

What Do You Care About?

Games of Strategy
Final Group Project
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Introduction

Game theoretic analysis can help us understand a player's best course of action and how a player can increase their payoffs. Key game theory concepts are seen in a scene from the 2020 Netflix movie *I Care a Lot*. To provide background on these concepts, we need to recall that in sequential games, we can use rollback logic to find what choices we would expect rational players to make. In order to try to achieve a better outcome, players can use strategic moves to make the other player move from default action to favored action. This can be an unconditional move, where the player commits to an action no matter what the other person does, or a conditional move, where the player follows a response rule to respond to what the other player does. A threat, consisting of a threat and an affirmation, is a type of conditional strategic move. Threats require both observability and credibility, and, more specifically, compelling threats also require a timeline for the action.

To provide a brief summary of the movie, the main character, Marla, makes a living by using the legal system to grant her conservatorship, which is when an individual takes over someone's financial or daily affairs. She becomes a conservator over wealthy elderly people who she argues cannot take care of themselves, even if they can, to seize a lot of their assets and money. Dr. Amos, her accomplice, provides her with these elderly individuals who are potential victims and testifies in support of Marla.

The movie focuses on a recent victim of Marla's, a seemingly normal rich elderly woman named Jennifer. However, we learn that Jennifer has a hidden, dark past; her son, Roman, is a crime lord, connected to the Russia mafia, and has faked his own death. Throughout the movie, Roman tries to get his mother back from Marla with the help of his numerous hitmen, like Alexi.

To try to get Jennifer back, Roman's hitman kills Dr. Amos, and the scene begins with Marla confronting Jennifer about Dr. Amos's death. During the movie clip, Jennifer threatens Marla, by asserting that if Marla doesn't relinquish conservatorship, Jennifer and Roman will kill her. Marla responds to the threat by declaring that she will never release Jennifer, resulting in Jennifer strangling Marla.

Analysis

As laid out by the scene, we have two players in our game: Marla and Jennifer/Roman. We consider Jennifer/Roman to be a singular player in our game since Roman acts on Jennifer's behalf. The game between our two players is a sequential game because players move in order having seen the previous player's choices. Our first player, Marla, chooses between either releasing Jennifer or not releasing Jennifer. After this, Jennifer/Roman can either kill Marla or not kill Marla.

In order to form each player's payoff structure, we must evaluate their priorities. We assume Marla's first priority is not to die because throughout the movie when she comes close to death, she vehemently fights for her survival. Her second priority is to not release Jennifer because keeping Jennifer as her ward is a profitable venture. Conversely, Jennifer/Roman's first priority is to end the conservatorship and get Jennifer released. This is evident from the threat they impose on Marla and since the conservatorship inhibits Jennifer's freedom. While we understand that killing is easier for Roman than other people due to his criminal background, we assume their second priority is to not kill Marla. This is because it could expose that Roman is alive and it would not automatically release Jennifer. Instead, if they killed Marla, the conservatorship would be passed on to a new guardian.

Given each player's actions and priorities, we can consider how the players would rank

each possible outcome. Since players do not receive a numerical payoff, we structure the payoffs ordinally to indicate how players would rank each outcome. For both players, their preferred outcome is one that achieves their two respective priorities, which we indicate by a ranking of 4. For example, Marla's best outcome occurs when she does not release Jennifer and she is not killed. On the other hand, the players rank the outcome that achieves neither of the respective priorities as the worst which we denote by a ranking of 1.

With a game tree (**Figure 1**), we can utilize rollback to determine the subgame perfect equilibrium (SPE). Regardless of Marla's decision, Jennifer/Roman would be better off choosing to not kill Marla as it provides them with a higher payoff than if they choose to kill Marla. Thus, Jennifer/Roman's best strategy is to always "Not Kill Marla". Knowing that, Marla is better off not releasing Jennifer so she can achieve her highest payoff. Thus, the game's SPE is {Not Release Jennifer, Not Kill Marla/Not Kill Marla} for (4,2).

In order to change Marla's mind from the default action of not releasing Jennifer to the favored action releasing Jennifer, Jennifer/Roman make a threat. The threat consists of an affirmation (a response Marla prefers and Jennifer/Roman will do it in equilibrium) and a threat (a response Marla doesn't prefer and Jennifer/Roman will not do in equilibrium) (**Figure 2**). We can recognize the aforementioned move is compellent, as Jennifer/Roman tried to change the status quo to Marla releasing Jennifer with this strategic move.

To successfully change Marla's mind, the threat that Jennifer/Roman will kill Marla if she does not release Jennifer needs to be both observable and credible. Jennifer/Roman made the threat observable through clearly stating the threat and affirmation in the scene. Further, Roman using his hitmen to kill Dr. Amos adds to the credibility of the threat. Through this, Jennifer/Roman tried to increase Marla's confidence that he would follow through the threat he

made to kill Marla. Another credibility device is the fact that Roman has numerous hitmen, like Alexi, who can kill Marla anytime. If credibility is successfully established, Marla should switch to the favored action of releasing Jennifer and thus, Jennifer/Roman will not have to follow through on their threat.

While we know after the threat Marla would be better off releasing Jennifer, Marla decides to make a commitment to not release Jennifer (**Figure 2**). Marla does this to undermine the threat. If Jennifer/Roman believe that she will not release Jennifer unconditionally, they'll be constrained to the choices conditioned on Marla not releasing her, boxed in green (**Figure 3**). If Marla succeeds, Jennifer/Roman would be better off not killing Marla, and not following through on the threat, giving Marla her highest payoff. So, Marla's toughness, determination and the little bit of craziness all add credibility to the unconditional statement she made, which served to undermine the threat.

However, we know Marla ultimately fails to undermine the threat because later on in the movie Jennifer and Roman tried to kill Marla and were nearly successful. One interesting way to understand why Marla failed is to recall the Iraq and US/Britain game from the problem set in which the US/Britain wanted Iraq to allow inspectors into the country. US/Britain tried to increase their payoffs by using a compelling threat, like Jennifer/Roman, to try to make Iraq play the favored action over the default action (**Figure 4**). In this game, the threat worked in making Iraq allow inspectors into the country.

Nevertheless, we can analyze what would have happened if Iraq made an unconditional statement to refuse the inspection no matter what, like Marla did (**Figure 5**). Here, US/Britain would be better off not bombing Iraq. Iraq doesn't take this action, because it knows that not only does the US/Britain have a strong reputation of following through on military threats, but

also they have an incentive to maintain this reputation for future military threats. So, Iraq decided to not make an unconditional move to not allow inspectors because there was a high likelihood the threatened action would occur.

Similarly in this game, when Marla commits to not releasing Jennifer, Jennifer/Roman would be better off not killing Marla. However, like the US/Britain, Jennifer/Roman have strong past credibility through their reputation of being able to kill others, and have an incentive to maintain this reputation. This is because if Marla decided to not release Jennifer, they will need to continue interacting with her. If they don't follow through, their credibility on all future interaction could be weakened. Thus, it might not have been wise for Marla to try to undermine the threat by choosing the unconditional commitment because Jennifer/Roman are very likely to follow through on the threat.

Summary and Key Takeaway

To summarize, in this scene, Jennifer/Roman tried to use a compelling threat to make Marla release Jennifer. To establish credibility of the threat, Roman killed Marla's accomplice and made it publicly observable. To undermine the threat, Marla then made an unconditional commitment to not release Jennifer in an effort to halt the threat Jennifer/Roman posed to her. Connecting the Iraq and US/Britain game to our analysis provides clarity on why Roman may still need to kill Marla, even after she has made her commitment clear, despite this being a worse outcome for him. Thus, a key game theoretic takeaway from our game analysis is "Know Your Rival!" This specifically relates to Marla knowing and understanding Roman's background as a crime lord who has a specific interest in maintaining his reputation and the credibility of his threats. Essentially, if you're going to undermine a severe threat, then it's crucial that you evaluate the likelihood of your rival following through on that threat.

Appendix

Figure 1: Jennifer/Roman and Marla Interaction Game Tree without Strategic Moves

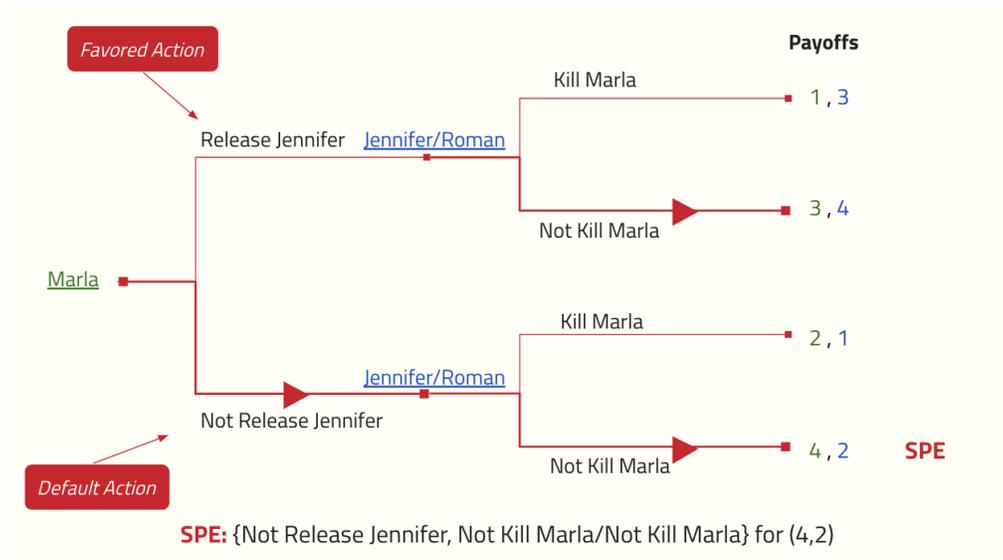


Figure 2: Jennifer/Roman and Marla Interaction Game Tree with Jennifer/Roman's Threat

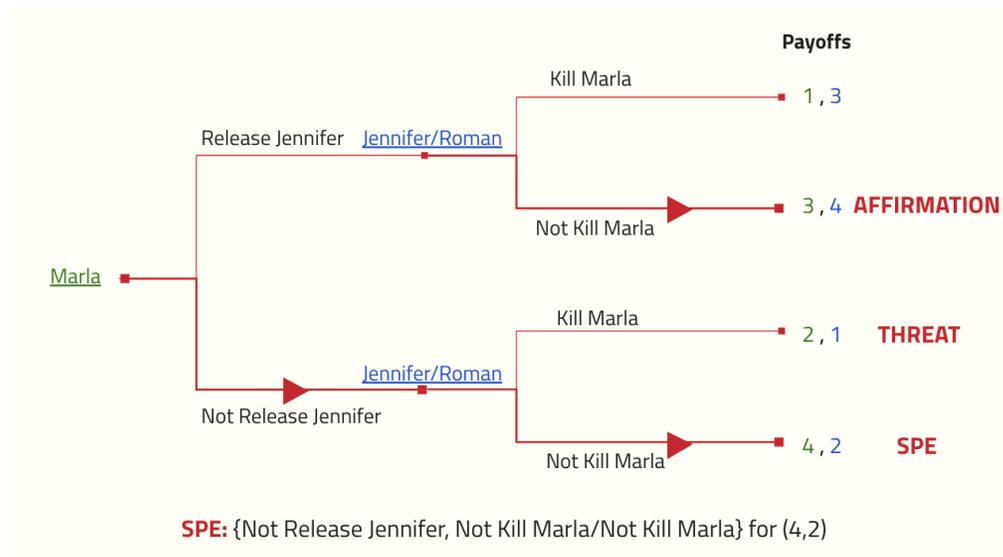


Figure 3: Jennifer/Roman and Marla Interaction Game Tree with All Strategic Moves

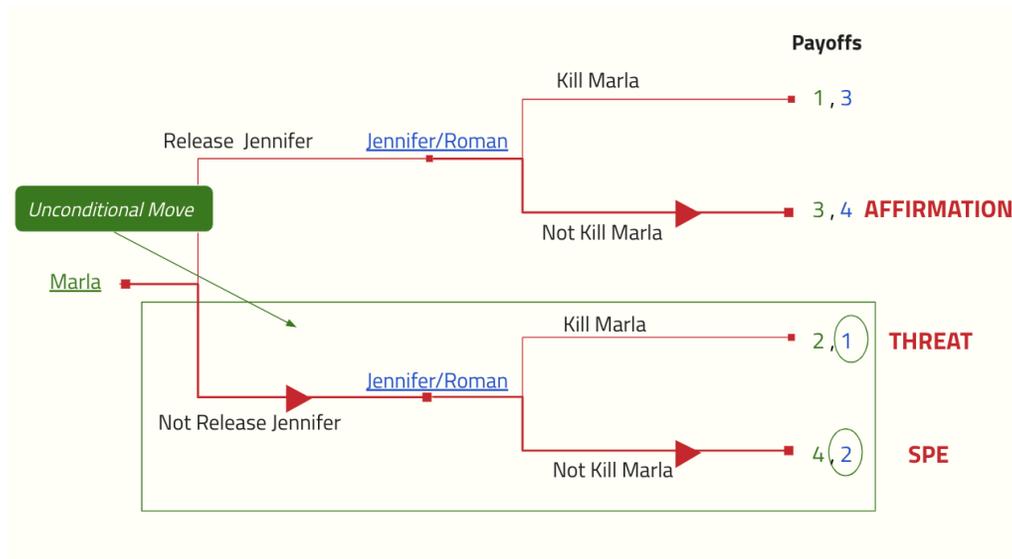


Figure 4: US/Britain and Iraq Game Tree with US/Britain's Threat

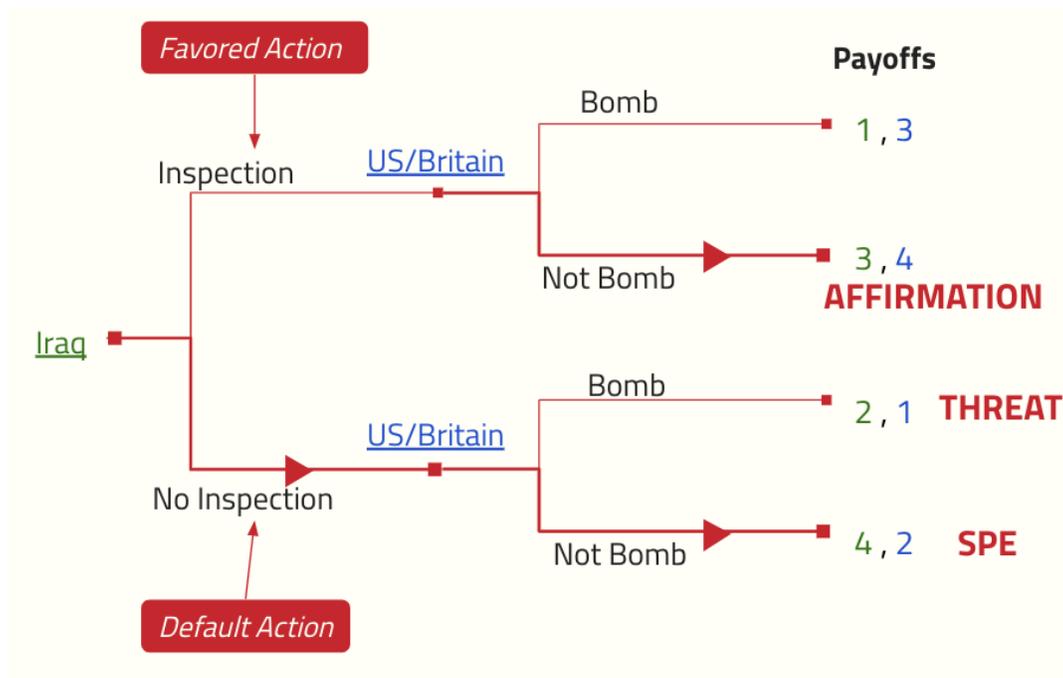


Figure 5: US/Britain and Iraq Game Tree with All Strategic Moves

