animal world and insist that it is also pertinent to human life here and now; but when they have to specify a biological effect, one is often disappointed. The step across this cultural gap is not easy to take and, once he reaches the obstacle, a biologist stops - at the usual conclusion that conventional morality is good, while biology is an undervalued stumbling-block. Unfortunately, this attitude is rather unsatisfying. We might as well go to a doctor who makes a thorough scientific diagnosis with explanations for an ailment, and yet, when it comes to treatment, decides that a medicine man's suggestions about blood-letting and incense are sensible.

Richard Dawkins, in "The Selfish Gene", pursues a fascinating argument to an end that virtually invalidates the rest of his book: biology is not on our side, but we should speak warmly of altruism. Having told an entirely different story than the Bible's, he arrives at the same pious recommendation. "We can even discuss ways of deliberately cultivating and nurturing pure, disinterested altruism - something that has no place in nature... We alone on earth can rebel against the tyranny of the selfish replicators", that is, genes.<3>

This view of the relationship between nature and morality was already voiced by T. H. Huxley, who wanted to replace the possibility of revolt with a direct exhortation: "Let us understand once and for all that the ethical progress of society depends not on imitating the cosmic process, still less in running away from it, but in combating

it."<4>

Richard Alexander regards purportedly altruistic actions as having indirectly reciprocal functions. For him, altruism is only a chimera. But it does not affect actions either positively or negatively, because we really act in ultimate self-interest; so there is no reason to suggest a change in morality. The exception is nuclear weaponry, which involves a vastly greater threat than the ordinary arms escalation we constantly live with. On this matter alone does he seriously seek a constructive path of change.

Besides lacking normative proposals, Alexander thinks that one ought not to have any. He lands in a problematic halfway position: "As I have warned repeatedly, no solution arises out of evolutionary understanding. But perhaps our view of the issues can be clarified and our collective response as a result altered."<5> The plausible reason for writing his book at all is that he attaches more faith to the cautious reservation in the second sentence than to the magisterial assertion in the first.

Many biologists, faced with the question of Darwinism's implications for ethics, reply by firmly repudiating the "naturalistic fallacy" (see Chapter 4). Such is the case for both Edward O. Wilson and Richard Alexander.<6> In our own opinion, this is ill-considered. A parallel would be a war correspondent who aims to describe life at the front realistically and honestly. The war's justifiability is not something he feels he can or should comment upon. Colleagues who produce more edifying reportage, and focus on the normative issue of which side is right, criticize the realist and say that his descriptions will be interpreted as objections against the war. This may be done either by a philosophically ignorant public who commits the naturalistic fallacy, or indirectly through other foolish and malicious commentators who will draw normative conclusions from his material. The material itself is much stronger than his possible inferences or neutrality. In this respect, the correspondent's critics make a correct judgement.

The situation with Darwinism is analogous. It offers a powerful picture of reality, entailing many reflections and reappraisals, whether or not the biologist takes part in these. Every Darwinist who has something of interest to say about people is at least guilty of "complicity in the naturalistic fallacy". The general view is that human prehistory is relevant if its influence on society today can be demonstrated. Darwinism can show this; hence it merits an important role in social debate, just as the picture of a war is important for normative attitudes toward the war. At heart, the war correspondent and the biologist also believe that an "is" should be relevant to an "ought". They may choose not to pursue the normative issues in person, but this is largely a tactical assessment.

Such a tactic may be adopted in order to avoid a group debate. Each of us has opinions unlike those of other people in the group we belong to, doubtless especially when intellectual groups and opinions are concerned. A communist presumably devotes more time to disputing communist views he thinks wrong, than to opposing non-communist views.

In wider political discussion, he is attacked for some of the communist views he does not share, as outsiders care little about the details of internal factions. Moreover, it is tactical to attack an opinion which the adversary does not hold, since an audience is easily persuaded that he tries to wiggle out. Intentional misunderstanding is a poisonous ingredient in most controversies.

A topic as sensitive as Darwinism will always involve tactical misunderstandings. One is accused not only for what one says, but also for what others in the same category say, on top of further confusions. It would be helpful if one were allowed to answer for oneself alone. This wish is indeed echoed, for example, by information managers, Christians, and politicians who accuse tactical cretins of disturbing the balanced, attractive image they present. Darwinism includes many advocates of a careful approach, or "covert Darwinism": one should proceed delicately, without provoking conventional attitudes and causing an inflamed debate.

Covert Darwinism is neither practically nor normatively a good strategy. That so revolutionary a theory as Darwinism has had such a limited impact upon the social sciences, while religious and secular metaphysics have managed to hold sway, is surprising. In philosophy, ideas like Hume's "skepticism" - a denial of causality - have often been honored. Kant and German idealism, with their critique of rationality and support for subjectivism and antimaterialism, may be seen as a dominant school in philosophy.

The rational ideas of the Enlightenment are greeted with entrenched opposition, and even with counterattacks. The Atlantis of metaphysics has not sunk, but become an island, protected from the consequences of progress in natural science. It must be conceded that, until now, this project has been amazingly successful.

Highly respected scientists such as Konrad Lorenz and Edward O. Wilson have come under rabid fire in an inflamed debate about humanity and Darwinism. To be made a target, one need only ask modestly whether Darwinism might be relevant. When ethology and sociobiology fall into disrepute, new words are sought - but sadly, "genes" and "biology" are also blacklisted by their opponents. How, then, can one express oneself? As in any discussion, sticking to one's guns is essential. Demands that one should plead other cases than one's own are not sincere and may be ignored. To go on the defensive, lest one be associated with bad company, is a weak reaction. Darwinism calls for more courage against the fear that it "goes too far". The notion that it is a dangerous kind of knowledge, which must be hidden from the public since it can be "misunderstood", deserves scorn.

In scientific debate, some participants choose a minimalistic strategy of reaching certain but limited conclusions. This is regarded as a virtue of science, because it makes permanent deposits in the bank of knowledge. One does not speculate about fundamentals; every further step is researched with care. Science builds upon "hard data". However, great scientists like Darwin have chosen a generalizing strategy: they create profound hypotheses from limited material. Since both strategies are needed, the choice is best left to personal preference. They are

not irreconcilable antipodes. In fact, a number of scientists have trouble in distinguishing between these two levels. For them, science must deliver Final Solutions - and therefore one should beware of saying too much. Science has to keep as clean a record as Caesar's wife, so one advocates minimalism also for general theories.

No one who enters a discussion of Darwinism and morality can claim to set forth a definitive answer. His claim is that he has a better proposal than those he rejects. Valuable criticism and rebuttal lead to revised hypotheses, and the discussion advances. This is the central model of science, as of democracy.

We are thus opposed to an armistice at the cultural gap. Anti-Darwinists are right to be afraid of long-term effects of Darwinism upon social philosophy. But Darwinists are wrong who try to tone down the conflict and view evolutionary theory as a humble innovation to be discreetly assimilated. Darwinism casts a dark shadow over the protected island of metaphysics. Philosophical taboos will not stop the discussion: who we are, and where we stand, have an obvious bearing on which way we should follow. There is no point in waiting for more research, or for a civilized invitation from metaphysicians. The advance has already begun and will very probably become ever more intense.

9.2 Critiques of sociobiology

Darwinism is, of course, a theory about all life on earth, and makes no special exception for mankind. Sociobiology, which concentrates on the evolution of social behavior, would hardly maintain that behavior is basically different in humans than in other animals. Yet feelings acquire a Promethean fire when the nature of man is mentioned.

The criticism of sociobiology comes chiefly from two sources: the religious fundamentalists and the (good old) New Left. One line of argument is easy to summarize. If the Bible is true, a comprehensive account of man is already available; and since Darwinism is false, sociobiology must be as well. Here we need not deal with Genesis, since most readers today have a Darwinistic view. It is in the specific application of Darwinism to human beings that we meet objections of both emotional and intellectual kinds.

For example, George Bernard Shaw reflected on Darwinian theory in revealing terms: "It seems simple, because you do not at first realize all that it involves. But when its whole significance dawns upon you, your heart sinks into a heap of sand within you. There is a hideous fatalism about it, a ghastly and damnable reduction of beauty and intelligence, of strength and purpose, of honour and aspiration."<7>

Most frequently, sociobiology is accused of "biological determinism". This wily assertion is not made in good faith, but jumps between philosophy and practice. Many philosophers are convinced determinists in the sense of believing that man is entirely controlled by various circumstances and thus has no free will. How this control is divided into biology, culture, childhood experiences and the like, is

of secondary importance. The key idea is that, due to a matrix of causes, free will does not exist.

While the possibility of free will is the essential issue about determinism, it may be wondered whether this question is interesting. From a functional viewpoint, rewards and punishments are clearly factors that control behavior. Without free will, the moral grounds for sentencing a criminal - or for praising someone who does good - disappear. And if so, the same is true of the grounds for condemning a judge or an executioner, since these are products of similar factors. In order to change a system radically, at least some free will is indispensable. Hence there is no valid reason, or perhaps even chance, to abandon the belief in moral responsibility. Determinism cannot generate any alternative normative ethics with practical value; it is only a lame theoretical protest.

In practice, we all believe in a free will which, though not omnipotent, has substantial scope of action. To see limitations in our biology is widely thought to be more pessimistic and morally reprehensible than recognition of other limitations. But critics of sociobiology are themselves more often Marxists than existentialists, regarding free will as very restricted.

The present book's message cannot be considered deterministic. Nor would it propose changes that are admitted to be impossible, and we have not read any books on sociobiology whose authors fail to speak of possible reforms. Where are the alleged determinists of sociobiology? Accusations of determinism recall other critiques of reform. Every reformist asks a basic question before deciding what should be done: what is possible? Sociobiology emphasizes the significance of evolution for social behavior, while the critics protest that biology is a factor of no real significance, as if man had left it behind him long ago.

One might compare an engineer who argues that the foundations should play a greater role in designing a building. His esthetic critics dismiss him for having poor taste and giving priority to practical and economic criteria over free creativity. The crucial issue, however, is not what looks appealing, but whether the thing will collapse if the ground is neglected.

It may be instructive to assess sociobiology alongside other alternative answers to an equally important problem - how flexible is human nature? We shall view these answers as coherent consequences of five different schools of thought.

Five ideas of flexibility

The most flexible approach of all is behaviorism. John B. Watson and his leading disciple, B. F. Skinner, conducted experiments which they took as proof that behavior is always a product of learning.<8> Skinner is best known for his studies of rats, but his conclusions were quite general. In a weak sense, behaviorism is certainly correct. One learns a lot from one's surroundings, such as a native language

and various social conventions. Yet this is a popular opinion, not a controversial finding. Behaviorism goes to an extreme and claims that, without learning, human behavior would be an empty page - a "tabula rasa" - in the book of observable phenomena. There are no genetic predispositions to make a specific lesson relatively easy, hard or impossible. A philosophy which might be called even more flexible is existentialism, but we think it too undeveloped and unclear about causal connections to qualify as an alternative in this context.

Behaviorism has earned a dubious political reputation. The ability to learn pleasant behavior is, unavoidably, coupled with the capacity to absorb less welcome lessons. Many authors have exposed the dark side of behaviorism, such as Anthony Burgess in "A Clockwork Orange". Here a brutal young hooligan is reconditioned with a combination of laboratory experiments and torture, but the opportunity is taken to remove his sexuality together with his violent mentality. Similar criticism has highlighted the fact that behaviorism possesses a plainly negative potential as well as a positive one. However, the primary question is whether it has the great potential assumed by its advocates, not whether it is good or bad. Sociobiologists hold, on the contrary, that a learning ability depends on the existence of a survival value for the knowledge involved. Animals are usually quick to learn skills that resemble the needs of their evolutionary past.<9>

The second idea, which allows less flexibility, is Freudianism. It stresses some childhood experiences as a sort of early learning that may be adjustable through comprehensive psychoanalytic treatment. Both its diagnoses and therapies have incurred much deserved criticism. The diagnosis is almost anecdotal in character, rife with conjecture on the basis of a few cases handled by the master himself. In a mild form, psychoanalysis may sound plausible; but in terms of stringent theory, it is deficient. The treatment rests upon a very doubtful hypothesis - that one's problems can be solved by gaining "insight" into why one feels in a particular way. Undesirable behavior often becomes obsessive and magnified in a search for its causes. The patient is so fascinated with his complexity and unique history that he undergoes an ego-trip instead of a change. This kind of treatment has vague effects, and several assessments show that patients in psychoanalysis recover to about the same extent as people who are not treated at all. In the studies of H. J. Eysenck, psychoanalysis yielded a slight increase in the numbers of both improved and worsened patients, compared with untreated people.<10> On the whole, psychoanalysis should be seen as a boldly speculative theory whose truth and results unfortunately do not match its creative imagination. Anthony Storr makes the judgement that the proofs that psychoanalysis can cure anything, what so ever, are so weak that they hardly exist.<11>

A third, and predictably attractive, idea has been the view of heredity launched by Jean-Baptiste de Lamarck. His main principle (see Chapter 6) was that acquired traits can be inherited. Thus, a better society would also improve human nature - music to the ears of any radical progressive. Interaction between the group and the individual is alluring to everyone with a holistic outlook: society changes man,

he in turn changes society, and so on, opening the door to fundamental change. But just like behaviorism, this theory invites negative change as well. Time and again, Lamarckism has been disproved by reality: acquired traits are not inheritable. Still it preserves its appeal, like a newspaper with huge circulation that nobody confesses to buying or reading.

As a fourth position, sociobiology applies the concepts of Darwinism and finds mankind to be less flexible than do the preceding schools. Diverse patterns of behavior are built into people's genetic code, which changes very slowly. The environment to which we are adapted through natural selection was quite different from today's society, yet it is difficult to conceive of a directed selection pressure for "new behaviors" in the new environment(s); a bashful accountant has no greater reproductive success than the aggressive leader of a cheering section. Even if humor and sympathy enjoyed some selective advantage, it would take so long to affect the population that it lacks significance in practice. Human nature may, then, be regarded as a virtually constant factor during historical times. In other words, sociobiology identifies a basis that cannot be transformed according to the behaviorist model, let alone the Lamarckian. The human nature described by sociobiology clashes with visions of Paradise: man is not good in religious terms, and never will be. This judgement provokes strong reactions.

The fifth standpoint consists of traditional myths of creation. If God created people and animals, these were and remain distinct. Modern women, and Eve in Eden, are fundamentally alike. Divine creation leads to the least flexible view of mankind, once Adam is deprived of his rib and Eve has given him the personality-transforming apple.

An interesting contrast between such myths and sociobiology lies in their sources of knowledge about human nature. Do studies of apes and other animals throw light upon mankind? Religious critics of behaviorism are often entranced by the absurdity of believing that one can learn about people by experimenting on rats. Yet the criticism by sociobiologists is that neither rats nor humans are an empty page, as behaviorism claims; evolution is the pen, and the texts are different. For a religious person, the non-animal origin of man is above suspicion as the paternity of Jesus. God's image is not a marginally modified ape; to learn something about man, one must go to Holy Scripture rather than the zoo. This total cleavage between nature and human nature attracts many others in addition to tellers of creation myths. The nature-culture gap is fortified, armed with every conceivable artillery, and defended to the last passer-by.

We would argue that those five are the only fairly consistent ideas of human flexibility. Opponents of sociobiology are in the habit of favoring the other four ideas, and at the same time denying association with them. There are good reasons for this tactic. Behaviorism, besides suggesting abuse, is scientifically shaky in living up to its ambitions. Psychoanalysis is in continual retreat. Lamarckism has been somewhat disrespectable ever since Lysenko's vain effort to improve Stalinist agriculture. Neither is it easy to assert the special status of man

in divine creation. This may be popular in ceremonious speeches, and as a metaphor or ritual, but it makes a mockery of its supporters as a serious hypothesis about life. So the four alternatives to sociobiology are not shining examples of science - although weak logic, absence of valid options, and fuzziness as to what the critics themselves believe, do not diminish their conviction that sociobiology is pernicious.

Cultural omnipotence

Banishment of biology to the museum of mankind, and warm applause for cultural influence, cause both scientific complications and political problems. Some critics try to avoid being called unilateral advocates of culture by claiming to uphold the influence of nature too, but this is seldom unambiguous. To begin with, the same view is already held by sociobiologists; they have never ignored the differences between cultures. What they add is a demonstration that there are specific frameworks in which all societies function - and that there are other frameworks which certain societies have attempted to escape, with negative consequences. We need to learn from our natural and cultural histories alike. If the discussion could focus on what these frameworks are, and on how culture blends with biology, the hysterical protests would die away.

Critics of sociobiology often maintain that they take a balanced position between biology and culture. The book "Not in Our Genes" by Richard Lewontin and co-writers, can provide some illustrations that contradict such claims. It says: "... if these changes (in female relative to male athletic prowess) are continued, the average female performance will equal that of males for all events currently competed for by both sexes sometime during the next century", "Even biological features such as eating, sleeping, and sex are greatly modified by conscious control and social conditioning", "Indeed, the reader will be hard put to think of any behavior, no matter how bizarre, that has not been manifested by some number of people at some time." <12>

The message here, as in the rest of the book, is that flexibility is complete. On the level of theory, however, the authors wish to present themselves as taking account of biological frameworks. In concrete terms: "Moreover, it is perfectly obvious that human social life is related to human biology. As we have pointed out, were humans only six inches tall there could be no human culture at all as we understand it." One wonders whom they are railing against, since not even radical behaviorists like Watson and Skinner would disagree. A middle path cannot be defined by portraying extreme positions that do not exist.

There is a tale about a delicatesser who put a bird pie on sale. When anyone asked, he explained that it was only 50 percent bird. Closer investigation revealed that it was a mixture of a bird and a horse. Lewontin's pie seems no less suspect. The last resort is to

launch a "dialectical outlook" which cannot tell the difference between culture and biology. They are joined in a substance that is more than a mixture of the two: a Hegelian synthesis is supposed to save the authors from consumers who demand an honest declaration of contents. But the sole choices are the five positions we have described earlier. As this pie contains less biology than the vermouth in a bone-dry Martini, it amounts to high doses of behaviorism and Lamarckism - under innocuous headings.

Other authors, such as the philosopher Ernst Cassirer, bear witness to the hypothesis of human society's total flexibility: "Language does not enter into a world of objective perceptions already achieved in advance, simply to add to given individual objects signs that would be purely exterior and arbitrary. It is itself a mediator...par excellence, the most important and valuable instrument for the conquest and construction of a true world of objects."<13>

This perspective exemplifies the frequent fixation upon language and how words become reality. Structuralism is an uninterrupted orgy of such mystical ideas. The more a thinker ensnares himself in self-made linguistic puzzles, the more advanced his theory is held to be. Language is not content to create out of nothingness: it can also attack phenomena which shallower souls assume to be the objective world.

The anthropologist Marshall Sahlins has contributed some inspirations to the sociobiological debate: "For the inhabitants of a Polynesian island, the sea is a 'higher' social element than the land, and the trade winds blowing from east to west likewise are conceived to proceed from 'above' to 'below'... The social arrangements are constructed on a meaningful logic, which in fact constitutes a human world out of an 'objective' one which can offer to the former a variety of possible distinctions but no necessary significations... The determination of kinship through acts of birth is just as arbitrary and creative as its establishment through acts of exchange or residence."<14>

Thus, not only does genetics become a cultural issue, but even physics has difficulties with its universal validity. Yet is it Western ethnocentrism to be unaware that 'higher' might mean toward the middle of the earth, and simply guess that the anthropologist needs a better translation? Some comfort for genetics is that it functions for unthinking animals in the same way as for prejudiced people. Genes were not created suddenly in our culture by the past century's scientific progress - they are a timeless factor in all cultures. Advocates of cultural omnipotence say the opposite, and denounce every claim to science across the limits of culture as ethnocentrism; our science is a function of our culture, so why should it be any more true? What is wrong with spirits? Cultural omnipotence supports the dominance of faith over reality.

The problem with a belief in cultural omnipotence is not merely its lack of realism, but its glorification and encouragement of a totalitarian attitude. Actually, tensions between the individual and society do not exist elsewhere than in egoistic, competitive Western

life. Beyond our borders, organic harmony prevails. But Sahlins has his own alternative version of genetics, which runs as follows.

"Individuals of the same group may then figure as particulate expressions of the same inherent substance: they have a coefficient of relationship of 1, whatever their genealogical distance." This statement is worth remembering. Bees attain a relationship coefficient (r) of no more than 0.75, meaning that two worker bees from the same hive share 75% of their genes. Most enthusiasts of fictitious genetics are satisfied with a modest $r = 0.5$: there are brothers and sisters in monasteries, as well as diverse Islamic brotherhoods, not to mention literal "blood brotherhoods". The ambition of $r = 1$ does survive in marriage - "These two have become one" - but how much of the woman's individuality is offered in order to maintain harmonious unity may be disputed. Harmony to the extent of $r = 1$ in an entire culture is determined not by man or woman, but by the state.

Hence, the critics of sociobiology arrive at a contrary theory that assigns absolute power to culture and total adaptability to individuals. These aspects are, of course, intertwined. An individual with greater character would restrict the potential in social experiments; culture would be limited by nature. The belief in social liberty loses some of its shine, as the other side of the coin is the individual's unconditional submission.

Our frontier with the animal kingdom is thereby made as massive as the Maginot Line. The book by Lewontin et al. surveys the distinction between homologous - or phylogenetic - likenesses, as in the wings of birds and bats, and analogous - or functional - likenesses without phylogenetic relationship, as in the wings of birds and insects. They then glance at our shabby cousins: "It is simply not possible to say that traits that appear to be homologous between humans and apes are really so." After this strong stand, the abyss separating us from them should be obvious to anyone; a hint is given by the contrast of birds with insects. Evidently the pie concocted by Lewontin et al. also contains the fifth position of human flexibility, its role as the crowning work of divine creation.

In plain terms, a border is being magnified into a dichotomy by speaking of "humans and animals" as polar opposites. Biologists take a rather different view. Apes and monkeys are usually designated in science as "nonhuman primates", specifically excluding our species, although we belong to the primates. On the evolutionary tree, humans and anthropoid apes are not even twigs on distinct branches. According to the technique of DNA hybridization, orangutans separated from our common ancestors about 14 million years ago, and gorillas about 9 million, while the lineage leading to humans and chimpanzees divided about 7 million years ago. On this basis, we are more closely related to chimpanzees than they are to gorillas.

All critics of sociobiology abhor using the same terms for humans as for animals, since a uniform terminology may interrelate the intentions and motives of humans with those of animals. Attribution of human traits to animals is perhaps acceptable in the culture of children, but is otherwise thought to be a serious error, so-called

anthropomorphism. Words like aggression, rape, cannibalism and harems are unsettling. A potential rapist might consider rape natural if he hears that a mallard duck commits it - an audaciously broadened variant of the theory that a bad example has awful consequences. But even such terms as singing, eating and copulating ought then to be wrong. The absence of indignation about "nice" words is a sign of consciousness that the objection would lose its force. What remains is only a harmless conjecture.

The idea is to protect us from perceiving behavior as natural due to its linguistic associations, because this can disturb free cultural creativity. Animals are supposedly quite distinct from mankind as regards their fundamentally different inner motives. For we are assumed to be products of culture and, therefore, must be distinctive, since animals have no culture - which completes the "proof".

There are also more personal motives behind the criticism of sociobiology. Biologists are trespassing into domains claimed by other disciplines, and academic turf is seldom left without self-righteous defenders. One philosopher expressing that concern with emphasis is Philip Kitcher. The title of his book, "Vaulting Ambition", refers to Shakespeare's Macbeth, and Kitcher spells out the metaphor: E. O. Wilson could have remained a respected lord over his fiefdom (Biology) if he had not made such a deplorable attempt to be king (of Philosophy). Now a civil war has begun, and loyalists of the old faith like Kitcher will fight. Wilson is to be treated no longer as a knowledgeable scholar but as a "pop sociobiologist" (a sociobiologist who says something about humans) and a "greedy reductionist" (an extra hint, if any is needed, that the author resents reductionism). Kitcher steams with irritation that "amateurs" attack the eternal questions which philosophy has been incapable of answering - but in which it professes to have attained a sophisticated level of ignorance. For a loyalist, the old king never dies.

Darwinism and liberalism

A topic that often arises is the similarity between Darwinism and liberal economic theory. It is a striking similarity and has been noted by countless scholars, among them Marx. Both the basic role of self-interest, and the ability to explain large-scale phenomena without recourse to metaphysics, are involved. Liberal political economy finds parallels in Darwinism, and the latter can claim support from the former. Darwin was familiar with liberal theory and this may have influenced his hypotheses. But the curious thing is that such observations frequently lead to condemnation.

As Sahlins puts it: "Since the seventeenth century we seem to have been caught up in this vicious cycle, alternately applying the model of capitalist society to the animal kingdom, then reapplying this bourgeoisified animal kingdom to the interpretation of human society." Or Lewontin et al.: "That the Hobbesian element dominates Darwin's thought is evidence both of the Malthusian origin of the

Origin and of the pervasiveness of competitive relations in our society. Darwin transferred the idea of competition from society to biology."<19>

This indignation would be justified if it had to do with two weak systems seeking mutual protection when attacked. In fact, however, both Darwinism and liberalism enjoy full intellectual superiority within their respective fields.

Darwinism is a hypothesis about life on earth. Many others exist, such as God's seven days, the clay idols that came alive, the metamorphosis of the murdered giant Ymer's body, and so on. Nonetheless, comparison shows clear differences between these hypotheses. The first is a consistent theory built on abundant empirical data, and the rest are collections of anecdotes, fantasies and revelations.

The liberal model, too, occupies a strong position in its sphere. Jesus' bread-and-fish magic is impressive, but industrial production is another matter entirely. Once again, a solid picture of theory and evidence collides with various thin counterproposals. Since the collapse of Communism, its value as an alternative has been hard to take seriously. The theory and practice of liberalism are woven together with a comprehensive transformation of human conditions, while other economic philosophies must be viewed as more dubious and of marginal significance.

An important step toward increased knowledge was the Scientific Revolution. Descartes has been sharply criticized for giving leeway to metaphysics, but it is fairer to see this as freeing a territory from holistic ideas. Science was liberated largely by Descartes' dualism between the body and the soul, which became a line of demarcation between science's responsibility for the body and metaphysics' concern with the soul. With the help of reductionism and rationalism, so hateful to metaphysicians, science has undeniably developed its area radically. Yet there is only one universe, and two explanations are difficult to uphold. Religion has tried to cover everything, but cannot maintain that ambition. Science also strives toward a complete picture, which sits ill with the urge to regard culture and the soul as a separate entity having special elements. Metaphysics possesses no necessary, desirable or protected status. The conflict between science and culture on the metaphysical island is inevitable.

When the two giants, liberalism and Darwinism, join forces, their opponents are bound to feel impotent and try to stop them with dubious arguments. The policy of defense has resembled that of passport police - attempting to keep sociobiology out of the realm of social science. Traditional and psychological advantages are to compensate for intellectual inferiority.

This may be illustrated with a feeling as fundamental as the love of parents for their children, where the psychological influence of metaphysics is palpable. We are eager to consider it a unique feeling that owes to our excellent character. But the Darwinistic explanation is cheerless, viewing it as simply normal: not to love one's children is exceptional. Thus, our love is recognized only for its strength, not

at all for its uniqueness - a setback for anyone who wishes to write praise for passion.

As was already noted by Aristotle, man is a social animal. We want respect and sympathy from others, but cannot easily obtain it unless we offer the same in return. So we undertake collective egocentric or ethnocentric projects and glorify elites such as God's chosen people, the proletarian avant-garde, and the Aryan race. We are ennobled by having a higher aim than merely living and working calmly on earth. Our intellect tells us that Darwinism is right, but our feelings tempt us to play the crowning role in the drama of Creation. Egocentrism is a constant theme in the antirationalistic movement, from the view of Earth as the universe's center to the fascination of an idealistic poet with his navel. In the egocentric perspective, we gladly regard ourselves as fine, generous, good people. It is an attractive image for advertising - and autosuggestion is often necessary in order to fool others. Aided by a distorted mirror, therefore, we use metaphysical magic to transform egoism into altruism.

However, pretense soon swallows the pretender when, like a witness in a revival church, he calls forth visions and frantic self-sacrifice. The dream does not become a reality, but it may become a nightmare. Anti-Darwinism finds a powerful ally in psychology. We do not enjoy a subordinate role as the cousins of apes, and prefer to imagine ourselves as portraits of God.

9.3 Biological rules of conduct

Biology as a moral foundation

In discussing what is right or wrong, a point of departure is needed. Biology starts from the notion that man is primarily a human being. This seems undeniable, but there do exist alternatives. One of them is to try and see the world from the position of a god, or a world-spirit. What are man's rights and duties on a nonhuman scale of values? Even people who are not religious have maintained this external perspective. It commonly arises in debates weighing human rights against those of other animals, and the idea that man possesses most weight is viewed as a kind of racism, or "speciesism". We doubt, though, that such broadmindedness amounts to much more than excitement with the ability to formulate it. Philosophy has been better at posing new questions than at giving new and useful answers.

To argue about animals' souls or emotional life does not appear very productive. Instead of humanizing animals, it would be wiser to free human beings from divine attributes and tasks. The main objection to eradicating lions and wolves is not their right to live, but that a greater human interest can be ascribed to keeping them alive than to putting further millions of people on the earth's surface. From the human perspective, our self-interest is necessarily paramount, but the

issue is whether human population growth is more vital than biological diversity. This provides a ground for serious discussion, whereas the argument from hypothetical animals' rights is a fruitless path to introverted Weltschmerz and extroverted self-advertising.

In regarding our own species, too, we are naturally influenced by its biological basis. Far from representing a divine conscience in human form, we have a conscience whose purpose is to promote our organism and its genes. In Darwin's words: "If...men were reared under precisely the same conditions as hive-bees, there can hardly be a doubt that our unmarried females would, like the worker-bees, think it a sacred duty to kill their brothers, and mothers would strive to kill their fertile daughters; and no one would think of interfering." <20>

Might makes right - or does weakness?

Among the moral claims of altruism is its opposition to what has been called the principle that "might is right". It takes this stance with enormous pride and conviction. Which, then, are the options it embraces?

If the protest is interpreted as a thesis that "the strongest are not always right", people will express a good deal of agreement, but also disappointment. It would be difficult to find anybody who thinks that the strongest are always right, so there is little to say for the antithesis. A stricter interpretation is that "the weak are always right", yet very few of us believe this either; at most, it may be placed in the mouths of adversaries as a polemical contrast to one's own balanced opinions.

More relevant is to view the protest as rejecting the approach of revised social Darwinism, discussed earlier (see Chapter 6). Against the thesis that "the stronger are usually right", we thus expect an antithesis that, on the contrary, it is the weaker who tend to be right. For if the meaning were only that the right of the strongest is a rule with exceptions, the critics would not be so angry. They need a better alternative and, since none is explicit, this antithesis seems most fitting. In what follows, we shall assume the same general significance when speaking of the right of the strong or the weak. It is not a Draconic law, but a choice between whether the stronger, or the weaker, are right more than fifty percent of the time.

The right of the weak is a widespread belief, although seldom outspoken or systematic. Some human reflexes certainly lean in that direction, such as spontaneous sympathy for the underdog in a fight. Those who dislike elected officials often suppose that any other sort of selection at all would be an improvement. Successful men are regarded as sly Don Juans, despised ones as unpolished diamonds - at least by the despised - and the cream is less likely to rise to the surface than the scum.

Similarly, it is a common experience to be oppressed by people in power. The occasions when a victim has himself been an oppressor are admitted less frequently, and described differently. If the boss

gives orders, power is talking; but if the orders are passed farther down, reason is talking. Power that benefits a person seems discreet; as soon as it turns against him, it becomes conspicuous, and readily acquires a negative association.

Much moralizing is intended to help the weak against the strong, and pays no attention to cases where the strong are right. The strong assert their rights without any voluntary defenders. As is shown by parallels in the field of law, this does not make it any easier to equate weakness with right. The state is more powerful than criminals, and criminals are defended by lawyers - a good way of throwing light on the issues, but in no way a proof that lawyers are the heralds of truth. Justice tends to be on the prosecutor's side.

As for revised social Darwinism, a number of arguments favor it. While many factors supporting the strong are morally neutral, there are several that connect strength with right. In a social structure, various positive traits are selected for. A chieftain presumably has a greater ability to further the interests of a tribe than do members of the lowest rank. He may perhaps be an egoist, yet his possibilities of becoming and remaining a chieftain are normally helped if he can restrain his self-interest to some extent. High status reflects not only destructive qualities but also positive leadership talent.

Moral righteousness is influential in every conflict. It increases the strength of whoever feels it. A man fights harder for his family and property than he would for somebody else's. Nothing indicates that a person who feels that right is on his side will groan about the world's evil and give up. Quite the opposite: his chances of winning in a test of strength are raised.

The link between right and power has its converse as well - powerlessness diminishes right. In a standard type of Western film, a bad gunman terrorizes a small town whose inhabitants cannot defend themselves. He wrecks the saloon, appropriates the owner's wife, takes supplies from the fat storekeeper and money from the puny banker. No one wants to become a client of the funeral parlor. People write letters to a distant authority and pray to God, waiting for a good gunman to ride into town and shoot it out with their persecutor. In view of their inability to mobilize power behind their rights, the audience begins to doubt whether they deserve to be saved by the hero. Why should he risk his life for such cowards? We share his contempt for them as he proudly rides away toward more rewarding perils.

It is understandable that the townsfolk do not dare, like the hero, to fight a duel. This would be more foolish than brave. But many other methods are conceivable, and why should the rules of play be laid down by the criminal? For example, a mass attack could be mounted to kill him. If a right cannot defend itself, it is morally weaker than a right which mobilizes power.

Those who assert their right with the power available to them are worthy of admiration. Some demonstrate against an occupying army, or help the police against a gang that terrorizes their neighborhood. A victim who does not fight back is taking a long step toward becoming, not a victim, but part of a peculiar social relationship - like an

abused wife who repeatedly returns to her husband after being patched up at the hospital. Unless the victim asserts his right, the reasons for anyone else to do so are obviously fewer. Right and power are positively correlated, while impotence undermines the moral force of right.

On these grounds, it is generally plausible that the stronger are more often right than the weaker. An additional and very important argument is the cost of believing otherwise. To turn a hierarchy upside down requires plenty of energy, and probably blood, if at all possible - a high price to reach a situation worse than the initial one. In sum, nothing can be gained from the antithesis that might belongs to the weak, and that the meek should someday inherit the earth. This seems an extremely unlikely and improper idea.

A provocative example is the revolutionary transformation of Eastern Europe. Many in the opposition expected that everybody allied to the Communist system would disappear from leadership. Such has not been the case, and neither would it be a good solution. The elite included not only crooks, but also capable people in numerous fields. Revolution involves personnel changes at the top, and crucial changes in the system; yet another implication is continuity in a large group of mostly suitable individuals near the peak of social power.

The moral indignation over a thesis that the stronger are usually right does not pass muster. Critics should, instead, offer more thoughtful proposals for improving morality. To regard oneself as an enemy of injustice is not the conclusion of a moral argument, but a trivial premise. When, and how, should the right of the stronger give way to a different principle? Evidently, serious suggestions of this kind are few. To avoid seeming empty-handed and confused, many a moralist has done his best to rescue the notion that weakness makes right.

The rival as angel

Altruism maintains that its humanitarian agitation provides some protection, however slight, against violence and assault. Despite this cultural assistance, the fact is rather obvious that human beings are more violent to other members of their species than animals are. Many animals engage in competition and conflict, especially between males, but the struggle is rarely pursued to the bitter end; normally the weaker male can flee with little injury. The winner is not held back by any advanced sympathy - so what is it that prevents an unlimited battle from putting an end to the loser? Would not elimination of a rival at the first opportunity be the surest means of avoiding future defeat by him?

A claim frequently made, at times with either approval or a sigh of regret, is that "the winner takes all". One is led to believe that no mercy can be expected of an omnipotent winner unless some moral compassion is fed into his heart. But comparison with the animal world shows that the matter is more complicated. Besides his profit, a

winner incurs two costs: energy is needed in order to fight, and there is a risk of being hurt. Moreover, supposing that Rival 1 has killed Rival 2, he will not be the ultimate winner if, once tired out, he is chased away in turn by a Rival 3, who collects the resource being fought over. Rival 3 reaps the same advantage as Rival 1 by the death of Rival 2, but avoids the cost.

Rivals 1 and 2 should thus consider resolving their conflict without allowing Rival 3 to become the ultimate winner. They can do so by ritualizing the fight to minimize the cost. Deer often go through a ritual of threatening postures and cries that may determine which of them is strongest without requiring combat. Only if these helpful rules are indecisive does combat take place, and then it is kept within limits.<21> If the aim were to kill the antagonist, evolution would doubtless have consistently provided them with spear-like horns, instead of inefficient crowns that seldom serve as murder weapons.

Human contexts also exhibit ritual conflict behavior where the Third Rival has the function of a guardian angel. For instance, competitors for a promotion are well advised not to fling too much mud at each other. Dirty tactics may have a good chance of succeeding, but if one's own uncleanness is exposed in the process, a third candidate can emerge as most suited. In many situations it is essential to prevent conflicts from escalating until the winner himself becomes a loser. To explain one's behavior by generous aristocratic virtues such as "fair play" sounds fine, yet there are weightier reasons.

The more likely a conflict is to involve only Rivals 1 and 2, the more violent it is. Cock-fighting, a sport in which the ritual possibilities are removed, depends on sheer force - as in the boxing ring. The Third Rival is a true angel of peace even if he neither looks, thinks, nor feels that way. As a third factor, apart from the costs of energy and risk, he stands for limiting the conflict and staying "fit to fight". This is not a humane ground for restricting conflicts, but it is effective.

Again, in today's primitive subcultures, attempts are made to find ritual methods of resolving conflicts. Two gangs disputing a territory may allocate it through single combat between leaders, or through a further ritualization such as a motorcycle race. Total war might decimate them and enable a third gang to take over.

Liberal society has been very successful at resolving conflicts by guiding competition into productive channels. Both democracy and capitalism allow the shadow of the Third Rival to fall upon their confrontations. A capitalist does not burn down his rivals' factories, as this would hardly be rational. Everyone else in the business is happy to see a competitor eliminated, and would be even happier if the arsonist were caught and punished. The alternative method is to fight with competitors for the favor of consumers. Similarly, political parties decide a race for government power by letting the public vote, not by force of arms.

In contemporary England, the risk of being murdered is only a twentieth of what it was 700 years ago.<22> However, some subcultures are far more violent. American Indians comprise just 3% of the population

in Canada, but commit 17% of the murders. For blacks in the United States, 12% and 48% are the respective figures.<23> If these groups are divided into people who have been assimilated into the rest of society and people who still inhabit reservations or ghettos, the differences are even bigger.

The usual altruistic explanation is that such "underprivileged" groups deserve pity and can be helped with a little more welfare funding. Another view would be to blame, not their need, but a lack of productive requirements. Thus, too, the romanticized musketeers of the seventeenth century became a warrior caste who indulged largely in settling accounts with each other - and while a duel may be somewhat ritualized, it is difficult to consider socially desirable. On a modern Indian reservation, the productive requirements of being able to hunt and fish have disappeared as suitable means of resolving hierarchical conflicts. Parasitic systems are full of internal struggles, since they have no constructive goals. The Mafia tries to solve internal problems with a minimum of violence and, not surprisingly, it often fails. Its ritual methods are faulty, and most disputes end at the point of a gun or knife; for a warrior caste, violence is close at hand.

In these subcultures as well, the necessity of remaining "fit for fight" is what stops many conflicts. Resistance to killing is always a vague feeling, compared with one's own fear of getting killed. The arguments for relatively peaceful behavior are improved only when the fear of losing a showdown is accompanied by the risk that, even if one wins, one will be weakened enough to lose a later bout with a third rival.

The right of precedence

Several mechanisms exist that modify the right of the stronger, and prevent it from being bestial in the sense of making rash choices. A frequent manner of resolving conflicts in the animal world is to utilize an asymmetry between the rivals. Since many animals are quite similar in strength, they benefit by rules that decrease the number of energy-wasting clashes. Among the commonest rules is that of an "established right": the animal which has a female or a territory wins, because the challenger backs off.

Two male cichlid fish are influenced greatly in their conflict behavior by the location at which they meet. The one which is within his territory will easily chase away the other. If he later goes into the other's territory and is discovered, he quickly leaves. It is clear that their relative strengths have not reversed; the decisive factor is which fish has the established right to the location.

Experiments with a species of butterfly reveal an interesting aspect of the natural view of rights and its effect on conflict.<24> The male with territory drives off the intruder after a confrontation lasting 2-4 seconds. If the researchers let the intruder occupy the territory briefly, he has the established right and evicts the previous owner. Not until both males are led to sense that they have this right

does an all-out battle occur. Neither male gives up soon - it lasts 40 seconds on average - and presumably the final winner is also the stronger. Yet in the vast majority of conflicts between these butterflies, what counts is not the right of the stronger, but the right of precedence.

Let us now look at *Homo sapiens*. Behavior in a nightclub obeys certain social principles which may illustrate an established right. A newly arrived couple sits down at a table. When dancing, they are careful to leave some clothing there, or some wine in their glasses. Others seeking a free table respect this mark of territory, and anyone who takes the same seats will leap up when the couple returns. If the mark has not been noticed, a dispute is indeed likely to arise. But if the next couple has had time to order its own drinks, nothing will be disputed: the first couple has not defended its right sufficiently, and the established right has been taken over by the next couple.

While groups may well enter the nightclub who argue that they have special rights, these are members of half-criminal subcultures rather than people of high status. On the other hand, if the city mayor or a famous actor should come in, the established right still applies. The latter types would surely have gotten the table if they had arrived together with the first couple - but as things are, they must wait. In human societies, the established right is often powerful and limits the right of the stronger.

Established rights are also found in relations between the sexes. Consider a "triangle drama" between an established partner and a rival who is superior in charm, status and physical strength. The rival is still expected to avert a direct confrontation with the husband. One can agree with the husband in spite of disliking him and sympathizing with the mutual preference of the woman and rival. His established right exists until it is dissolved. If the woman's passive role seems disturbing, the same situation might be replayed with the sexes reversed. A woman as the weak partner would be equally supported by an established right against a superior competitor. How this established right is dissolved varies among cultures: the usual requirement is either discreet adultery, or an official repudiation of the right as in divorce.

A person may be replaced at work by someone who is thought to be better. If the difference is insignificant, however, he keeps his job. Nor can a tenant normally be deprived of his housing if the sole reason is that somebody else wants it. One might object that this is just a temporary convenience - changes are not worthwhile if their benefits are marginal - and that factors like status, money or beauty will tip the scales in the end. But such protection against competitors who are marginally better is by no means a passing or unimportant phenomenon. Most conflicts are of that very kind, with little difference in strength between the rivals.

When someone appropriates a resource, he decreases other people's opportunities of using it. This presents no practical problems if it concerns, say, clay to make a pot with. For a pot's value consists so largely of labor that other potters are only marginally affected by a

slight decrease in the supply of clay. Liberal philosophers such as John Locke have not found it difficult to maintain that a right connects the producer with his wares, and to dismiss other people's claim on a potter's pot. But difficulties arise if the property is highly valuable to others and restricted in quantity - as with the right to land and, even more so, to hunting grounds. Locke was unable to solve these well; he assumed that the right to undeveloped products will not cause strong conflicts of interest.<25> According to classical Marxism, too, natural resources are not worth much because all value derives from work. The right of precedence is an alternative that fills the legal vacuum surrounding resources which nobody has created. In the absence of other persuasive criteria, the first claim has a definite argument in its favor.

Many hold that aboriginal peoples have a right to their hunting grounds, even though it is precisely the weak sort of undeveloped right. In all conflicts between peoples, the right of precedence is the point of departure, and an established right is seldom questioned if the owner has managed to retain it. A brutal conflict does not begin until a territory has changed occupants sufficiently to persuade each party of a moral right to it - as in the case of butterflies. If only a territory has a rightful occupant, other male butterflies will fly onward, even if they are stronger and the place is attractive. The same is broadly true in the world of humans.

Tit for Tat

For cooperation to occur, a number of preconditions must be fulfilled. The cooperation has to be profitable in comparison with the parties going their separate ways, since it has no intrinsic value beyond its rationality for individuals. And rationality, in turn, requires that the relationship be farsighted. Every cooperative venture faces vulnerable situations where one party may economize on effort by breaking off the relationship and collecting benefits. When this possibility exists, continued cooperation needs further advantages that are attractive. Investments in cooperation are never certain to bear fruit, so the cooperation is easiest to uphold if the parties interact rapidly and frequently. A successful strategy of cooperation is not only spread through evolutionary success; in fairly intelligent creatures, it can also be promoted by learning or imitation.

In addition to such observations, we can investigate how rules of action fit into theoretical models. Facts without hypotheses often lead to very limited conclusions, while theoretical investigations yield deeper insight into the practical value of solutions and the features that call for clarification.

An interesting simulation of data about rules of action was carried out by Robert Axelrod.<26> He designed a contest between different strategies, to determine which of them worked best in a cooperative situation. They were tested in an iterated variant of the Prisoner's Dilemma (see Chapter 6): it was better for both parties to

cooperate than for neither to do so, and ideal for each party to benefit from cooperation without making any contribution, but worst of all to cooperate and be cheated. In this case, the numbers were unlike those in our earlier example, yet the arguments are the same. It is best to defect regardless of what the other party does; nonetheless, if one can get the other party to cooperate by doing so oneself, this is better than no cooperation at all.

A number of programs were brought into duels games, each involving a series of 200 moves. Researchers from diverse disciplines submitted 15 programs for strategies, whose total scores were calculated when they all met all the others. The winner was a quite simple program called "Tit for Tat". It began by choosing cooperation, and continued by making the same choice as the rival program's previous move. Thus, if it meets a program that always defects, it cooperates one time and then defects 199 times. If the other program always cooperates, so does Tit for Tat.

Later a new contest was arranged with 63 programs, of which at least some were expected to beat Tit for Tat. Moreover, a rule of evolution was added. When all programs have had a game against all others, a new environment was introduced, weighting each program according to its score, and the contest was repeated in a new "generation" - this being done for 1,000 generations. The aim was to prevent the results from being prejudiced by the fact that, since the programs varied in their ability to deal with different opponents, and since low-scoring programs were gradually eliminated, the programs scoring high against these would also tend to be eliminated, producing an artificial evolutionary situation. Another change, toward greater realism as well as more cooperativeness, was to make each game indefinitely long, instead of exact 200. With such a fixed limit, it pays to cheat on the last move; if one thinks the opponent foresees this, it pays to cheat already on the next-to-last occasion, and so forth. In other words, the "shadow of the future" is not always stimulating. Expectations of a fixed end to cooperation can create special moves that disturbs the long-term orientation.

Once again, Tit for Tat won. Several inferences can be drawn about the differences between more and less successful strategies:

1. It was profitable to initiate cooperation. Systems that waited for the opponent to do so often got no cooperation.
2. It was not profitable to defect if the opponent cooperated. Many programs had an installed defection in order to increase their profit, but this often backfired, because too many had revenge reactions. Defect could pay off momentarily, yet soon cost more. Programs with the principle of never be the first to defect were big winners. The most successful of cheating programs began by getting the eighth place, but then fell in significance during the evolution, since the easily exploited programs were eradicated.
3. Tit for Tat was good at showing others that it did not tolerate defection, by reacting sharply. Worth noting is that this was a clear but limited revenge. Programs which used more massive reprisal, by

defecting several times if the opponent did so once, were less profitable.

4. Immediate reprisal was more successful than delayed reactions, as a fast reaction encouraged some cheating programs to return to pure cooperation.

5. Under the given conditions, even Tit for Tat can thus pervade a population of narrow-minded egoists, if only they become a small group with possibilities of mutual contact. Conversely, this program's culture is very resistant to invasion by cheating strategies. It is strong in evolutionary terms.

What are the lessons of these experiments? If they are translated into advice for human society, we find support both for respected rules of morality and for certain less admired ones.

Remarkably, although Tit for Tat had the highest total score, it did not win a single game: the opponent always earned at least as many points. (The program cooperates as many times as, or one more time than, the opponent.) Here is something basic to ponder over. People have a striking tendency to view their interactions as zero-sum games: each side is believed to lose as much as the other gains. Even when they know a game is not zero-sum, they balance personal benefit against the partner's benefit - which easily leads to dissatisfaction and friction, despite the cooperation's great inherent advantages. In contrast, Tit for Tat won by maximizing cooperation, not by earning more than its partners. Human life offers countless examples of successful cooperation breaking down because one party thought it was getting a smaller share of the profit.

The experiment also indicates that deceitful defections are hard to carry through, and the chances of outwitting the opponent are exaggerated - and scarcely only by system designers. Some humans may camouflage deception, but others are very vigilant, and a chain of reprisals can be devastating. There is much to say for the profitability of a nice, simple policy which rewards good with good.

Also of interest is the indication that it pays to invite cooperation by taking the first step. A willing wallflower, who waits for others' initiative, frequently waits in vain.

The virtuous implications of Tit for Tat deserve emphasis. That good should be rewarded with good is normally regarded as praiseworthy, but its support from these experiments is on another level: as a rule of action, it proves to be rational and profitable for the actor himself. A cynic might call it a pious old wives' tale, but the contrary is the case. Paradoxically, among the victims of old wives' tales are our deceitful cheaters. In a highly competitive situation, one watches out for parasites; those who rely on the foolishness and naivety of others are often doing themselves a disservice.

As for less virtuous consequences, it follows that deceit must be punished - and punished without delay. Initial forgiveness reinforces the cheating behavior, and creates the impression that parasitism is tolerated. On the other hand, a resounding punishment which excludes or

seriously hinders future cooperation is not advisable.

Tit for Tat does have a problem: it can produce an infinite series of reprisals. This is also a human problem, and the question is whether any improvements are possible. Axelrod suggested that the reprisals be diminished gradually to a stop, as when a mobilization of three enemy divisions is answered by mobilizing only one.^{<27>} The point is made, and the smaller provocation brings an even milder response, and so on. While the scheme may seem appealing, we think it is bad advice.

A relevant work, discussed by Axelrod, is Tony Ashworth's study of the unofficial cooperation which took place on the Western Front during World War I.^{<28>} The upper command on both sides opposed any unofficial cease-fires, yet they constantly occurred. The general conditions for cooperation to arise were present. Soldiers stared at the same antagonists for a long period and could be expected to react to each other's behavior. A cease-fire was obviously better for both sides than mutual shooting. To shoot at the enemy without being shot back at, however, was the best alternative - it would not be punished by one's superiors, and a weaker enemy was less likely to mount an attack that could kill oneself. This situation amounts to a repeated Prisoner's Dilemma - the Best can be the Good's worst foe. As a result, the soldiers tried to tone down the fighting; they did not shoot at specific times, or at particular targets. Such unofficial cooperation was maintained with simple rules, quite like Tit for Tat.

Although each side was eager to avoid provoking the other, it replied to any violation with a double or triple salvo. This might appear to have risked escalation, but was probably a sensible move. If three shots had been answered with three, instead of six or nine, the enemy could have been emboldened to launch further attacks, since he was prepared for reprisal and had the advantage of surprise. A delayed reprisal, to gain a corresponding surprise, would mean a late and unclear reply, with the risk of random - and ever more intense - shooting. Still worse, if the rule were to answer three shots with only one, continued aggression would have been directly promoted. The adequate approach, in the spirit of Tit for Tat, is a rapid reaction with approximately the same effect as the provocation. If the enemy were to suffer a minor loss but improve his relative position, he would be tempted to break off any cooperation when there is also an element of competition.

These rules of armistice exhibited a curious ability to emerge spontaneously, to spread along the Front, and to last for protracted intervals. After offensives that were decided at the top and conducted loyally, the unofficial cooperation soon resumed. What undermined it, towards the end of the war, was a growing frequency of commando raids. The artillery could shoot poorly by intention, but commando raids had to be successful and surprising, lest they become suicidal. They occurred sporadically, and the reprisal raids had to be just as successful and surprising. When an attack was to be effective and the response was delayed, the reciprocal revenge was unclear - so the system of unofficial cooperation collapsed.

In our view, a rule of diminished reprisal is less suitable for

most purposes, since it may open the door to defections. Two conditions should be fulfilled in order to prevent them. A defection must not leave the adversary much better off than before, compared with the other party - and subsequent revenge must put him in a worse position than if he had chosen to cooperate. The majority of cooperative contexts, like the Prisoner's Dilemma, involve both competition and a common interest.

Neither is massive reprisal to be recommended. If a gang leader kills a member who steals his beer, the others are unlikely to steal from him - yet this can have dire repercussions when a conflict arises. The leader's risk of losing the fight is increased if he has eliminated an ally, and such behavior does not help in recruiting new members. Massive reprisal is a poor means of teaching others to do as one wants, and it can aggravate a conflict through escalation as well as revenge. Not only polite imperatives like "moderation", but also rational self-interest, favor restrictions on revenge.

A popular combination is to threaten substantial reprisal and, if it does not suppress a violation, to take little or no counteraction. The intention, of course, is to maximize the deterrent of fear while avoiding a vicious circle of revenge. But actions speak louder than words, and one must sometimes engage in costly conflict to maintain the threat's credibility. Threats that are not carried out cause great uncertainty. Many leaders see the uncertainty as an advantage, which enables them to wait until the last moment before deciding whether to strike hard or back down. However, it chiefly benefits opponents who are optimistic and aggressive - those whom one wants most to frighten. Consistent and moderate revenge, not threats of extra revenge, is what can deprive the adversary of any illusions about successful deception. Cooperation builds primarily on the adversary's conviction that it is the best realistic solution in his self-interest.

The strategy of manipulation by talking tough is often tried, but with unreliable results. An example is the use of long official punishments such as a "life sentence" to prevent crime. Ignorant criminals are expected to feel more fearful, and the citizens more secure, than if the shorter actual punishments were made official. Similar is the inclination to negotiate with terrorists in spite of vigorous statements to the contrary. Such lies never fool an opponent, although they may blind the liar to his real policy. Double standards are not a good basis for reprisal.

An argument for diminishing the scale of reprisals is that it could limit punishment to the utility gained by the violator. The situation is frequently not a zero-sum game where this utility equals the loss of the violated. Most commonly, the violator gains less than his victim loses - a thief sells goods below their original value. Since the objective is that crime should not pay, it may occasionally be enough to take "a tooth for an eye". Yet extra punishment has a strong justification: there is always some possibility that the violator will escape. What he gains is certain, but the punishment he faces is only a risk. Hence, the reprisal must be adjusted in order to produce the right effect. In the United States, damages awarded by a court are conventionally three times the offender's profit. As described above,

the same mathematics were applied in the trenches of Flanders. Crime, too, ought not to become statistically lucrative. Now if these circumstances are put together, they seem to cancel each other. A punishment lowered to match the violator's gain would be raised to compensate for his chance of getting away, so it might as well stay at the level of the victim's loss. Thus, equivalent revenge seems often to be optimal.

When estimating the dangers in a vicious circle of revenge, one can easily exaggerate the risks of revenge itself, by taking account of other actions. Revenge is not as deeply esteemed as generosity, yet it is a far more acceptable motive for action than pure aggression is. Many gratuitous attacks are therefore excused as responses to "grave provocations". A Mafia family may assault a rival family so as to enlarge its territory, and explain this as revenge for the murder of a narcotics courier. Germany's invasion of Poland in 1939 was officially a reply to an alleged border infringement. In such cases, the appeal to revenge, while false, is often accepted - not least because of moral rules against revenge. The actor should have been denounced for a more serious crime, aggression, but he gets off with admitting a less serious crime, revenge!

If we overlook all the instances in which one or both parties welcome conflict, revenge becomes a much smaller obstacle. Whether in private life, at work or in politics, a fresh start is still possible. The blows stop being traded and cooperation begins. At first, it is hesitant and gradual, making sure that the other side really wants to cooperate, but eventually it develops. If it is prevented by either side's unwillingness, the problem is not a vicious circle of revenge, even if this is claimed to be the reason. The problem is that one party thinks the cooperation undesirable. In the widespread propaganda for "turning the other cheek", reprisal thus suffers a great deal of erroneous criticism. Reprisal is absolutely essential for preserving mutual cooperation, not mainly a danger to cooperation. The absence of reprisal, despite every eulogy, is a destructive practice.

An alternative that did not figure in the preceding experiments was the Golden Rule. Its instruction would have been to cooperate consistently, regardless of whether the other party does or not. One might be surprised that nobody was interested in testing this rule, which is surely the most honored rule of behavior. Presumably it was considered to be a rule only for conversation, not action. If used, the Golden Rule would have been exploited, with the principal function of helping parasitic programs initially to earn better scores.

Axelrod clearly concluded that his experiments lend solid support to a reciprocal morality. He points with insight to the many advantages, for both individuals and society, of understanding and applying reciprocity. We note, however, that when commenting upon conventional morality, he becomes as ingenuously reverential as so many others do: perhaps, after all, it is mostly these virtues which should be preached. Could the Golden Rule, even though bad for the practitioner, and harmful to society by encouraging parasites, be good in some different sense? "Yet, basing a strategy on reciprocity does

not seem to be the height of morality either - at least not according to our everyday intuitions. Reciprocity is certainly not a good basis for a morality of aspiration."<29> Why this reservation against reciprocity, and deference to High morals?

A rule that comes close to Tit for Tat is the Old Testament law: "Eye for eye, tooth for tooth, hand for hand, foot for foot."<30> Many moralists argue that this is an awful principle which ought to be replaced with "Turn the other cheek". The Old Testament's polemic was aimed at a third alternative, massive reprisal - to exact an eye for a tooth. There is every reason to view these as the most relevant options, and to recognize the advantages of limiting conflicts. In private life as well, one is definitely wise to control the inclination to hit back with excess. From an angelic perspective, the Tit for Tat rule appears brutal; yet a little afterthought leads to a different judgement, namely that it minimizes conflicts and promotes cooperation. Turning the other cheek may be an effective proposal in Heaven, but the latter is a highly hypothetical environment.

The fine aspect of reciprocity, to reward good with good, is questioned discreetly by many crafty minds, but not in a moral debate. The other aspect, to repay evil with evil, is regarded as obscene and attracts unabated criticism - but this is the aspect which enables cooperation to operate and to progress. Without reprisal, altruism acquires a limp and can be no more than reciprocity's handicapped sibling.

9 Summary

Sociobiology is the science of evolutionary foundations for social behavior, including that of man. Sociobiologists agree that man is a product of evolution, but they have been very cautious when it comes to drawing normative conclusions. Philosophers often argue for a discipline which is shielded from scientific advances and dominated by metaphysics. For our part, we reject such an entrenched truce at this cultural gap, since the nature of man bears directly upon his future choices - upon normative ethics. The criticism of sociobiology derives chiefly from religious fundamentalists, who do not believe in evolution to begin with, and from the Left, which includes some evolutionary biologists. A common claim has been that sociobiology is deterministic, almost as if people were robots entirely guided by their genes; yet no ideas of the kind are known to us from literature in the field. Our survey of flexibility in human nature discusses five viewpoints, in order of decreasing flexibility: behaviorism, Freudianism, Lamarckism, sociobiology, and myths of creation. We find critics of sociobiology advocating the other four views, although under different labels. Apart from its scientific weaknesses, cultural omnipotence has political ones - the total power of culture implies total adaptability of the individual.

Altruism is widely held to be necessary for protecting the weak

from the strong. But what does it mean to plead the right of the weak? We have examined the connection between power and right, such as how individuals are judged who assert their rights with the powers at their disposal, compared with those who see themselves as helpless victims. Further, we maintain that several factors, in both animal and human contexts, modify the right of the stronger without recourse to altruism.

Our final investigation concerns the theoretical grounds for viable cooperation. It shows that they flatly contradict an altruistic morality. To initiate cooperation is profitable, but the sequel requires one's own behavior to be influenced by what the other party does - to continue cooperating if he does, and to stop if he does. Reprisal is thus an essential ingredient for making cooperation work. However, it also lies in the individual's self-interest to limit revenge, so that a more balanced cooperation can be resumed. A principle of "turning the other cheek" is, by contrast, quite destructive to cooperation.

Notes Chapter 9. Biology and the cultural gap

1. *Trends in Ecology and Evolution*, November 1993.
2. Cosmides (1989); Barkow, Cosmides & Tooby (eds.), *The Adapted Mind*.
3. Dawkins, *The Selfish Gene*, p. 201
4. Huxley, *Evolution and Ethics*, p. 83.
5. Alexander, *The Biology of Moral Systems*, p. 220.
6. Alexander, *The Biology of Moral Systems*.
7. Shaw, quotation from Williams (1989), p.196.
8. Skinner, *The Behavior of Organisms*; Watson, *Behaviorism*.
9. Wilson, *Sociobiology*; Manning, *An Introduction to Animal Behaviour*.
10. Eysenck, *Fact and Fiction in Psychology*.
11. Storr (1969).
12. Lewontin et al., *Not in Our Genes*. Quotations from pp. 138, 267, and 242.
13. Cassirer, citation in Sahlins, *The Use and Abuse of Biology*, p. 63.
14. Sahlins, *The Use and Abuse of Biology*. Quotations from pp. 12, 59, and 60.
15. Lewontin et al., *Not in Our Genes*, p. 255.
16. The DNA hybridization method and these results are described by Diamond, *The Third Chimpanzee: The Evolution and Future of the Human Animal*.
17. Kitcher, *Vaulting Ambition: Sociobiology and the Quest for Human Nature*.
18. Sahlins, *The Use and Abuse of Biology*, p. 101.
19. Lewontin et al., *Not in Our Genes*, p. 242.
20. Darwin, *The Descent of Man and Selection in Relation to Sex*, p. 73.
21. Maynard Smith & Price (1973).

22. Daly & Wilson, *Homicide*, p. 276.
23. *The Economist*, July 10, 1993.
24. Davies (1978). Also see Tinbergen, *Social Behaviour in Animals*.
25. For a discussion of Locke's reservation "sufficient and equal good left for others", see Nordin, *Etik, teknik och samhälle, ett rättighetsetiskt alternativ*, p. 26, Nozick, *Anarki, stat och utopi*, p. 202, Sugden, *The Economics of Right, Cooperation and Welfare*.
26. Axelrod & Hamilton (1981); Axelrod, *The Evolution of Cooperation*.
27. Axelrod, *The Evolution of Cooperation*, p. 187. As a more general rule, he proposes the factor 0.9 for the preceding enemy action, p. 138.
28. Ashworth, *Trench Warfare, 1914-1918: The Live and Let Live System*.
29. Axelrod, *The Evolution of Cooperation*, p. 137.
30. Exodus 21:24.