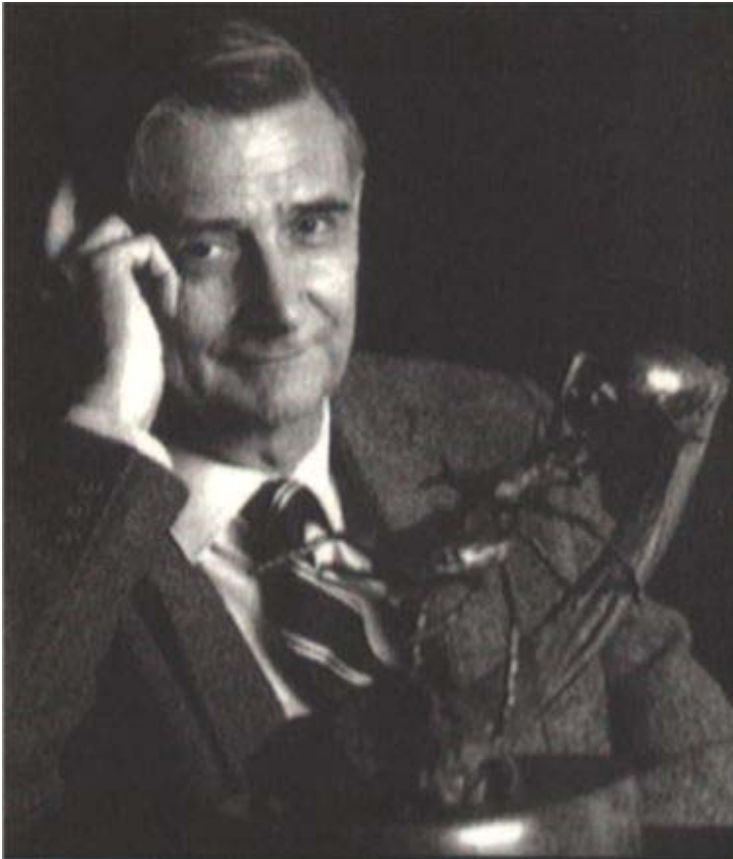


Karl Marx was right, it is just that he had the wrong species

Edward O. Wilson



Among many other things, Edward Wilson is a myrmecologist and two times Pulitzer-prize winner. There is a picture taken by him of an ant holding between its mandibles a banner with the words: 'Onward Sociobiology!'. Following the publication in 1975 of his book Sociobiology, the New Synthesis, he became both to opponents and proponents the living symbol of the application of evolutionary theory to social behavior. This interview took place at Harvard University, March 27, 1997.

Konrad Lorenz wrote that animals of the same species sometimes by accident kill one another, but they never do it on purpose. Humans supposedly are the exception. What is your comment?

Well of course the mass of evidence over the last thirty years shows that this is not true. Killing of members of the same species, including deliberate killing during contests for dominance, killing of territorial rivals and invading males, infanticide and even cannibalism are commonplace. This has been shown in many different groups of animals. We always hope that what Lorenz had said would be true, so we could use the animal-kingdom as an example of how human beings should conduct themselves.

Are humans more murderous than other animals?

No. The data from long-term behavioral studies of groups such as lions, hyena's and chimpanzees show that the per capita murder-rate in animal-societies that do engage in murderous aggression is much higher than in human beings. It is just that we have a much more alert media that reports murders whenever they occur. Some time ago I calculated all this, and I believe that is true even if you throw in the rate of mortality due to direct aggression during war in the modern area. Even there, in a few episodes during this century where we saw the highest mortality in modern history, the percentage of people killed out of the entire population of Europe was still relatively small. As horrendous as it was, a couple of tens of millions, it was still only a small percentage. Whereas a larger percentage of an entire clan of aggressive social animals sometimes is killed. And when you go down to ants, they are genuinely the most warlike of the animals, and the mortality-rates there of individuals and colonies can be truly staggering.

But animals often do show some restraint, as Lorenz claimed. There is ritualised fighting, and the losing party is often not killed. Why not, as he may live and fight another day?

Lorenz was basically correct in pointing out that most animal aggression is ritualized. Explanations of why animals take so much time to threaten, rather than attack directly, have been discussed many times. I believe that the prevailing explanation is that it is often advantageous to both parties to work out some communication whereby the duel is steered by display rather than direct aggression. One of the reasons for this is that even the stronger individual is frequently killed or badly hurt. For the same reason a winner may refrain from killing the loser, because the loser may still do damage. And the winner may have to face yet another rival. Also, for a social animal it may not pay to kill off a subordinate animal, because this last animal may be vital for the dominant animals success, particularly in hunting or combatting rival groups. And yet another explanation is kin selection; closely related rivals may have a genetic interest in keeping one another alive.

As to male rivals of a species with lethal weapons, such as poisonous snakes; use of such a weapon by one side would almost certainly meet with immediate retaliation. So I believe there are several reasons why rivals often refrain from full-blown aggression, but instead use complex rituals which are often quite conspicuous and elaborate.

Nevertheless, animals of the same species often kill one another. How could Lorenz have been so completely wrong?

Lorenz was a great naturalist, but he himself studied only a very limited number of species. The information that has produced a newer picture was forthcoming for the most part only after field-studies of many animals that had not been studied in Lorenz' time. It was not a case of him ignoring information, he just did not have the information.

But I also believe that the great success of his book Das sogenannte Böse, or On Aggression, was due in part to the fact that it was a message people wanted to hear, namely; nature tells us that it is a mistake to be aggressive and carry out war. I slightly knew Konrad Lorenz, who was one of my sources of inspiration

when I was a young student. One of the reasons that he was annoyed by me was that I showed, by bringing together a large amount of information in the nineteen-sixties from insects, that not only were many insects murderous in their aggressive interaction, but aggression was totally lacking in large numbers of other species. So in fact, aggression was not a general instinct spread throughout the animal kingdom as Lorenz had thought, but it occurred only in species in which aggressive behavior evolved as a density-dependent factor. In other words, when densities of populations are not regulated by predators, emigration or disease, then you will find territorial and other forms of aggression, which can be interpreted as specialized responses to favor individuals competing for limited resources. Not all species do have individuals growing to densities and numbers that they even get to compete. And therefore there is never a situation in which there is any advantage in being aggressive.

There are about 9.500 known species of ants, many of whom you studied, but there is only one species of Homo. Why?

I think I have the answer for that. That is because we are so big. We are giant animals. The bigger the animal, the larger the territory and home range that the animal needs. Ant-species, consisting of very tiny organisms, can divide the environment up very finely. You can have one species that lives only in hollow twigs at the tops of trees, another species that lives under the bark, and yet another species that lives on the ground. Human beings, being giant animals and particularly being partly carnivorous, cannot divide the environment up finely among different Homo-species. There have been episodes in which there were multiple hominid-species, probably two or three species of Australopithecus, co-existing perhaps with the earliest Homo. But it is evidently the tendency of hominid species and particularly of Homo to eradicate any rivals. It is a widespread idea among anthropologists that when Homo sapiens came out of Africa into southern Europe about a hundred-thousand years ago, it proceeded to eliminate Homo neandertalensis, which was a native European species that had survived very well along the fringe of the advancing glacier.

You write that ants often share food among themselves. Why, and how did you find out?

Back in the fifties Tom Eisner, a colleague of mine, and I did I believe the first experiments tracing radio-active labelled sugar-water through colonies of ants. We were able to estimate the rate at which the food was exchanged, and the volume that was exchanged. Not only do many colonies exchange food with fanatic dedication, but in the colonies of many antspecies the workers regurgitate food back and forth at an extraordinarily high rate. Now we understand that the result of this is that at any given time, all the workers have roughly the same food-content in their stomach. It is sort of a social stomach. So that an ant is informed of the status of a colony by the content of its own stomach. It therefore knows what it should be doing for the colony. If you only had a small number of extremely well-fed ants and the rest were hungry, the workers would go out hunting for more food, whereas in fact it might be a bad time to hunt for food.

Why doesn't this sort of communism exist among humans?

What I like to say is that Karl Marx was right, socialism works, it is just that he

had the wrong species. Why doesn't it work in humans? Because we have reproductive independence, and we get maximum Darwinian fitness by looking after our own survival and having our own offspring. The great success of the social insects is that the success of the individual genes are invested in the success of the colony as a whole, and especially in the reproduction of the queen, and thus through her the reproduction of new colonies.

This was I think one of the main contributions of the idea of kin-selection. We now understand quite well why most species of social insects have sterile workers, and therefore can have communist-like systems. In which the colony is all, the individual is only a part of the colony, and the success of the whole community is what counts far above the success of the individual. The behavior of the individual social insect evolved with reference to what it contributes to the community, whereas the genetic fitness of a human being depends on how well it can individually use the society. We have become insect-like only by extreme contractual arrangements.

You write that a major difference between humans and ants is that we send our young men to war, while they send their old females. Why is that?

Well first of all, all the worker-ants are female. In the bee, ant and wasp-societies sisters are extremely closely related to one another, and therefore it pays to be altruistic toward sisters, whereas brothers do not benefit by giving anything to sisters. So the females are the ones who are fanatically devoted to one another. Why are they old? Once again it comes down to this matter of what is best for the colony. As the workers grow older, they put more and more of their time outside, and as they become quite old or injured or sick, they spend their time either outside of the colony or right at the edge. The advantage of this is that the individuals that are going to die soon anyway, having already performed a lot of services, are the individuals that sacrifice themselves. It is the cheapest for the colony.

Whereas in humans, not only are the young males the strongest, but by being mammals in a competitive society young males tend to be greater risk-takers, braver and more adventurous. They are moving up in the ladder of status, rank, recognition, and power. And to be a member of the warrior-class when it is needed, has always been a rapid way of moving up. So that appears to be the main reason why we send young men out, and they are willing to go.

Nowadays not only the word sociobiology is used, but also words such as evolutionary psychology, Darwinian anthropology and others. Why so many names?

The classical Lorenzian, ethological tradition recognized that characters evolve in behavior just as they do in anatomy. You cannot appreciate what a great advance that was intellectually in the forties and the fifties, unless you lived that time. Now we take it for granted. In the seventies I realised that we needed to have a new body of theory that would incorporate the best elements of ethology, but it would be directed at the study of societies, in particular complex societies, and that would use natural selection theory to explain relationships within a society. Sociobiology was to be the study of the biological basis of all forms of social behavior, in all kinds of organisms, including human beings.

Sociobiology then came under attack by critics all over the place because its use in studying human behaviour. It was regarded as biological determinism which

was not acceptable for the social sciences. Any idea that human behavior of any kind had a biological basis was not acceptable in the seventies. And then there were Marxist critics like Gould and Lewontin who felt that it was injurious to the progress of human beings toward a socialist society, which they considered the most just and inevitable society. You won't get Gould admit that today, but that was how he talked in those days!

So the word sociobiology was under heavy attack in the late seventies and early eighties. The subject of sociobiology however flourished; it became the dominant way of thinking in animal behavior studies. But in humans it was so controversial and there were so many misunderstandings and attacks! Then a new generation entered the field of human sociobiology, some of them are very capable, they have been coming up with really new ideas. And they started avoiding the word sociobiology, and use words like evolutionary psychology and Darwinian anthropology. There is also the expression: A scientist would rather use another scientist's toothbrush than his terminology.

This famous incident in 1978, where an anti-sociobiologist threw a bucket of water over your head, did it perhaps unconsciously motivate you to devote more time to bio-diversity?

Leave sociobiology and no more buckets of water? The answer is no. The reason I went into biodiversity was that it was my lifelong passion. I was trained to study biodiversity. I had been to the tropics and was well aware of all of the conservation-problems around the world. I realized that the time had come for biologists who knew about biodiversity and ecology and extinction, to become active in this field. So I moved in that direction, and I think it was the right decision to make. Because I consider for the immediate future to be involved in that, help spread information, get policies, and so on, it is more important than even this business of understanding human behavior. And furthermore, I just loved the work. This is what I do naturally, study biodiversity.

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