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## UNFAIR TRADE: MONKEYS DEMAND EQUITABLE EXCHANGES

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**MONKEY BUSINESS.** Brown capuchin monkeys demand an honest deal.  
De Waal

For the first time, researchers say, they have shown that a species other than *Homo sapiens* has a sense of fairness.

Female brown capuchin monkeys tend to turn uncooperative, and sometimes even throw things, if they see a neighbor receiving a lovely grape in exchange for the same token that gets them only a cucumber, according to Sarah Brosnan of Yerkes National Primate Research Center in Atlanta. The clearest protests come from monkeys that see a neighbor getting that grape for free, she and her Yerkes colleague Frans de Waal report in the Sept. 18 *Nature*.

De Waal "has been one of the primary researchers promoting the idea that other animals have a sense of fairness," comments primate researcher Susan Perry of the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany. That view has both advocates and detractors. Perry says, "It is nice to see empirical tests of these concepts."

Brosnan says her inspiration for testing the monkeys sprang from experimental economics analyzing how people react to inequity (SN: 2/16/02, p. 104: Available to subscribers at <http://www.sciencenews.org/20020216/bob9.asp>). In 1999, economist Ernst Fehr of the University of Zurich proposed that, to understand markets, economists need to recognize that people often forgo immediate gains if they see the system letting someone else benefit more.

To test another species, Brosnan trained brown capuchin monkeys to use rocks as tokens of exchange. She gave a monkey a token and then held out her hand. If the monkey returned the rock, she'd offer food. During 2 years of this basic rocks-for-food economy, monkeys exchanged their tokens for food in a matter of seconds about 95 percent of the time.

Brosnan worked with pairs of female monkeys because in a preliminary trial, females but not males balked at inequities.

Her more extensive study tested five females that were familiar with one another but not related. In a series of trading bouts, Brosnan accepted a token from one monkey and handed over a grape as the other monkey watched. However, the second monkey's token was rewarded with a less-tasty cucumber. As the bartering progressed, the second monkey began either to refuse to trade in its token or to reject the cucumber. That monkey on average nixed the deal sometimes vigorously in 10 out of a string of 25 opportunities.

When Brosnan gave a grape to the first monkey without requesting a rock in payment, the second monkey opted out of the rock-for-cuke deal in about 20 out of a string of 25 offers.

Such treatment would outrage a person, too, Brosnan contends. The experiment "implies that the human sense of fairness is evolved," rather than solely learned, she says.

Fehr calls the new paper a "very important finding." He agrees that the study "shows that inequity aversion must have very deep evolutionary roots." This aversion underlies human cooperation and affects how markets work, he adds.

Primatologist Joan Silk of the University of California, Los Angeles says that the new work "extends knowledge of cooperation in the primate order." However, she points out that the paper "raises an interesting paradox." Monkeys in lab studies cooperate with partners not related by blood, "yet in nature, we see very little evidence of this capacity," she says.

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