



THE CONUNDRUMS OF COOPERATION

One of the fundamental issues raised by scientists in fields as varied as biology, behavioral economics, psychology, and sociology concerns the causes of pro-social behavior, and cooperation in situations in which individuals could benefit by acting selfishly. Why do we honor others' trust if we would be better off exploiting them? In other words, what is the basis of social order?

However, if they decline this offer and deny any involvement, the district attorney claims she will be able to dig up enough evidence to sentence them for a less serious offence. The choice that the suspects face is not simple, because a decision made by one of them affects the punishment of the other. If both of them keep quiet, the district attorney charges them with a misdemeanor that she can prove they committed, and that will result in six months in prison. If one of them confesses to the crime, but the other does not, the former will get probation, while the latter will be sentenced to five years in prison. Finally, if both of them confess, they both will serve three years.

It is in the suspects' best interest as a group that they both keep quiet, but individually each of them is better off confessing. In other words, if I expect you to keep quiet, and I also keep quiet, I will end up doing six months. If, on the other hand, I confess, I'll be free immediately. Similarly, if I have reasons to believe that you are going to confess, I'll be sentenced to five years if I won't confess, and to three years if I do the same. In both scenarios, my punishment is lighter when I confess. Your preferences mirror mine. That is, we are both better off making a deal with the DA regardless of what either of us does.

As a consequence, we both confess and end up in prison for three years. The paradox lies in the fact that even though we are both acting rationally from the individual point of view, as a team we end up worse off than we would if we both kept quiet.

What is the big deal about cooperation?

The prisoner's dilemma is not another abstract thought experiment. Rather, as mentioned earlier, it is a model representing many different social, economic, and political situations that people face in their lives. And, although the game in the original story involves only two players, it can also be played by multiple partners. The crux of the game is the tension between the group interest ("cooperation") and individual interest ("defection"). This tension is present in many everyday interactions. If all group members choose to cooperate, the group as a whole, as well as each individual member, wins. From each individual member's perspective, however, it makes the most sense if everybody else bears the cost of cooperating, while that individual reaps the benefits of that cooperation without actually cooperating.

Group-interest oriented/cooperative behavior allows for the production of public good or for maintaining common good. Despite the similarity of these terms, the two types of goods differ significantly. Producing a public good requires cooperation during the production process, but no group member can be excluded from enjoying it once it is produced, regardless



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To answer these questions, researchers often make use of two-person games, which are convenient tools for modeling strategic interactions between rational individuals. Among these games, the best known is the 'prisoner's dilemma,' named after a fictitious story about two suspects placed in separate cells so they cannot communicate with one another.

In this story, the district attorney is certain that the two prisoners are guilty of the crime of which they are suspected, but she doesn't have sufficient evidence against them. She therefore promises each of the suspects a lighter sentence if either confesses to the crime.

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of the level of his or her own contribution. Researchers call this the interdependence of production and independence of consumption. For example, imagine that the playground in front of your apartment building is in disrepair. To remedy that, your fellow building tenants agree to get together and clean the space, plant flowers, paint benches, and fix the playground equipment. If you do not partake in the endeavor, you can still enjoy the view, play there with your kid, or sit on the bench. Nobody can limit your view or restrict your kid's access to it. In that sense, the repaired playground is a public good.

Common goods, on the other hand, are usually natural resources that are finite in their amount. In this case, we do not address the issue of interdependence of production, as these resources exist independent of a given group or community. We instead address the issue of interdependence of consumption. The more of the good I will use, the less of it is left for others. It is, therefore, in the group's interest that each member uses it in a limited way, so it can serve the group as long as possible. But each individual group member is tempted to use it more liberally, expecting others to constrain their usage. If all group members think that way, common goods will soon expire.

Notice, however, that defection is not necessarily a product of egoism or disregard for others. It is more likely a product of fear of being exploited. That is, individuals are not as much selfish as they are concerned that not enough persons will contribute to the production of public goods, or to the preservation of common goods. They fear the efforts of the few cooperating group members will be lost, and no public or common good will be available for anyone in the end. Of course, this fear is not the only source of defection in social dilemmas. Selfishness, greed, and eagerness to exploit others also matter.

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If defection is rooted in the greed of some and the fear of others, might punishment for defection increase cooperation? Persons motivated by greed might choose to cooperate in order to avoid punishment, whereas those who are fearful may cooperate due to expectations that sanctions will deter others from exploiting them. The problem, however, is that sanctioning for defection is costly for those who sanc-

tion. Shouldering the cost of punishing defectors is indeed in the interest of the group as a whole, but each individual member is tempted not to bear that cost while waiting for others to do so. Alas, if each group member thinks that way, defectors will not be punished and therefore will not be compelled to cooperate in the future. As a consequence, again, the group will not be able to produce public goods or preserve common goods. Put differently, the question of whether to sanction entails for group members the so-called second order dilemma.

Nevertheless, as Swiss economist Ernst Fehr demonstrated in his experiments, individuals are willing to shoulder the cost of sanctioning dissenters if doing so increases cooperation. Participants in Fehr's experiments played 20 public goods games in two rounds of 10 games each. In one round they could not use punishments. In this round, the level of cooperation was initially high but decreased with each game, as has been the case in most experiments on public goods dilemmas. In the "punishment available" round, on the other hand, the cooperation level was stable and high across games.

Between reputation and status

Are punishments the only way to maintain cooperation and social order? A growing body of research in sociology suggests that equally important are reputation and status. Reputation and status, despite seeming similar, are very different. Reputation refers to evaluations by a given community of a member's personal characteristics, such as her willingness to cooperate, honesty, and generosity. Status refers to a person's standing in a group's prestige and deference hierarchy. Status is relational and reputation is not. That is, the reputation of one's colleagues does not affect how they perceive her reputation in a social interaction, whereas her status relative to her colleagues in the group does. Whether she has higher or lower status than do her colleagues will significantly affect her decisions. Whether I have a higher or lower reputation than yours will not, what matters is the focal person's reputation alone.

Voluminous research shows that persons enjoying good/pro-social reputations are perceived as more trustworthy, that they are preferred as interaction partners, and that they achieve better outcomes in economic transactions (e.g., Internet auctions). Note, however, that a reputation system – e.g., online transaction reviews – is a public good in itself and, as such, requires at least a minimum threshold of cooperation in order to be produced. This may be the reason why willingness to cooperate increases in situations in which individuals' own reputation may be established. Moreover, studies indicate that building a system of reputation is strongly affected by the rule

of strong reciprocity and altruism. Partners in online transactions exchange reciprocal reviews even when they have no personal interest in doing so, and they are more likely to write a review when it has high utility for the recipient (e.g., when he or she has few positive reviews or many negative reviews).

Status operates in a different manner. First of all, status matters only if it differentiates actors or is directly relevant to the situation (status is, as stated above, relative). Status is similar to reputation insofar as higher cooperation by a person leads to higher status – e.g., status can be “bought” with philanthropy. But higher status, unlike reputation, will only lead to higher cooperation under specific conditions.

On the one hand, higher status partners are perceived as more competent, group-oriented, and cooperative than are lower status partners. Their actions, in turn, are perceived as normative and anticipated, which is why higher status actors can influence lower status actors. Results of experimental studies demonstrate that, in status-differentiated groups facing a public dilemma situation, higher status actors, when given the opportunity, indeed initiate cooperative behaviors aimed at producing public good significantly more often than do lower status actors. Higher status actors also contributed more and influenced low status actors to follow their suit.

On the other hand, consider a situation in which two players in a prisoner’s dilemma game (described at the beginning of this article) do not have information about their partner’s past behaviors nor any knowledge about the possibility of future interaction with their partner. In this situation, players still face a decision about whether to cooperate, and **status may provide the only guidance about how to act in order to avoid loss** (or maybe even gain), regardless of what the other person does. Here, the lower status partner will be less fearful than the higher status partner with whom she is interacting, as she can expect higher cooperation. This is because actors, when making decisions about whether to trust their partners, risk the following: finding themselves in a situation worse than they would face had they not trusted their partners; finding themselves with a payoff worse than their partner’s; or being exploited or cheated by their partner.

The risk is therefore higher for the high status actor than it is for a low status actor. In other words, regardless of whether the “prisoners” make decisions consecutively (sequentially) or at the same time (simultaneously), the lower status actor risks less in trusting her partner than does the higher status actor. It follows, then, that in sequential games, the level of cooperation will be lower when an actor of higher status initiates the game than it will be when the lower-status actor initiates the game. When actors make decisions simultaneously, the level of cooperation will be higher when actors are of similar status than when



Chicken games and stag hunts

To model mixed-motive situations, researchers also use popular two-person games, such as chicken games and assurance games (a variant of coordination games that is also known as a stag hunt). What differentiates these games from prisoner’s dilemmas is the pay-off matrix and, consequently, the type of equilibrium (or lack thereof) that applies to a given game.

actors have different levels of status. In both types of games, however, two partners with high status will be more likely to cooperate than two partners of low status. Results of recently conducted experiments by the authors of this article seem to be consistent with this reasoning. In sequential games, in which lower status partners initiated the game, the level of cooperation was lower than was the case when the game was initiated by higher status partners. Observations regarding simultaneous games, or games in which partners were of equal status, conformed to these predictions.

The body of research on status indicates that status affects cooperation differently than does reputation, and that status may have a different effect on cooperation depending on the number of people interacting. In two-person situations, high status will have a negative effect on cooperation when a high-status person interacts with a low status person. In multiple-person situations, however, such interaction will tend to have a positive effect.

This conclusion may seem surprising, as one might anticipate that a higher status actor will be more fearful when facing multiple actors of unequal status than when facing just one. One might predict, therefore, that her willingness to cooperate will be lower in multiple- compared with two-person games.

Despite this seeming inconsistency in the experimental results, what they demonstrate is that status is a significant factor in solving the cooperation conundrum even when individuals do not know or expect to interact with each other in the future. The full understanding of the effects of status differences on cooperation and trust, however, requires further research.

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This article was possible thanks to generous funding by the Polish National Center for Science (Project title: “Dilemmas of cooperation under unequal status”; No 2012/05/D/HS6/03118)

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