

Strategic Moves

- A game is specified by the actions available to the players, the order of gameplay, and the payoffs that result from combinations of actions
- Altering any of these ingredients can also change the outcomes
- Each player has incentive to manipulate them to yield a better outcome
- Devices to manipulate a game are called **strategic moves**
 - *Commitments*
 - *Threats*
 - *Promises*
- These 3 devices work only if your opponent believes in the *credibility* of your action
- e.g. Parents are terrible at strategic moves because they lack credibility; New Year's Resolutions

Classification Of Strategic Moves

We need to formally define what it means to "move first."

1. Your action must be observable
2. The action must be irreversible

Consider the flight check-in game we considered. A moves before B, but A's action is not observable to be; therefore, the mere chronology of events is irrelevant. The game is effectively simultaneous.

If moves are reversible then A would want to feint one move in order to get B to react to that and then A would change its action to its benefit.

Unconditional Strategic Moves

Suppose player A is making a strategic observable and irreversible move in the first stage of the game.

- Player A declares, "In the game to follow, I will make a particular move, X."
- This declaration makes player A's move unconditional, irrespective of what B does.

If the statement is credible, this is tantamount to changing the order of the game at stage 2. This strategic move is called a **commitment**

A commitment is a simple seizing of the first-mover advantage when it exists. Reconsider the sequential garden game, but Talia declares she will not contribute.

Conditional Strategic Moves

A can, alternatively declare, "In the game to follow, I will respond to your choices in the following way. If you choose Y_1 , I will do Z_1 ; if you do Y_2 , I will do Z_2 ;..." i.e. player A's move is conditional on B's behavior.

- This type of move is called a **response rule** or *reaction function*
- This means that B has the true first move in the sense just explained

Conditional moves take a few forms

- **Deterrence** - When A wants to prevent B from doing something
- **Compellence** - When A want to induce B to do something
- A **threat** is a declaration by A to *hurt* B *unless* B conforms to a certain action (or inaction if desired)
- A **promise** is a declaration by A to *reward* B for a conforming action

Credibility Of Strategic Moves

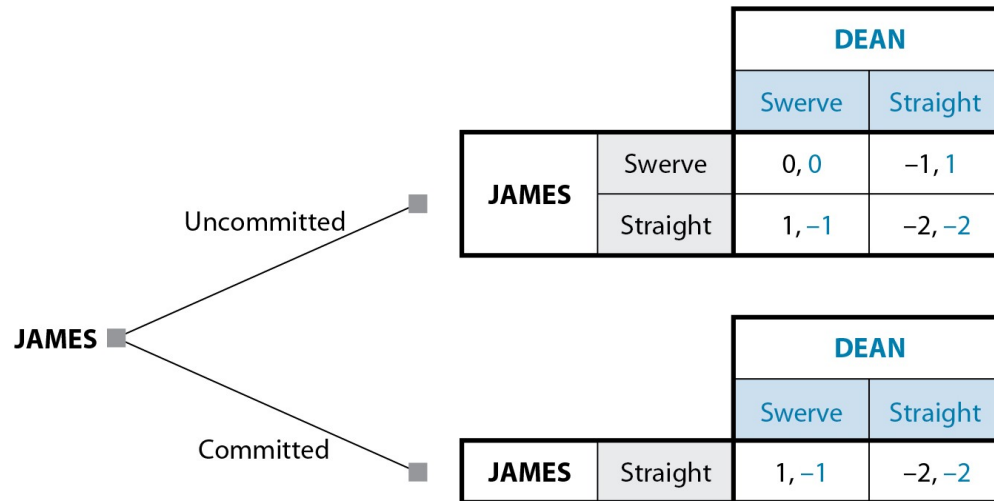
The effect on A's payoff has an important implication for the efficacy of A's strategic moves.

- An essential aspect for a threat is that it should be *costly* for the threatener to carry out the threatened action. They are threats of *mutual harm*.
- In order for a promise to be effective it must be so *costly* that the other player would not expect A to hand over the reward anyway

There are two general ways to make a strategy credible

1. Remove from your own set of future choices the other moves that may tempt you
2. Reduce your own payoffs from those temptation moves so the stipulated move becomes the actual best one

Commitment



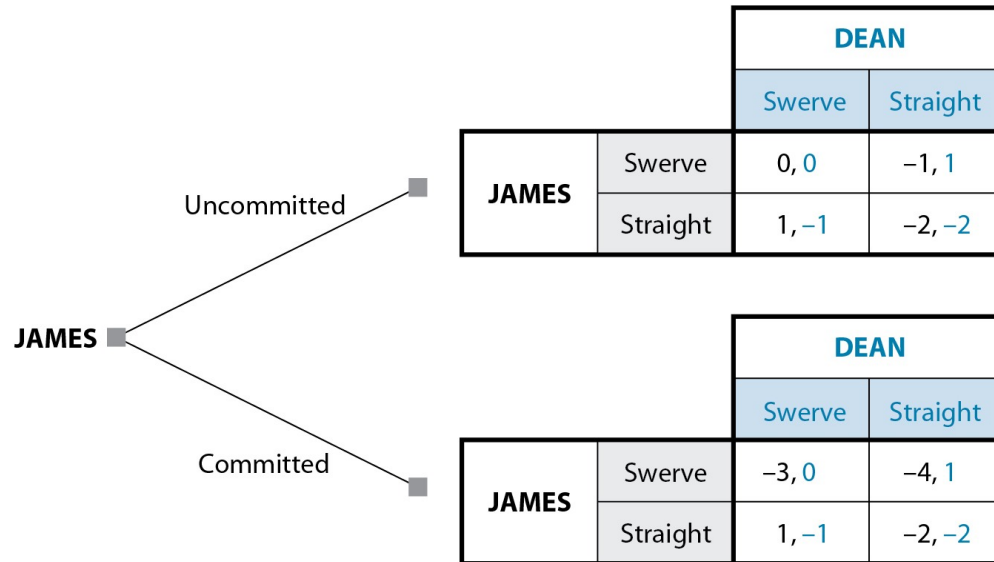
Chicken: Commitment by restricting freedom to act

The chicken game had two pure-strategy NE, but when made sequential it had one.

How can James be credible in his commitment?

Let's assume here James disconnects the steering wheel and tosses it out the window. (observable and irreversible)

Commitment



Chicken: Commitment by changing payoffs

Here we assume chicken is played with some regularity and James has acquired a reputation for toughness.

Not acting tough hurts his reputation, so playing swerve is additionally damaging (-3)

Dean (or any player B) may want to remove the ability to "see" this commitment. But how?

Commitment

A teacher's deadline enforcement policy can be *Weak* or *Tough*, and the student's work can be *Punctual* or *Late*.

- Simultaneous/Teacher moves 2nd - *Weak* is dominant for the teacher, student choose *Late*
- Teacher commits to *Tough* and it's credible because it is a gain and not already the equilibrium strategy

		STUDENT	
		Punctual	Late
TEACHER	Weak	4, 3	2, 4
	Tough	3, 2	1, 1

Payoff table for class deadline game

Threats & Promises

Example Of A Threat: U.S.–Japan Trade Relations

		JAPAN	
		Open	Closed
UNITED STATES	Open	4, 3	3, 4
	Closed	2, 1	1, 2

Payoff table for U.S.–Japan trade game

Japan and the U.S. both have the option to open their markets or keep them closed.

Both sides have dominant strategies.
(*Open*; *Closed*)

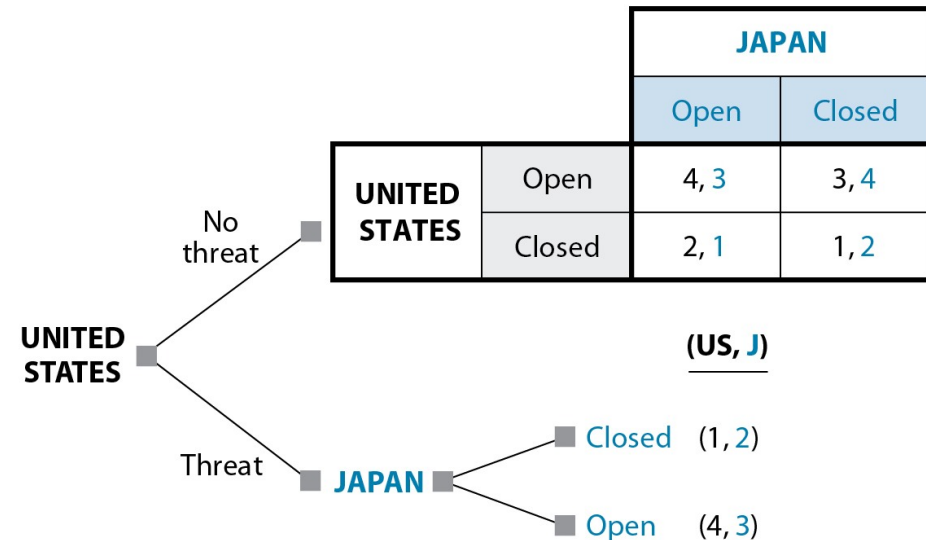
Confirm an unconditional move would not work.

Example Of A Threat: U.S.–Japan Trade Relations

Suppose the U.S. threatens (w/ implicit promise), "We will close our markets if you close yours."

Using rollback, we see the U.S.'s threat will work.

Note, dominance is only relevant when the game is simultaneous or when Japan moves second.



Tree for the U.S.–Japan trade game with threat

The device of defeating a compellent threat by small steps, or "slice by slice", is called **salami tactics**.

Example Of A Promise: The Restaraunt Pricing Game

- Each restaurant has dominant strategies.
(*low*; *low*)
- If one restaurant can credibly promise to *high*, the cooperative outcome can be achieved. Suppose Xavier does.
- Xavier promise is dubious. To respond to what Yvonne does, Xavier must move second in the second stage game, giving him incentive to cheat.

		YVONNE'S BISTRO	
		20 (low)	26 (high)
XAVIER'S TAPAS	20 (low)	288, 288	360, 216
	26 (high)	216, 360	324, 324

Payoff table for restaurant prisoners' dilemma (\$100s per month)

Example Combining Threat & Promise: Joint U.S.–China Political Action

		CHINA	
		Action	Inaction
UNITED STATES	Action	3, 3	2, 4
	Inaction	4, 1	1, 2

Payoff table for U.S.–China political action game

The U.S. and China are contemplating whether to take action to compel North Korea to give up its nuclear weapons programs.

The game is dominance solvable. (*Action*; *Inaction*)

Example Combining Threat & Promise: Joint U.S.–China Political Action

		CHINA	
		Action	Inaction
UNITED STATES	Action	3, 3	2, 4
	Inaction	4, 1	1, 2

Payoff table for U.S.–China political action game

- An unconditional move won't work - China will respond with inaction
- A threat alone won't work - the implied promise is not credible
- A promise alone won't work - China knows the U.S. will intervene if it does not
- "We will act if, and only if, you do." The U.S. needs to make the implicit explicit.

Some Additional Topics

When Do Strategic Moves Help?

An unconditional move, a commitment, need not always be advantageous to the player making it. In games where there is a second-mover advantage, it is a mistake to commit oneself to move in advance.

The availability of a threat or a promise can never be an actual disadvantage.

- Whenever threats and promises bring a positive gain, they do so precisely when their credibility is inherently questionable & must be achieved by some specific credibility device

It is never desirable to be on the receiving end of a threat, but it is often advantageous to let opponents make promises to you.

Deterrence Versus Compellence

A threat or a promise can achieve either deterrence or compellence. e.g.

- A parent *compels* a child to study hard by *promising* a reward
- A parent *compels* a child to study hard by *threatening* a punishment
- A parent *deters* a child from making bad friends by *threatening* punishment
- A parent *deters* a child from making bad friends by *promising* a reward

In general, deterrence is better achieved through a threat and compellence by promise.

- A deterrent threat requires no timeline
- A compellent threat requires an expiration date

Acquiring Credibility

Reducing Your Freedom Of Action

Automatic Fulfillment - Suppose at Stage 1 you relinquish your choice at Stage 2 and hand it over to a mechanical device or similar procedure or mechanism that is programmed to carry out your committed, threatened, or promised action. It is observed by your opponent.

Delegation - Instead of a mechanical device you can delegate the power to act to another person or organization. Trade often works like this where countervailing duties between agencies are laid out by law. Delegation devices are not complete guarantees of credibility.

Reducing Your Freedom Of Action

Burning Bridges - Cortes upon arriving in Mexico is said to have burned all of his ships leaving return to Spain not as an option. Similarly, a player can handicap himself by eliminating one of his strategies through *bridge burning*. The EU's approach to Brexit is similar.

Cutting Off Communication - If you send the other player a message demonstrating your commitment and at the same time cut off any means for him to communicate with you, then he cannot argue or bargain with you to reverse your action. You can't really do this for a threat.

Changing Your Payoffs

Reputation - You can acquire a **reputation** for carrying out threats or delivering on promises. This is useful for repeated games against the same player. If you fail to carry out your threat or promise in one game, your reputation suffers, and you get a lower payoff in other games.

Dividing The Game Into Small Steps - If a game can be split into smaller games (subgames), then the reputation mechanism can kick in.

Teamwork - Groups of players monitor each other and, if necessary, punish deviating members. Banks used to work like this.

Changing Your Payoffs

Irrationality - Your threat may lack credibility because the other players know you to be rational & that it's too costly for you to follow through. You can claim to be rational; thus, your payoffs are different than what your opponents perceive.

Contracts - You can make it costly to yourself to fail to carry out a threat or to deliver on a promise by signing a **contract** under which you have to pay a sufficiently large sum in that eventuality. Contracts to enforce threats are problematic.

Brinksmanship - Perhaps a threat might be too "large" to be credible. You can reduce the threat by making it a matter of chance.

Countering Your Opponent's Strategic Moves

Irrationality - If you are known to be so irrational that you will not give in to any threat and will suffer the damage that befalls you, then making threats will be pointless.

Cutting off communication - If you make it impossible for the other side to convey to you the message that it has made a certain commitment or a threat, then your opponent will see no point in doing so.

Leaving Escape Routes Open - If the other side can benefit by burning bridges to prevent its retreat, you can benefit by dousing those fires or perhaps even by constructing new bridges.

Undermining Your Opponent's Motive To Uphold His Reputation - says it all

Salami Tactics - You fail to comply with the other's wishes to a very small degree so that it is not worth the other's while to carry out the comparatively more drastic threatened action

Summary

- Actions taken by players to fix the rules of later play are called strategic moves
- Strategic moves must be observable and irreversible as well as credible
- A commitment is an unconditional first move
- Conditional moves such as threats and promises are response rules designed either to deter rivals' actions to preserve the status quo or compel rivals' actions to alter the status quo
- Threats cost nothing if they work. Promises are costly if they are successful

An Example Of Delegation From Curb Your Enthusiasm



Larry is tasked with keeping the host from eating any dessert "NO MATTER WHAT". As usual, Larry follows through to complete his job to the letter of the law.