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Genetic Basis to Fairness, Study Hints

By NICHOLAS WADE

“It's not fair!" is a common call from the playground and, in subtler form, from more adult assemblies. It now seems that monkeys, too, have a sense of fairness, a conclusion suggesting that this feeling may be part of the genetically programmed social glue that holds primate societies together, monkeys as well as humans.

Two researchers at Emory University, Dr. Sarah F. Brosnan and Dr. Frans B. M. de Waal, report today in the journal *Nature* that they taught female capuchin monkeys to trade pebbles for pieces of food. The capuchins were caged in pairs, so that each member of a pair could see the other. If one monkey got a grape in return for her pebble but the other only a less desired piece of cucumber, the shortchanged monkey would often refuse to hand over the pebble in exchange or might decline to eat the cucumber — both very unusual behaviors.

These refusals were often accompanied by emphatic body language, like dashing the pebble or the cucumber on the floor, Dr. Brosnan said. The expressions of exasperation were twice as common if the monkey offered a cucumber saw her companion being given a grape without even having to hand over a pebble.

The behavior suggests that the monkeys have a sense of fair treatment and respond negatively when their expectations are violated, the researchers say.

The finding bears on the question of whether the sense of fairness found in all human societies is learned from school and family or is instead an innate behavior fostered by the genes.

"The fact that we find the sense of fairness in a nonhuman primate implies it is an evolved behavior and has a good benefit," Dr. Brosnan said.

Protesting unfair treatment of oneself, in other words, probably has a genetic basis in capuchins and so presumably in all social primates, including people.

The food experiment was not conducted in male capuchins, Dr. Brosnan said, because they tend to share food with everyone, whereas females are more discriminate, sharing only with those who share with them.

The reason stems from the structure of capuchin society, which is based on a harem system. A male shares food freely because everyone around is either a sexual partner or a child he has fathered. Females within a harem have no such incentive and evidently measure out their favors on a basis of reciprocity.

The monkey research is part of a long-term effort by evolutionary biologists to understand the genetic basis of social behavior. Selfishness might seem the best way for an individual to get the most genes into the next generation, evolution's only coin of success. But biologists have come to understand how cooperative behavior, under certain definable conditions, can have a greater genetic payoff and therefore how genes that foster such behavior could be favored by evolution.

The sense of fairness discovered in the capuchin monkeys seems to be another aspect of the innate primate repertory of social behaviors.