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The Evolution of Economic Rationality: Do Monkeys Understand Money?

By Roy F. Baumeister on July 15, 2008 in Cultural Animal

(This post was coauthored with Kathleen D. Vohs.)

Money is a powerful force in human life and affairs. Its very power gives pause to those who look to evolution for full explanations of human behavior, because money has not existed long enough to have influenced evolution. By some estimates, money only goes back a couple thousand years, which is too short even to have influenced human evolution.

Still, one can get some clues as to how evolution prepared us for money from the burgeoning research that seeks to present animals with economic choices. To gain perspective on human financial decisions, one may ask, what would monkeys do?

Keith Chen and Marc Hauser at Yale University taught monkeys about resources that bear a strong resemblance to money. Monkeys don't care about money, per se, but they do care about marshmallows. (This already is a difference of gigantic proportions in that monkeys must learn about resource-exchange using something that is already a primary reinforcer - food - whereas humans can extend the range of their motivations to secondary reinforcers.) A resource (marshmallows) exchange task was introduced whereby pressing a lever would give another monkey a marshmallow; hence this was a task that involved a bit of altruism. Not only were monkeys taught about the game. Two specific monkeys were conditioned (entrained), such that one always pulled the lever for his monkey partner (thus being a very generous partner) and the other never pulled the lever for his partner (stingy). Then they let these conditioned monkeys play the game with other monkeys. Monkeys that played with the highly generous monkey figured it out and quickly took advantage of him. Monkeys that played with the stingy monkey also figured it out quickly and subsequently shunned or were aggressive toward him.

Thus, monkeys can at least understand and respond effectively to the difference between a generous provider and a tightwad. Still, the fact that these differences had to be done

with marshmallows instead of a more abstract representation of value (which is what money is) suggests a limited capacity to use or understand money.

Other studies have shown that monkeys take any handout above zero that is offered to them in a version of what, in humans, is called the Ultimatum Game. In the Ultimatum Game, one person is designated the Proposer (who thus offers the ultimatum) and the other becomes the Responder (who decides whether to take it or leave it). The Proposer offers an amount of money to the Responder out of a total amount that the Proposer has been given by the experimenter - usually this is $10. The whole game involves the Proposer offering the Responder an amount, which the Responder has the option to accept or reject. Accept the split and both sides get what was offered; reject it and both sides get no money at all. This obviously not an evenly matched game. The Proposer has the power to make the ultimatum. All the Responder can do is either take whatever is offered or say no, which is costly to both players.

When humans play this game, the Responders will sometimes refuse offers that they deem too low. Depending on the person and the circumstances, people tend to refuse offers below 20% of the total. Monkeys, however, have no such scruples, and will take anything above zero.

You can look at the monkeys' responses in different ways. One way is that they are not bothered with issues of pride, self-esteem, and fairness. After all, a human is humiliated to accept a tiny share, especially if he or she expected an equal split. They know that the other person could have divided the pay equally and perhaps should have - but chose instead to claim the lion's share for self and offer only a measly sop. Monkeys apparently either do not understand that they should be embarrassed, or they do not care.

Yet another way of looking at it is to suggest that monkeys are actually pretty smart. Economists continue to scratch their heads at the results of studies with the Ultimatum game. They assume that people are basically oriented to maximize their own profits. If you and someone else worked equally to earn $100, and that person has the power to divide it and chooses to offer you only one dollar while keeping $99 for himself, well, you are still better off with one dollar than with nothing. Hence economic rationalists find it slightly scandalous that people ever refuse any offer. Economists think that if people were true to financial logic, they would act more like monkeys.

Thus, when monkeys play, they behave as economists would have humans do - they accept any offer above zero. This means that, although rational (they have more when they leave the game than when they entered), monkeys are not sensitive to issues of fairness. Humans most certainly are. Humans feel all kinds of self-conscious emotions when they receive more than they think they ought to receive. Not always, of course, but it happens.

Other work suggests that monkeys do not have a fully developed sense of fairness. There are signs that they are acutely sensitive to getting less than their fair share, such as if they see another monkey getting more than they get. If you have two dogs and give one a

biscuit treat, the other will look at you with a mixture of expectancy and indignation. Getting less than your fair share is called being underbenefited, and many animals seem to have that.

But a fully developed sense of fairness means that you are uncomfortable with being overbenefited as well. That is, it bothers you to get more than your fair share. Here is where humans seem to part company with other creatures.

What happens when monkeys overbenefit from an exchange - do they experience guilt, embarrassment, shame, or try to rectify the situation? Apparently not.

This may be why humans embraced money: because it allows for trade of resources on the basis of equity, which is subject to exchange rates. That is, imagine that I ask you to paint my living room walls; then by the virtue of the fact that I wanted you to paint my walls, I may not be skilled at or want to paint your walls. But I can repay you in another currency, namely money. In this way, humans can correct overbenefits in a manner that is separate from the original payment (in this case, wall painting).

Humans' emphasis on fairness can be seen in other instances as well. One important study showed that people will spend their own money to punish others who do wrong. In these studies, even at a cost to themselves, people were willing to inflict harm on those who took advantage of others.

So maybe Adam Smith, that seer of economic truths, was right after all when he wrote, "Nobody ever saw a dog make a fair and deliberate exchange of one bone for another with another dog. Nobody ever saw one animal by its gestures and natural cries signify to another, this is mine, that yours; I am willing to give this for that."