

# When prejudices become a disadvantage

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Putting somebody in a pigeon-hole? Researchers from ETH Zurich have been exploring the question of whether prejudices might sometimes be rational. Credit: flickr

(PhysOrg.com) -- Swiss researchers from ETH Zurich have been exploring the question of whether prejudices might be rational under certain conditions. Using game theory, they created various scenarios and played them fifteen million times. The researchers have now reached a conclusion: those who are prejudiced are soon at a disadvantage, as they learn nothing new and miss many opportunities.

Prejudices are generally regarded as irrational because they are not sufficiently based on experience, and as unethical because they lead to misjudgements and [discrimination](#). Nevertheless, this does not change the fact that we all are quick to judge others. Might [prejudices](#) be an especially effective decision-making method that has evolved in the

course of [evolution](#) to rapidly assess dangers? Dirk Helbing, a professor of sociology, and Thomas Chadeaux investigated the conditions under which intuitive [judgements](#) might be rational, and when on the contrary they are misleading. Their results have been published in [PLoS One](#).

## Rapid success with black-and-white thinking

For the study, the researchers used the scientific method of [game theory](#). The [players](#) simulated on the computer behave in a friendly or unfriendly manner depending on their traits (e.g. gender, age, [assets](#), [religion](#) or cultural background). If the player is friendly and encounters an unfriendly one, he or she gets taken for a ride. Anyone who makes wrong decisions is outsmarted. In order to avoid this, one has to get to know the other players and adopt a suitable decision-making strategy.

The researchers tested five different strategies. In the scenario “ALLD”, the players play it safe and are always UNfriendly. However, they do not profit from a friendly counterpart either, and hence miss many opportunities to be successful. The “tit-for-tat” (“TFT”) strategy is based upon the principle of “what goes around comes around”. It begins by being friendly and then imitates the behaviour of the opposite player. In game theory, the TFT strategy is regarded as one of the most successful, a yardstick for all other strategies, so to speak. The other three strategies P1, P3 and P5 are governed by the number of the opposite player’s traits they consider. They therefore stand for different degrees of prejudice. In P1, only one of the opposite player’s traits determines whether one is friendly or not. It is thus a matter of extreme black-and-white thinking. In P5, five characteristics are taken into consideration, which makes the decision considerably more differentiated. In all five scenarios, the researchers varied the number of participants and the duration of the game, and played the simulation a total of fifteen million times.

How long the game lasts and how many participants are involved is

important. If the game only lasts for a short time and many take part, the probability that any two players will meet several times is low. In other words, there is less time to get to know the others. In this case, the unfriendly ALLD strategy is the most successful. The black-and-white strategy P1 is similarly effective. The “tit-for-tat” strategy, on the other hand, has the disadvantage that it has to learn the opposite player’s behaviour first. Overall, the ALLD and black-and-white strategy P1 are initially triumphant. However, their success declines rapidly if the game lasts longer. The exact opposite happens for the differentiated P5 and the “tit-for-tat” strategies: their success only becomes apparent after a while, but then remains at a constantly high level. Prejudiced strategies are therefore successful and rational for a short time. However, as they do not learn from mistakes and cannot adjust their behaviour, in the long run they yield to strategies that respond to their partners in a more differentiated way. “Figuratively speaking, if there are only five people on an island or the people on an island have known each other for a long time, prejudices are just plain useless,” explains Thomas Chadeaux.

## **Realistic conditions**

But how close are these simulations to reality? What do they say about our everyday life? “Prejudices are – especially because they are formed quickly and easily – often convenient in the everyday world but fail when the situation becomes more complicated,” Dirk Helbing concludes. In order to illustrate this, the researchers took interferences into consideration as they exist in the real world. What happens, for instance, if participants are wrongly assessed and certain traits do not necessarily have anything to do with the behaviour? Then prejudiced players are unable to adjust their strategy. The longer they play, the more they come up short in comparison. Differentiated strategies fare better. And what happens if the participants simply behave randomly? In this instance, the result deteriorates for all strategies. However, the more players act randomly, the more dismally players with prejudices perform.

## Recognizing and using otherness

“While it is efficient to react to a single trait in the beginning, you must not stop learning new things in a complex world; otherwise, you miss many good opportunities,” explains Helbing. However, developing a differentiated – and in the long run successful – judgement takes time. “The most successful strategy is to begin with simple rules of thumb and then keep refining them,” says Helbing. People who gain a wide range of experiences and are willing to adapt their behavior accordingly perform the best. For the two ETH-Zurich researchers, the question of how you can learn new things in a targeted fashion is therefore central. If one applies the research results to society, this means that one should seek and encourage the exchange of different people. “Minorities especially have the problem that they are often wrongly treated because they are not known well enough. It is therefore a question of multiplying contacts with different people to avoid blowing your chances of successful interactions with them. Social networks play a key role here,” says Helbing.

## Game theory

Using game theory, different decision-making situations can be modelled mathematically and simulated on the computer. A payout function, for instance, determines how successful one is if the decision made meets that of the opposite player. Who wins thus depends on the kind of game, the decisions of the players and consequently the underlying decision-making strategies.

**More information:** Chadeaux T, Helbing D (2012) The Rationality of Prejudices. *PLoS ONE* 7(2): e30902.

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