# PS 0500: Institutions

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https://williamspaniel.com/classes/ir2021

#### Outline

- Goods
- Monitoring
- Collective Action Problems
- Hegemonic Provision of Public Goods
- Issue Linkage
- Unintended Consequences
- Justice Dilemma

# NON-RIVAL RIVAL EXCLUDABLE NON-EXCLUDABLE

# Excludability

- A good is excludable if its provider can effectively deny you access to it
  - Example: Your math textbook versus national defense

#### Rivalrous

- A good is *rival* if consumption by one individual interferes with another individual's consumption
  - Example: The pen you are using versus the lecture you are currently attending

NON-RIVAL

EXCLUDABLE

PRIVATE

CLUB GOOD

NON-EXCLUDABLE

COMMON POOL GOOD

PUBLIC GOOD

NON-RIVAL

EXCLUDABLE

MY BREAKFAST FROM PAMELA'S

CLUB GOOD

NON-EXCLUDABLE

COMMON POOL GOOD

PUBLIC

NON-RIVAL

EXCLUDABLE

NON-EXCLUDABLE

MY BREAKFAST FROM PAMELA'S

MOVIE TICKETS, GYM MEMBERSHIP

COMMON POOL GOOD

PUBLIC GOOD

NON-RIVAL

EXCLUDABLE

MY BREAKFAST FROM PAMELA'S MOVIE TICKETS, GYM MEMBERSHIP

NON-EXCLUDABLE

FISHERIES

PUBLIC GOOD

NON-RIVAL

EXCLUDABLE

MY BREAKFAST FROM PAMELA'S MOVIE TICKETS, GYM MEMBERSHIP

NON-EXCLUDABLE

FISHERIES

CLEAN AIR, SAFE SEAS,

> THE FACT THAT WE ARE SO SHARE OR COMPONE

NON-RIVAL

EXCLUDABLE

MY BREAKFAST FROM PAMELA'S MOVIE TICKETS, GYM MEMBERSHIP

NON-EXCLUDABLE

FISHERIES

CLEAN AIR,

CAFF CFAC THE FACT THAT WE ARE SO STANLEY CUP CHAMPIONS

NON-RIVAL

FISHERIES

CLEAN AIR, SAFE SEAS,

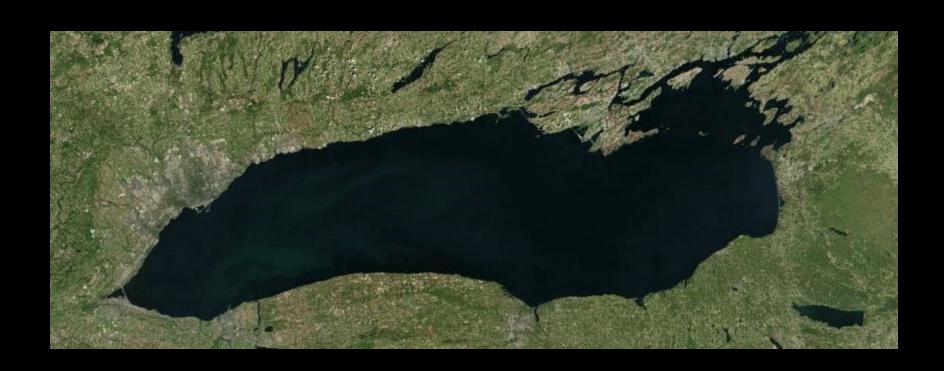
> THE FACTRIM WE MESA SIMMER COD COMPONIX

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| NON-EXCLUDABLE | FISHERIES |  |
|----------------|-----------|--|



# Overfishing

- Overfishing is a big problem in Lake Ontario
- This leads disrupts reproduction and will eventually deplete the entire population

# Overfishing

- Suppose New York passes a law to cap fish hauls
- Will this solve the problem?



# Harsh Realities

 Canadian fish are super polite but have no respect for international borders



# The Treaty

- Suppose the long-term optimal cap on fish is 1,000,000 per year
- Then the treaty should limit the sides to 500,000 each (or something that adds up to 1,000,000)

#### Enforcement

- Both sides could play a grim trigger strategy
  - Start by capturing 500,000 this year
  - If at any point anyone has exceeded that limit, capture as many fish as you can
  - Continue capturing 500,000 each year otherwise

# **Monitoring Problem**

- Actors need the ability to observe past actions to play grim trigger strategies
- If I don't see what you did in the past, I cannot properly punish you for deviation

#### Externalities

- Without monitoring, evil Canadians might be tempted to capture 600,000 fish
  - Depletes the jointly optimal long-run cap
  - But Canada imposes a negative externality on the United States
    - Enjoys the benefits while only suffering part of the consequences
    - Rest of consequences paid by U.S. (the externality)

#### Solution

- Create monitoring institutions (bureaucracy)
  - Bad news: bureaucracy is costly to maintain
  - But they can flag violations of the agreement and allow states to correctly sanction violators
  - Alternative is no cooperation at all

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# NON-RIVAL

| CLEAN AIR, SAFE SEAS, THE FROTTON WE ARE SA |
|---|

NON-EXCLUDABLE

# The Situation

- 100 countries
- Each individually decides to provide a benefit or not
  - Example: Force domestic industry to go green

# Payoffs

- Everyone who provides the benefit produces 300 units of goods, distributed equally among the states
  - Costs c > 0 to provide

# Payoffs

 Free riding costs nothing but produces no benefits for anyone

# Question: Should you provide the public good?

# Payoff for Providing

- You receive 300/100 c for providing
- You also receive n(300)/100 from other countries, where n is the number of other countries that provided

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- You also receive n(300)/100 from other countries, where n is the number of other countries that provided
- Total: 3(n + 1) c

# Payoff for Free Riding

- You receive nothing from yourself but pay no cost
- You still receive n(300)/100 from other countries, where n is the number of other countries that provided
- Total: 3n

# When Should You Provide?

- 3(n+1)-c>3n
- c < 3

#### When Should You Provide?

- 3(n + 1) c > 3n
- c < 3</li>
- So if the costs are very small, you should provide
  - But if they are anything above 3, free riding is better

# Inefficiency

- Suppose c = 5 for everyone
- Outcome: No one provides, everyone earns 0
  - Sum of all payoffs: 0

## Inefficiency

- Suppose c = 5 for everyone
- Better outcome: Everyone provides and earns 3(n + 1) - c = 300 - 5 = 295
  - Sum of all payoffs:  $295 \times 100 = 29,500$
  - 29,500 units of productivity are lost!

### Collective Action Problem

- Everyone wants [something]
- But producing [something] is costly, and the benefits are dispersed to many (non-rival, non-excludable)
- So people do not produce [something] and hope others will
- But everyone is thinking like this, so [something] never gets produced

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### The Situation

- 100 countries
- Each individually can create a public good or not
  - Example: Clear the waters of Somali pirates



- If at least one country provides the public good, everyone receives 10 units of value
  - Costs 10 < c < 100 to provide</li>

 Free riding costs nothing but relies on someone else to provide the benefit

- Provide: 10 − c
- Not provide:
  - 10 if someone else provides
  - 0 if no one else provides

- Provide: 10 c
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- Since c > 10, providing provides a negative payoff; not providing gives at least 0

- Provide: 10 c
- Not provide:
  - 10 if someone else provides
  - 0 if no one else provides
- Since c > 10, providing provides a negative payoff; not providing gives at least 0
  - So no one provides
  - 1000 units lost

### The Situation

- 101 countries
- 100 countries are the same as before
  - 101<sup>st</sup> receives 100 for providing the good
  - Intuition: A hegemon uses the good more than anyone else

# Hegemon's Strategy

Quick inference: no other country will provide the public good

# Hegemon's Strategy

- Quick inference: no other country will provide the public good
- Provide: 100 c > 0
- Not provide: 0
  - Thus, the hegemon provides the public good

## Hegemons Are Helpful!

- Without the big guy, no one receives the benefits
- With the big guy, everyone receives a value of 10 despite putting no effort into the game
  - Hegemon is happy to provide because it benefits from the good so much

## Operation Ocean Shield

- 15 vessels: United States
- 5 vessels: India
- 3 vessels: Denmark and UK
- 2 vessels: Greece, Italy, Japan, Malaysia,
   Netherlands, Portugal, South Korea
- 1 vessel: Canada, China, Colombia, New Zealand, Norway, Pakistan, Spain, Turkey, Ukraine

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### Public Goods

- A public good is non-rival, non-excludable
- Providing public goods is costly
- If the benefit is highly decentralized, no one has incentive to contribute

#### **Public Goods**

- Public goods provision is a large-n prisoner's dilemma
- No cooperation possible in one-shot interactions

### Public Goods

- Cooperation possible with repeated interaction
  - Threat of future punishment (grim trigger) incentivizes cooperation

## Problems with Grim Trigger

- 100 countries play grim trigger strategies
- 99 provide the public good; one cheats
- Grim trigger: everyone should cheat for the rest of time

### Problems with Grim Trigger

- But this completely destroys cooperation
  - 99 other states were properly providing
  - Why should 1 cheating cause everyone to stop providing the public good?

### This Is Weird...

- Every country in the world agrees to stop polluting
- Only one country cheats...and this causes everyone to immediately begin polluting again?

## Problems with Grim Trigger

- Grim trigger strategies are better when punishment can be targeted
- Hard to deny public goods
  - They are non-excludable

#### Solution

- Since we cannot specifically pollute the polluter's country, we must link issues
- Issue linkage is tying commitment to one policy to commitment on another policy

## Example

- Treaty: If you violate the pollution standard, we raise tariffs on your country
  - Punishment specifically targets the violator
  - Allows other states to maintain cooperation

### Expectations

- States with more intertwined relationships are more likely to cooperate
  - Easier to link issues

### Expectations

- The fewer states involved in the interaction, the more likely they are to cooperate
  - Easier to monitor the interaction
  - Fewer states means more interconnectivity

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### Review

 Institutions have no enforcement mechanisms (anarchy)

The UN have a problem with that? You know you should do? You should sanction me—sanction me with your army.... Oh, wait a minute, you don't have an army! I guess that means you need to [be quiet]. That's what I'd do if I didn't have an army. I would [be quiet]. [Be quiet], [be quiet], [be quiet].



#### Review

- Institutions have no enforcement mechanisms (anarchy)
- Compliance to international "rules" must be out of self-interest



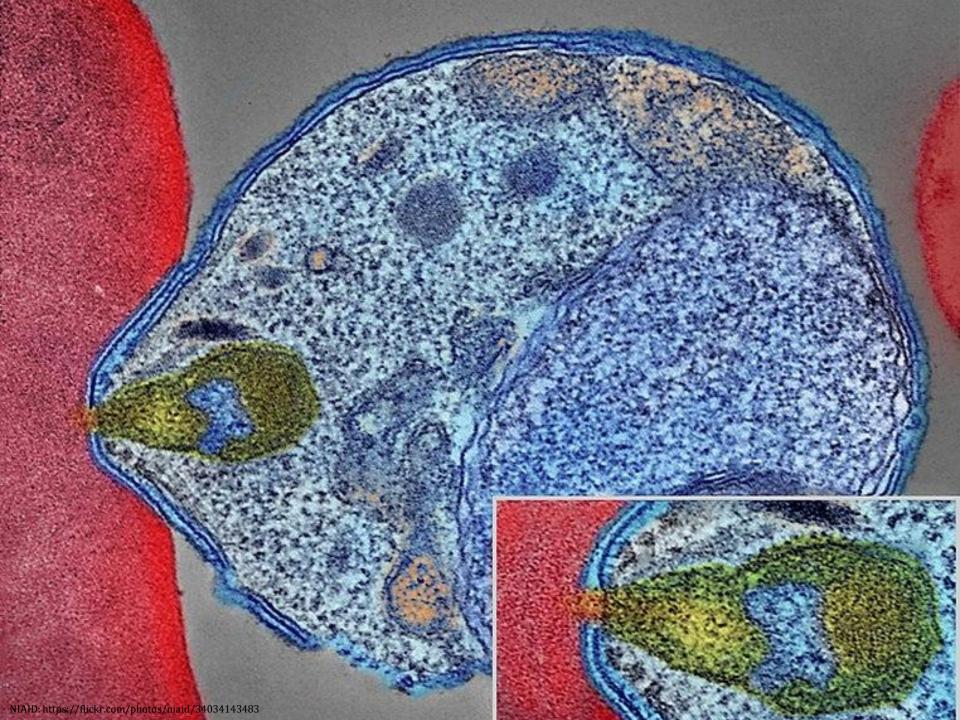
#### Review

- Institutions have no enforcement mechanisms (anarchy)
- Can only alter behavior by changing incentives
  - Compliance to international "rules" must be out of self-interest
  - Spirit of the rule is less important than the rule itself

#### Fun Failures

- CFB helmets
- France's no free Amazon shipping
- Minnesota public smoking ban
- Reading periods
- Pitt's fried chicken incident
- All sorts of World Cup fun









### DON'T GO TO BED WITH A MALARIA MOSQUITO

\* SLEEP UNDER A NET! \* KEEP IT REPAIRED! \* TUCK IT IN! \*

BE SURE NO MOSQUITO IS INSIDE WAITING FOR YOU

FIGHT THE PERIL BEHIND THE LINES







### Externalities

- Does the intended use of malaria nets have positive or negative externalities?
- Does using malaria nets to fish have positive or negative externalities?

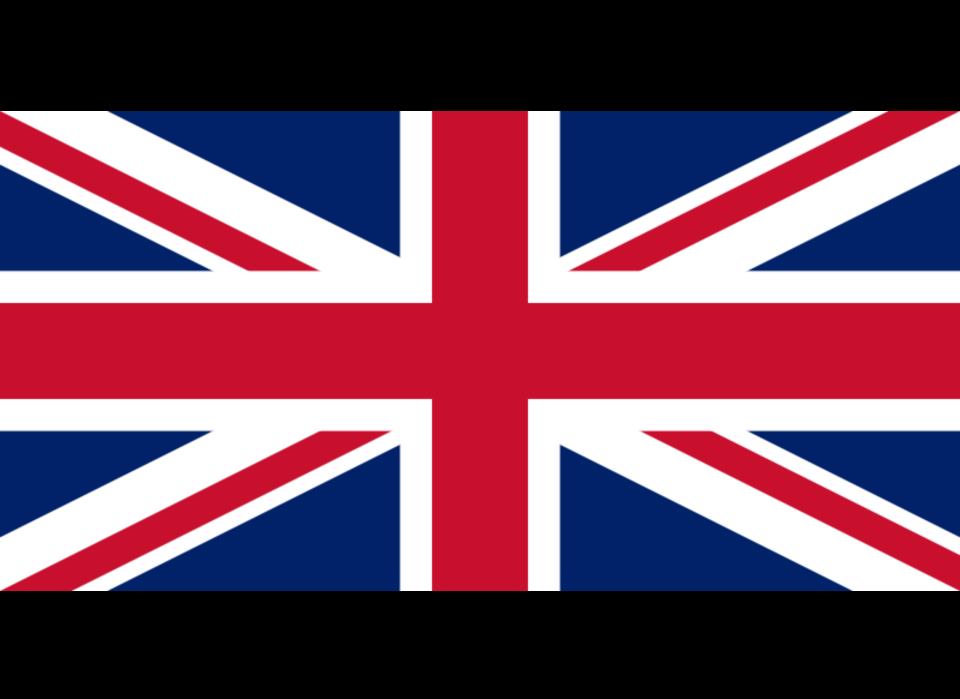
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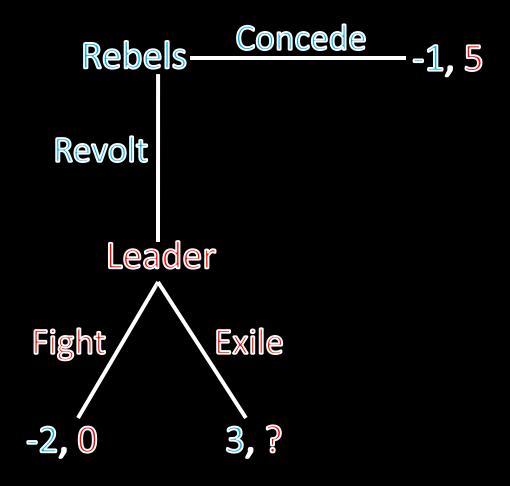
### Role Play!

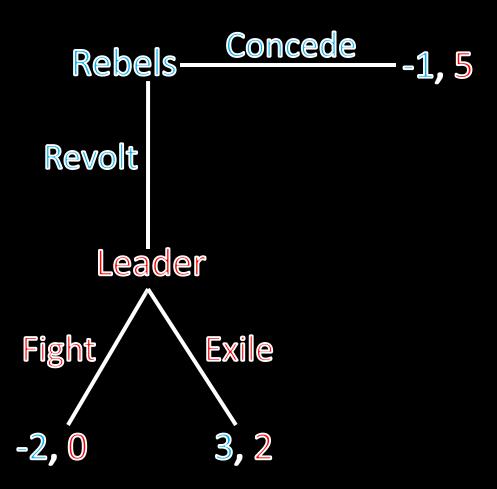
- You are a dictator
- You are culpable pre-1998
- A civil war breaks out in your country
- Are you more or less likely to give up power?

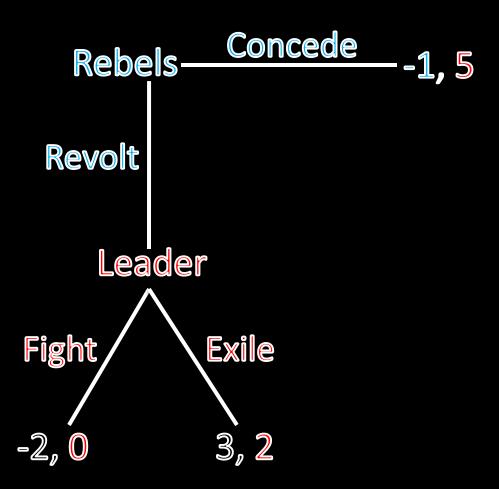
## Role Play!

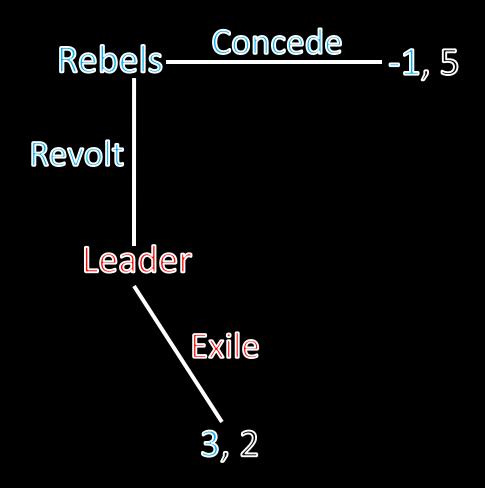
- You are a dictator
- You are not culpable pre-1998
- Do you commit atrocities following Pinochet's arrest?

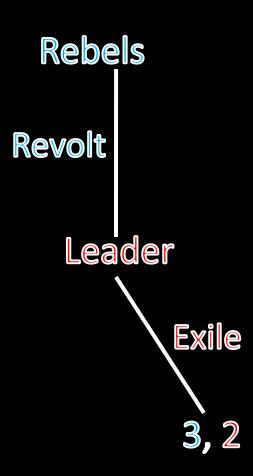
#### **Culpability Game**

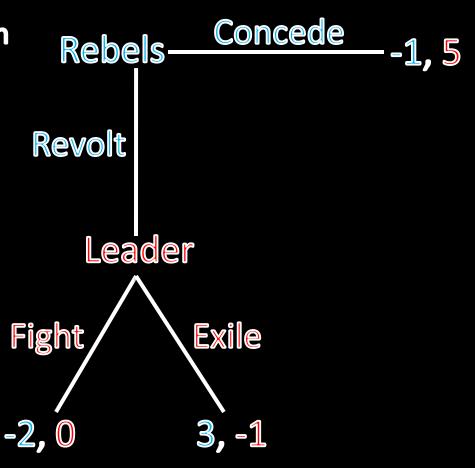


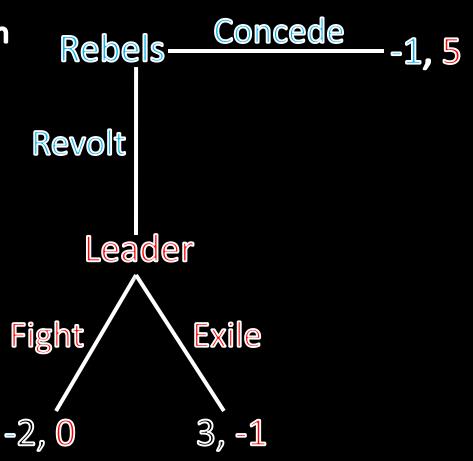


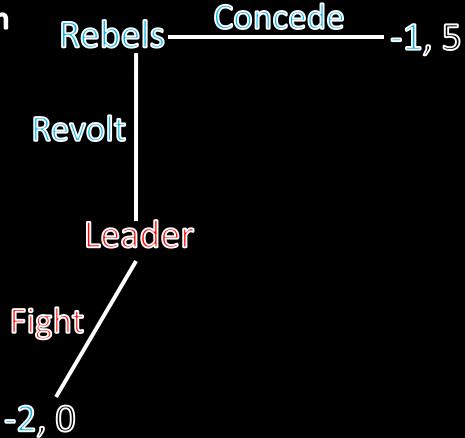












Rebels—Concede—-1, 5

