

PSC/IR 106: Institutions

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Review

- Institutions have no enforcement mechanisms (anarchy)
- So compliance to international “rules” must be out of self-interest

Outline

- Goods
- Monitoring
- Collective Action Problems
- Hegemonic Provision of Public Goods
- Issue Linkage
- Perverse Incentives

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RIVAL

NON-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 watching

	RIVAL	NON-RIVAL
EXCLUDABLE	PRIVATE GOOD	CLUB GOOD
NON-EXCLUDABLE	COMMON POOL GOOD	PUBLIC GOOD

	RIVAL	NON-RIVAL
EXCLUDABLE	MY LESS THAN TASTY BREAKFAST FROM JINES	CLUB GOOD
NON-EXCLUDABLE	COMMON POOL GOOD	PUBLIC GOOD

EXCLUDABLE

RIVAL

MY LESS THAN
TASTY
BREAKFAST
FROM JINES

NON-RIVAL

MOVIE
TICKETS, GYM
MEMBERSHIP

NON-EXCLUDABLE

COMMON
POOL
GOOD

PUBLIC
GOOD

EXCLUDABLE

NON-EXCLUDABLE

RIVAL

NON-RIVAL

MY LESS THAN
TASTY
BREAKFAST
FROM JINES

MOVIE
TICKETS, GYM
MEMBERSHIP

FISHERIES

PUBLIC
GOOD

EXCLUDABLE

NON-EXCLUDABLE

RIVAL

NON-RIVAL

MY LESS THAN
TASTY
BREAKFAST
FROM JINES

MOVIE
TICKETS, GYM
MEMBERSHIP

FISHERIES

CLEAN AIR,
SAFE SEAS

NON-EXCLUDABLE

RIVAL

NON-RIVAL

FISHERIES

CLEAN AIR,
SAFE SEAS

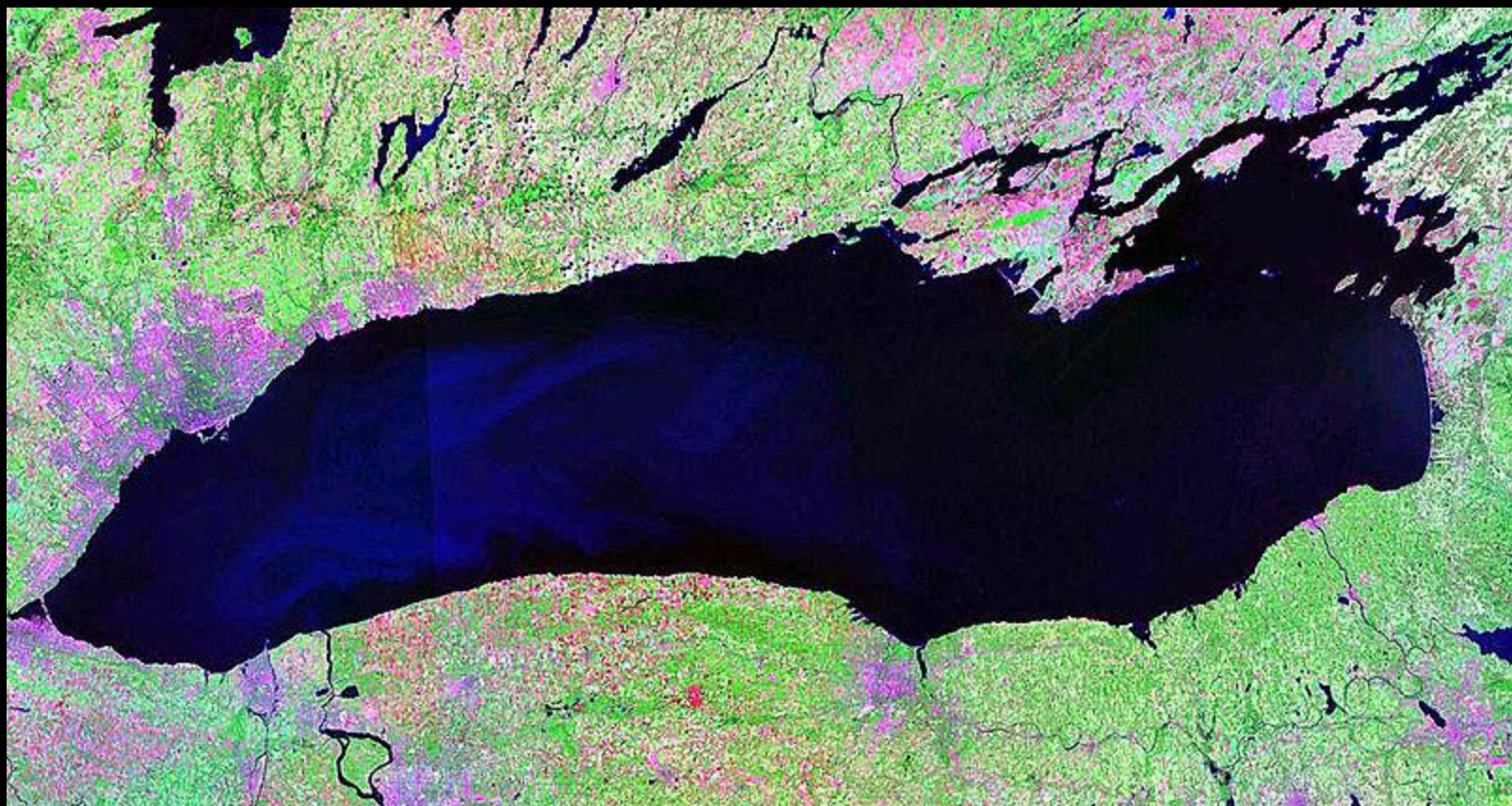
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FISHERIES



Overfishing

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

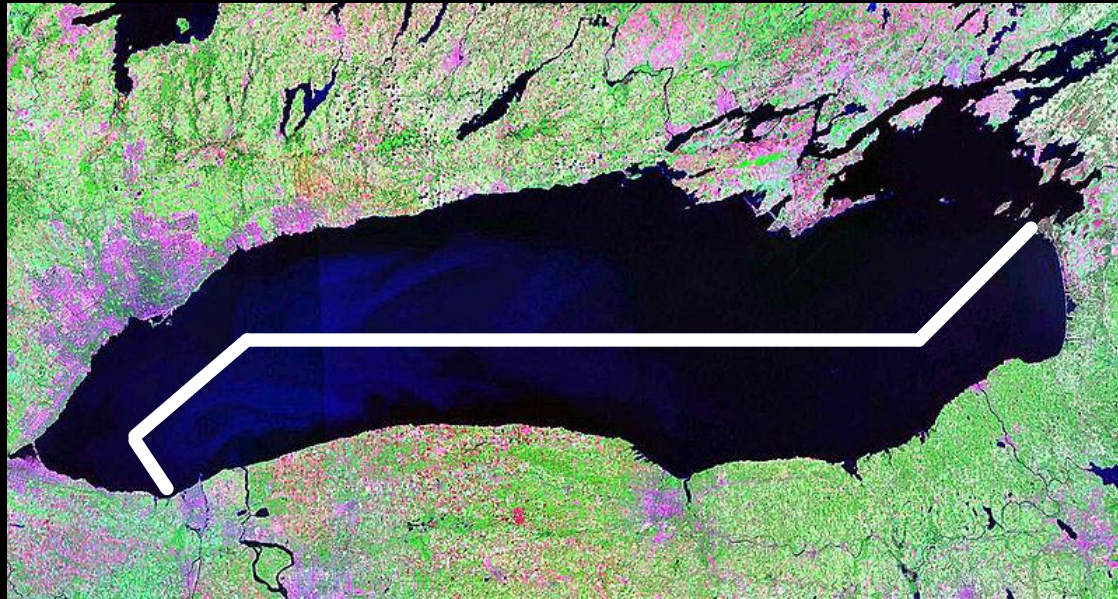
Overfishing

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



Harsh Realities

- Canadian fish are very 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

Monitoring Problem

- Without monitoring, the evil Canadians might be tempted to capture 600,000 fish
 - Depletes the jointly optimal long-run cap
 - But Canada enjoys the benefits while only suffering part of the consequences

Solution

- Create monitoring institutions (bureaucracy)
 - Yes, bureaucracy sucks and is costly to maintain
 - But they can flag violations of the agreement and allow states to correctly sanction violators
 - The alternative is no cooperation at all

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NON-EXCLUDABLE

CLEAN AIR,
SAFE SEAS

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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- 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?

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



Payoffs

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

Payoffs

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

Payoffs

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

Payoffs

- Provide: $10 - c$
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Payoffs

- 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
 - 101st 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

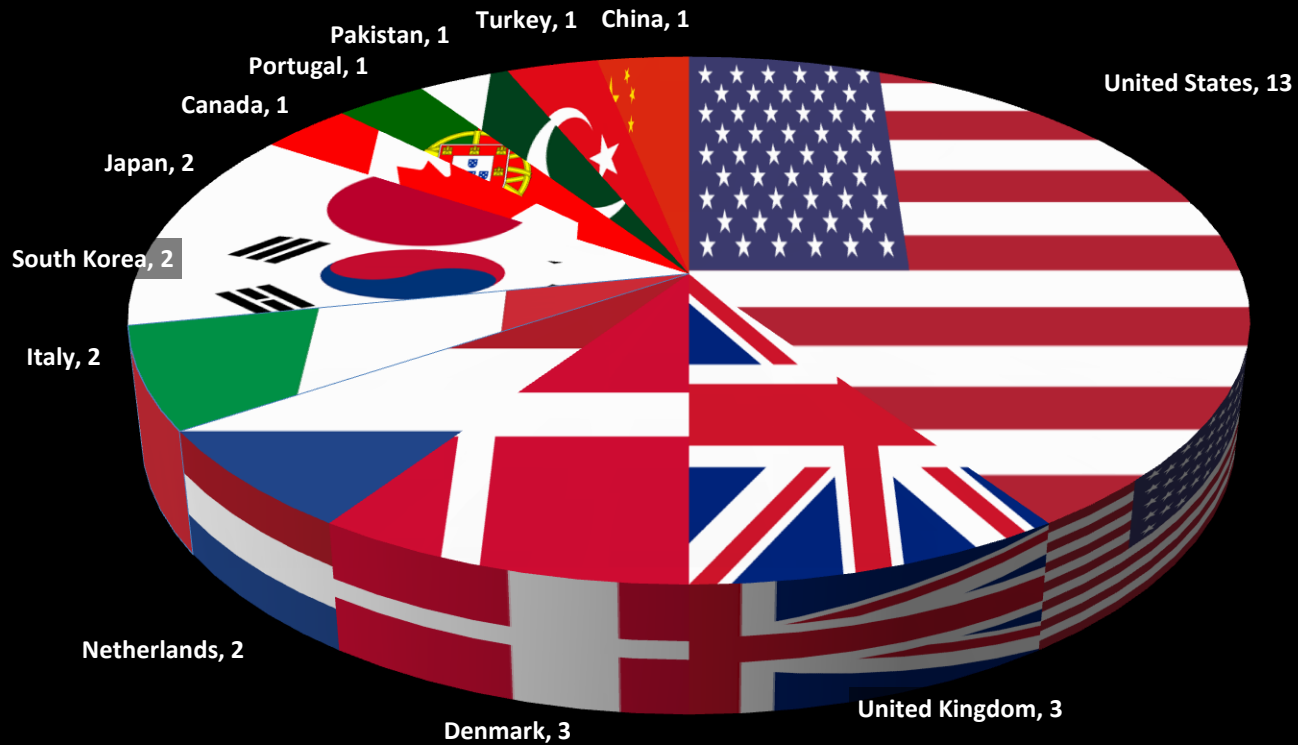
Hegemon's Strategy

- 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



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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

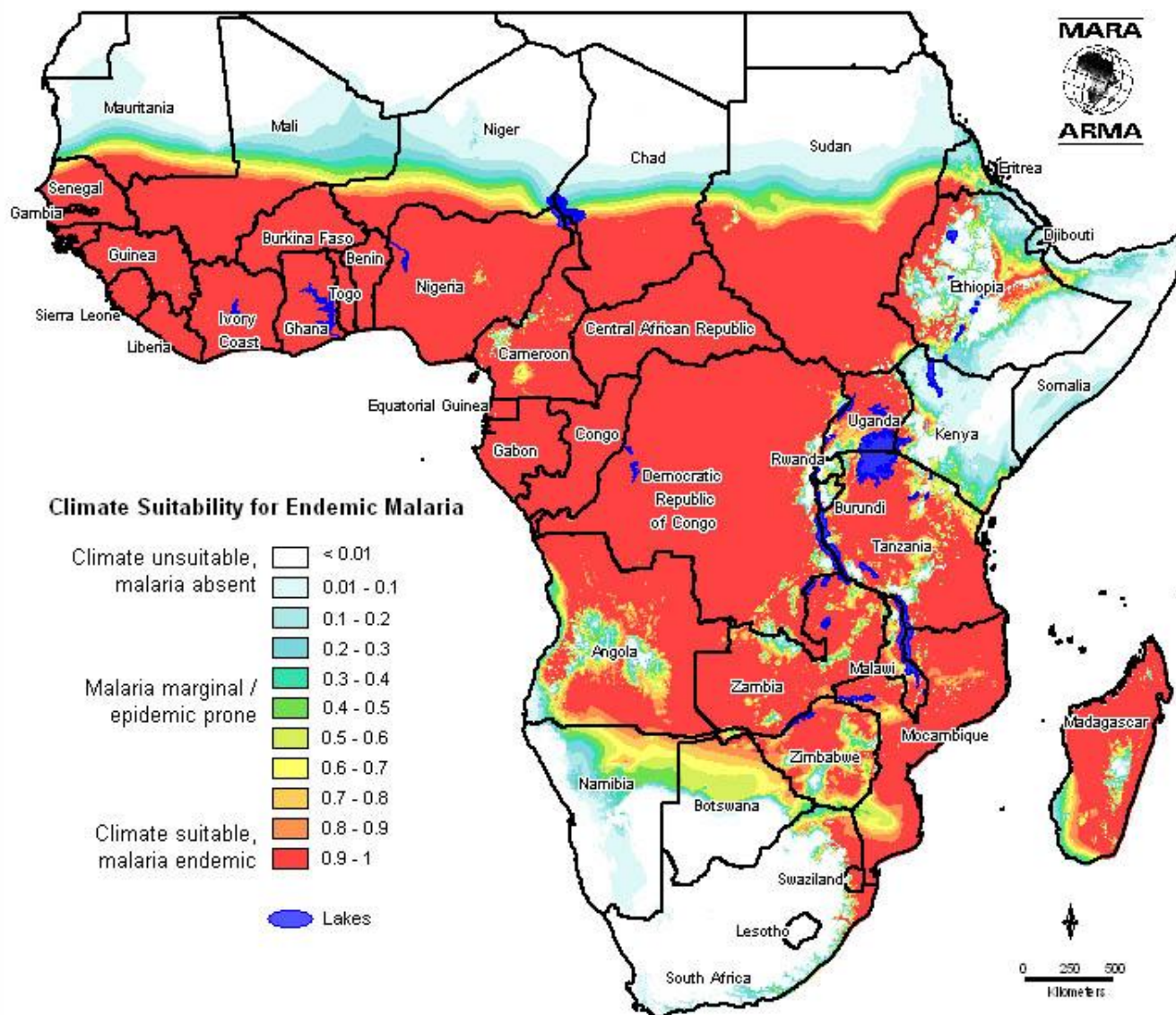
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Fact of Life

- Institutions don't dictate how people act
- They give their audience the rules of the game
- Audience will do whatever is best, even if it is not what the institution wants them to do

Distribution of Endemic Malaria



This map is a product of the MARA/ARMA collaboration (<http://www.mara.org.za>). July 2002, Medical Research Council, PO Box 70380, Overport, 4067, Durban, South Africa
 CORE FUNDERS of MARA/ARMA: International Development Research Centre, Canada (IDRC); The Wellcome Trust UK; South African Medical Research Council (MRC);
 Swiss Tropical Institute, Multilateral Initiative on Malaria (MIM) / Special Programme for Research & Training in Tropical Diseases (TDR), Roll Back Malaria (RBM).

Malaria distribution model: Craig, M.H. et al. 1999. *Parasitology Today* 15: 105-111.

Topographical data: African Data Sampler, WRI, http://www.igc.org/wri/sdis/maps/ads/ads_idx.htm.



**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









Universal Jurisdiction

- The (claimed) right of international bodies to prosecute individuals regardless of where a crime was committed
- UK arrests Pinochet in 1998 under universal jurisdiction

Role Play!

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

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?

Takeaway

- Institutions create the rules of the game
- Players strategize according to those rules, not in the spirit of the rules