

LIFESTYLE
STUDYING WHY WE PLAY FAIR

FAYE FLAM, Special from The Philadelphia Inquirer

835 words

1 October 2000

The Record

All Editions: Sunday

L04

English

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The apparent tendency for people to play fair and demand a fair deal from others even at a cost has long baffled economists and other social scientists. But researchers who took a different approach say they have found a way that natural selection could have bred a kind of fairness instinct into the human race.

Not that Darwin's evolution offers a straightforward answer to the puzzle. "Natural selection generally prefers the strategy of keeping everything to yourself," said **Martin Nowak**, a theoretical biologist at Princeton University's Institute for Advanced Study, lead author of the paper in a recent issue of the journal *Science*. "Where, in such a Darwinian world, can you have the evolution of fairness?"

To find out, they looked to something called the "Ultimatum Game." It comes out of the field of game theory, invented by mathematician John von Neumann in the 1940s, and has become popular among economists for studying the quirks of human behavior.

In the "Ultimatum Game," someone gives you a pot of money and asks you to split it any way you want with an unseen opponent. If the opponent doesn't like your offer, he or she can reject it, and both players end up with nothing.

In a purely rational world perhaps on the planet Vulcan Mr. Spock and his logical kin would offer the other player a minimal amount.

And the opponent would accept, reasoning that some money is better than none.

But on Earth, people behave quite differently. The "Ultimatum Game" has been played hundreds of times all over the world, and again and again, the person making the offer has chosen to split the money close to 50-50. And the person on the receiving end has rejected anything less than about 30 percent.

The "Ultimatum Game" became famous in economics for its odd outcome.

"In standard economic theory, people prefer more money to less, and as often as not, that's true," said Gary Bolton, an economist from Pennsylvania State University's Smeal College of Business in State College, Pa. But in this game, he said, "people seemed to take other things into account they cared about justice."

So what was it about survival of the species that would make giving away wealth a good thing to do? And does it say anything about the serious games we play today the negotiating game played by the Israelis and the Palestinians, say, or the talks between union and management?

What Nowak and colleagues found was that, under certain circumstances, playing fairly and demanding fairness could become a winning strategy. It all depended on whether a player had the opportunity to develop a reputation for demanding fairness that is, to become known as a hard bargainer.

While earlier experiments had repeatedly shown humans tendency to share, they failed to determine why. Was it because they liked fairness, or because they feared the other party would reject an offer that was too low? So economists tried a variation called the Dictator Game, in which the other party could not reject offers. They found that some people would offer nothing and others would share a token amount but a handful of people would still share the money 50-50.

Nowak, as an evolutionary biologist, wanted to figure out whether such behavior could be genetic whether it could come about by natural selection. To do that, he created a computer model in which simulated people played the game. The "players" were designed so that those who won the most money would reproduce

themselves faster than those who won less a sort of survival of the richest. That basic setup is used to predict the course of evolution in many simulations.

In the simplest version of the game, the simulated players who gave as little as possible and accepted anything that was offered made the most money and prevailed. But then Nowak and colleagues added a twist reputation.

If players could get some information about each other's past behavior, then everything changed. Throwing away small offers, while costly in the short run, could pay off in the long haul if a player could get a reputation for driving a hard bargain.

It works for the same reason that good poker players try to cultivate a reputation for bluffing: Other players will bet much more against them when they do have a good hand.

To test the "Ultimatum Game" where reputation mattered, Nowak's group created a population of three types of computer creatures that played against each other. Each group used a different strategy.

If the rules of the game were set up so that any of the players could get sufficient information about the others, then reputation as a hard bargainer started to matter. The "fair" players on both sides grew to dominate the population. That is, it paid to demand fairness, and that in turn meant it paid to play fair.

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