**Cooperative or Competitive: A Negotiator’s Dilemma**

First, I will share with you a famous story in Game Theory ---- “The prisoner’s dilemma（困境，进退两难的境地）”. We can also treat it as an example for negotiation. Let’s see an extract video from Khan Academy, explicating the prisoner’s dilemma. If you want to explore it further, please find the original on Khan Academy Website. Before we see the video, we need to know some background information in order to understand this lecture easier. Eric and Isabella are two members of a criminal gang（犯罪团伙）. They are arrested（被逮捕）and imprisoned（被投入监狱）. The prosecutors（检察官）lack sufficient evidence to convict（定罪）the two on the principal charge（主要罪名）. They offer each prisoner a bargain（条件）. Each prisoner is given the opportunity either to: betray（背叛）the other by testifying（作证）that the other committed the crime, or to cooperate with the other by remaining silent. Here is the detailed story:

（Video from Khan Academy）Hello! I’m Geoff Sayre-McCord. I teach philosophy at the University of North Carolina at Chapel Hill. I’m gonna speak to you today about the Prisoner’s Dilemma.

Consider the following situation. You and Isabella commit a diamond heist. Days later, you’re both arrested, and the police have enough to charge and convict you of parole violation, for which you will each get three years in prison. Though they have their suspicions. And the police recovered the diamonds, they have no hard evidence that you two are the ones who robbed the jewelry store. Yet the detective is no slouch. She decides to make each of you an offer. If one of you, and not the other, confesses and rats on the other, agreeing to turn state’s evidence, then that person will go free, while the other will serve 15 years for robbery. It both you confess and rat on each other, then while neither will serve 15 years, you will both serve ten years in prison. Assuming, for a minute, that you each only care about minimizing your time in prison, you would prefer that Isabella remain silent while you rat her out, and thus go free. You were just about to tell the detective you will testify against Isabella when you realize that she’s in the very same situation. If she reasons as you have, so turn state’s evidence against you, you and she will end up serving ten years each, not getting off scot-free. So, you realize, you’re better off and she’s better off if you both just remain silent, working together to foil the detective’s efforts to get a confession. Since Isabella is in the same situation, you figure she must realize this too, and so you plan to remain silent is set, until, that is, it occurs to you that if Isabella is going to remain silent, then you can get off with no jail time simply by ratting her out. Moreover, if this last though occurs to Isabella and she decides to rat you out, you will still do better ratting her out, since instead of doing 15 years in prison, you’d have to be only 10. So no matter what Isabella does, you do better turning state’s evidence against her. And the same is true of her. As a result, you both conclude you need to confess and rat on the other, with the predictable and sad result of you both serving 10 years, instead of the 3 years you would have had, if only you had together remained silent. But then some good luck strikes, and you and Isabella find ourselves alone in a room together. Taking the opportunity, you talk and agree to stay silent, so as to serve only three years, rather than 10. When you are then separated, you rest easy, thinking you have together been able to at least minimize your jail time. Until, that is, you realize that if you turn Isabella in, you won’t have to serve any time, unless of course she turns you in too. But if she’s going to break your agreement and turn you in, you’d better turn her in to avoid 15 years in prison. You are stuck again, predictably, doing worse than you might have done. You both are. If only. If only what? Well, if you could count on her to keep her word, you could then keep yours and end up with a sentence of only 3 years. Or you could turn her in and go scot-free. But you can’t count on her to keep her agreement, at least if she realizes that you might well not keep yours. So she needs to be confident that you won’t break yours. But then she will have a strong incentive to break hers. And if you know that of her, you too will have a strong incentive to break yours. That is the prisoner’s dilemma.

Now, let’s analyze the prisoner’s dilemma.

The prisoners are given the following offer or choices:

* If A and B each betray the other, each of them serves 10 years in prison
* If A betrays B but B remains silent, A will be set free and B will serve 15 years in prison (and vice versa)
* If A and B both remain silent, both of them will serve 3 years.

We assume that both understand the nature of the game, and they have no loyalty to each other and will have no opportunity for retribution（报应，惩罚，报答）or reward（报酬）outside the game.

*Please try to think over the solution for a while and analyze each case yourself.*

By analyzing the table we can see that: You are always punished less for choosing to betray the other person. However, as a group, both of you fare（v.结局，结果）better by cooperating (remaining silent). Think over the above statement for a while.

This is the dilemma both the prisoners face. Should one cooperate or betray? Even if the best solution would be both the prisoners cooperating with each other but due to uncertainty（不确定性）on each other, if they betray each other, they will get a lesser optimum（最佳的，最有利的）solution.

This can be observed in real-life cases:

Jenny and Jane are university students. They are working together on a project. They need to finish the report by the weekend. While Jenny is invited to a fantastic party that she really wants to go. Now she is facing the dilemma. If Jane does all the work, Jenny can go to the party and get the same grade. But if Jane chooses to have a vacation with her family at the same weekend, neither of them do the work, then they will both fail.

Both M company and K company do not spend money on advertising, their market share won’t change. But if M company changed their strategy and put a lot of money on advertising, it outspends (spend more money) the other, however it will receive a benefit by taking more market share than the other.

The [prisoner’s dilemma](https://en.wikipedia.org/wiki/Prisoner%27s_dilemma) demonstrates that two rational people might not cooperate even if it is in their best interest to do so. Just keep looking around in this beautiful world. Who knows you can find yourself in a prisoner’s dilemma one day!

Negotiators face a similar challenge in their decision-making as they also have incomplete （不完整的）information about the other negotiator’s intentions（意图）. In bargaining scenarios, this formulation（公式，这种类似情况） suggests that agreements are unlikely （不可能）because each party has an incentive（动机） to defect （变节，背叛）in order to maximize his own gains. However, such an outcome is sub-optimal（次优的选择） because players would be better-off if they both cooperated.

In real life, cooperation does occur. To account for（解释）this, Robert Axelrod used a repeated version of the PD game to demonstrate that individuals who pursue their own self-interest may cooperate with each other when they realize that they may meet again.

Moreover, Axelrod used computer simulations（模拟）of a repeated PD game to show that, even when met with an uncooperative opponent, a player can maximize his gains by using a tit-for-tat（针锋相对，一报还一报） strategy, a strategy that involves starting out the game as cooperative and then punishing one’s opponent (defecting) whenever he/she fails to cooperate. Alternatively, when the second party responds positively to a cooperative opening by the first party employing the tit-for tat strategy in a repeated game, cooperation may then arise as an equilibrium（ /ˌiːkwɪˈlɪbriəm; ˌekwɪˈlɪbriəm/ 均衡，平衡）outcome. This case is illustrated in the example provided below.

Tit-for-Tat:

One of the best-known examples of an iterated（adj. 重复的）Prisoner’s Dilemma where players use a “tit-for-tat” strategy to produce lasting（adj. 持续的，永恒的）cooperation comes from trench warfare（战壕战） between British and German troops along the Western Front, during World WarＩ. Over the course of the war, troops dug into positions along the 500-mile of earth between France and Belgium. Once positions became entrenched（v. 挖好了壕沟）, meaning neither side could win but could merely hold their positions, small bands of troops （小股部队）frequently realized that inflicting damage（造成伤害）on the other side merely provoked reprisals（激起报复行为）without bringing additional gains（附加利益）. As isolated（adj. 被孤立的）bands of troops sat facing one another across small tracts of land （小片土地）for extended （adj. 长期的）periods of time the game changed from a one-move Prisoner’s Dilemma game – where defection is the dominant（adj. 占优势的）choice of action – to an iterated version of the game favoring cooperation.

The change occurred in this way. As bands of soldiers isolated from their central army came to realize that victory was not an option along the trench where both camps had dug in, many concluded that cooperation might be the next best solution. The pattern of behavior that emerged reflected a very different kind of tit-for-tat than the fire（开火）and return fire（反击）version. It began when one side signaled its intention（向对方示意己方意图）to “live and let live”, to agree not to shoot at one another. The other side would then reciprocated（ /rɪˈsɪprəkeɪt/ v. 回报） in kind（以同样的方式）, having also recognized that there was an opportunity to reach a point of equilibrium around a mutual willingness not to fight.

Note that in long-term interactions, the outcome of negotiations – the choice of parties to either cooperate or defect - can depend heavily on the amount of trust that is established between the two sides.

Review

At last, please translate these sentences into Chinese as a review of today’s lesson.

1. The prisoner’s dilemma demonstrates that two rational people might not cooperate even if it is in their best interest to do so. 囚徒困境的假设表明，即便两个人合作的结果最符合双方的利益，但是理性的人也可能会选择不合作。
2. In bargaining scenarios, agreements are unlikely because each party has an incentive to defect in order to maximize his own gains. However, such an outcome is sub-optimal because players would be better-off if they both cooperated. 在涉及竞争利益的情况下，双方之间不太可能达成协议，因为每一方都有强烈的动机——为了己方利益的最大化而背叛对方。然而，这样的结果只是次优选择，因为如果双方都愿意合作，对双方来说结果都会更好。
3. When met with an uncooperative opponent, a player can maximize his gains by using a tit-for-tat strategy, a strategy that involves starting out the game as cooperative and then punishing one’s defecting opponent whenever he/she fails to cooperate. 当遇到一个不合作的对手时，一方可以使用以牙还牙的策略来使自己利益最大化，这种策略包括以合作的方式开始游戏，然后在对方不合作时采取措施惩罚他们的背叛。
4. In long-term interactions, the outcome of negotiations – the choice of parties to either cooperate or defect - can depend heavily on the amount of trust that is established between the two sides. 在长期的交往中，谈判的结果——选择合作还是背叛——很大程度上取决于双方之间建立的信任程度。

Today we talked about two famous strategies in negotiation. Can you understand them? Maybe you need to take some more time to think them over and over in order to catch the essence of them. Try to read some books about negotiation theories to get further and deeper understanding if you are interested in this area. Thank you for your patience and see you next time!