A non-human example of the cultural transmission of social norms

IS AGGRESSIVE behaviour innate or learned? In baboons, it seems, it is learned. A surprising natural experiment, reported in *Public Library of Science Biology*, an online journal, suggests that the level of violence in baboon society is culturally determined.

The story begins in 1983, in the Masai Mara Reserve in Kenya. Robert Sapolsky, a primatologist at Stanford University, was five years into a study of the reserve's olive baboon population when one of the troops he had been observing suffered an outbreak of tuberculosis which killed half of its males. Since the source of the infection was a garbage dump being used as a food supply, and control of this dump was contested with another troop, the males who became infected and died were the more aggressive individuals in the troop—ie, those best fitted to the task of fighting for food. The result was that the level of aggressive behaviour within the troop dropped off markedly.

Dr Sapolsky was understandably upset by what had happened and decided to start again with another troop—one with a more normal sex ratio and social structure. So he turned his attention to a troop 50km away until 1993, when he wanted to show his new colleague (and wife) Lisa Share his original research site. To his surprise, ten years after the natural cull of aggressive individuals had started, the behaviour of the troop's males was still pacific. The reason for that surprise was that every male who had been in the troop in 1983—not just the ones who had died of tuberculosis—had gone. All of the troop's males were incomers. (Male olive baboons seek their fortunes in troops other than the ones they have been born into.)
Dr Sapolsky and Dr Share decided to investigate further. They began to observe Forest Troop (as Dr Sapolsky dubbed his original subjects) in detail. They compared the troop’s behaviour both to what it had been before the outbreak, and to that of the other troops they had been studying.

Some things had not changed. Top-rank males in all groups stayed boss for roughly the same length of time—a year. So-called approach-avoidance interactions between males, in which a high-ranking male displaces a lower-ranking one without any overt violence, happened about as often in one group as in another. But the detailed pattern of these interactions was different. In the new Forest Troop, males tend to “pick on individuals their own size”, attempting to displace those of adjacent rank, whereas in more traditional groups top monkeys tend to bully those at least two ranks below them—animals that have no chance of fighting back. The new Forest males are also less likely to launch attacks on females.

Subordinate males in the new Forest Troop are under less physiological stress, too. When Dr Sapolsky had sampled blood in the pre-outbreak Forest Troop, he had found high levels of hormones called glucocorticoids, which are released in response to stress. Not so in the new Forest Troop. Glucocorticoid levels in its members are low. In fact, even the act of sampling blood had differentiated high- from low-ranking males in the old days. Dominant males suffered no altered behaviour, whereas subordinates scratched themselves, shook their heads incessantly and ground their teeth. No longer.

Cultural transmission of behaviour has been seen in many animals besides humans. But until now, it has concerned what foodstuffs are good to eat, how to make and use tools, and how to communicate (many bird songs, for example, have learned regional dialects). Cultural transmission of, for want of a better word, manners, has never before been observed outside Homo sapiens.

How it came about is still a bit of a mystery, though when Dr Sapolsky and Dr Share weighed the evidence they felt it supported the idea that males new to the troop somehow picked up on how they were expected to behave by watching what was going on, and then found life easier if they did likewise. It also seemed to have a lot more to do with how the Forest females treated newcomers, than their treatment by existing Forest males. The females, it seems, like the new arrangement and are keen to preserve it.

However, such pacific behaviour is unusual in baboon troops, which suggests it is an unstable arrangement. In particular, it might be overthrown if several males with different ideas arrived at the same time. Dr Sapolsky and Dr Share are therefore watching the troop intently, to see what, if anything, causes its males to revert to the tried and tested macho methods of normal baboon life.