Common Pool Resources

Theory & Evidence on Common Pool Resource Regimes

Back to the Future: Reclaiming the Commons
12 november
Real World Economics Amsterdam

Summary

- **Introduction:**
An example from Mexico

- **The Tragedy of the Commons theory**
Markets and states are needed to prevent overconsumption of the Commons by individuals.

- **Common Pool Resource (CPR) Regimes**
Ostrom: “that's not true, people can govern themselves through Common Pool Resource (CPR) Regimes”

- **Past, present and future challenges**
Lack of trust, states, markets, capitalism, technology, etcetera.

An example from Mexico

"Reclaiming the Forests and the Right to Feel Safe"

(August 2, 2012 New York Times)

"Cherán's residents said they had been subjected to multiple episodes of rape, kidnapping, extortion and murder by the paramilitary loggers, who have devastated an estimated 70 percent of the surrounding oak forests that sustained the town's economy and indigenous culture for centuries. ...

[H]ere in Cherán, a group of townspeople took loggers hostage, expelled the town's entire police force and representatives of established political parties, and forcibly closed the roads. ...

The Mexican government authorities had previously ignored their repeated pleas for help, the residents said, so the people of Cherán simply took the law into their own hands."

Some videos

Short interview with Ostrom:
http://www.youtube.com/watch?v=D1xwV2UDPAg

Long lecture by Ostrom:
http://www.youtube.com/watch?v=E5ZPGeF2ics

Dividing the streets (a CPR), the 'corners' in Baltimore among drugdealers: From 'The Wire' (fiction):
http://www.youtube.com/watch?v=hGo5bxWy21g

Tragedy of the Commons

Garrett Hardin (1968)

- "The degradation of the environment to be expected whenever many individuals use a scarce resource in common"
- Formalized in a game (Ostrom 1990):

If both cooperate: they get 10 each. If one cooperates and the other defects, the cooperator ("sucker") gets -1 and the defector obtains 11. Nash equilibrium: both defect: both get zero.

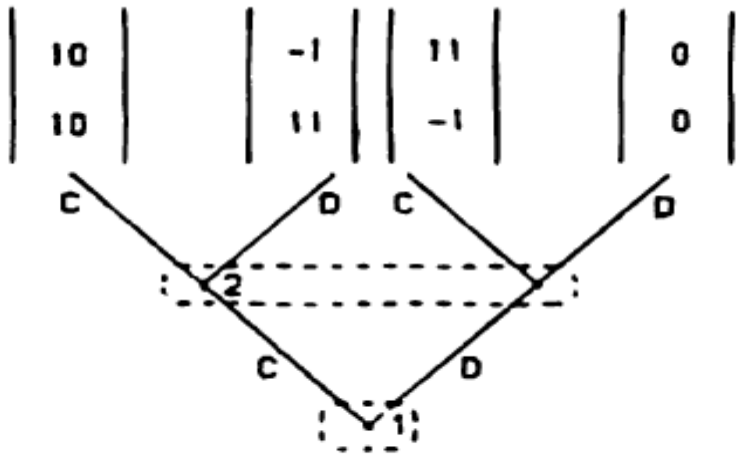


Figure 1.1. Game 1: The Hardin herder game.

Tragedy of the Commons

Assumptions of the model:

- Communication among players is not possible, forbidden or irrelevant.
- Verbal agreements among players are nonbinding
- "Complete information": all players know the full structure of the game tree and the payoffs attached to outcomes.

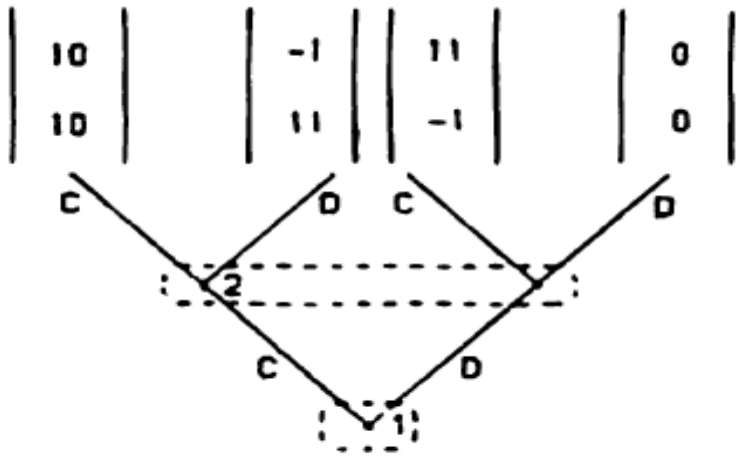


Figure 1.1. Game 1: The Hardin herder game.

Conclusions from Tragedy of the Commons

- Leviathan [central state control] as the “only” way

"if ruin is to be avoided in a crowded world, people must be responsive to a coercive force outside their individual psyches, a 'Leviathan,' to use Hobbes's term" (Hardin 1978, p. 314, in Ostrom 1990).

- Privatization as the “only” way

"Both the economic analysis of common property resources and Hardin's treatment of the tragedy of the commons* led Robert J. Smith (1981, p. 467) to suggest that "the only way to avoid the tragedy of the commons in natural resources and wildlife is to end the common-property system by creating a system of private property rights" ” (Ostrom 1990)

- People are consumers or voters

Distorted view of CPR use by economists:

"The problem with the commons is the tendency of overusing them, and the usual solution is to establish property rights to govern access. This is what happened in the sixteenth century in England where common land was enclosed and became property of the local landlords. The landlords then charged grazing fees, and so cut back the use."

(Hindriks & Myles, Intermediate Public Economics, 2006)

Common Pool Resource (CPR) Regimes

- **The models are not wrong.**

- When conditions approximate the conditions of the models, yes, the 'tragedy of the commons' occurs.

- When they don't, we often find effective CPR regimes.

- Most of the institutional arrangements used in the success stories were rich mixtures of public and private instrumentalities.

Doubling the amount of goods

New goods

		Subtractability of Use: High	Subtractability of Use: Low
Difficulty of excluding potential beneficiaries	High	*Common-pool resources*: groundwater basins, lakes, irrigation systems, fisheries, forests, etc.	*Public goods*: peace and security of a community, national defense, knowledge, fire protection, weather forecasts, etc.
	Low	*Private goods*: food, clothing, automobiles, etc.	*Toll goods*: theaters, private clubs, daycare centers

FIGURE 1. FOUR TYPES OF GOODS

"Forests, water systems, fisheries, and the global atmosphere are all common-pool resources of immense importance for the survival of humans on this earth." (Ostrom 2010)

Evidence from the field

- Multiple cases where resource users were successful in organizing themselves **without overexploiting the CPR**:
fisheries, forests, irrigation systems.
- Many studies show self-organized CPR regimes work *better* than government systems.

When are CPR regimes successful?

When are they 'robust' (= surviving over a longer term)?

Design principles / best practices:

1A. **Clear User Boundaries:**
between legitimate users and nonusers

1B. **Clear Resource Boundaries**

2A. **Congruence with Local Social and Environmental Conditions**

2B. **Congruence of Appropriation rules with Provision rules**:
the distribution of costs is proportional to the distribution of benefits.

3. **Collective Choice Arrangements**:
Most stake-holders participate in governance.

4A. **Monitoring the appropriation and provision levels** of the users and

4B. **monitoring the condition of the resource**,
by individuals who are accountable to or are the users.

5. **Graduated sanctions**:
Sanctions start low but become stronger

6. **Conflict Resolution Mechanisms**:
local arenas exist for resolving conflicts

7. **Minimal Recognition of Rights**:
The government recognizes self-governance.

8. **Nested Enterprises**:
When a CPR is connected to a larger social-ecological system, governance activities are organized in multiple nested layers.

In short:

- Most important: possibility of ***communication.*** Which can enhance *trust*.

- Also important: *self-sanctioning* and *self-monitoring*
- Supported by game theory experiments in the lab (Ostrom 2010)

2/3 of over 100 studies confirm that robust resource systems are characterized by most of the design principles and that failures are not.

Cox, Arnold, and Villamayor- Tomás (2009)

Ostrom 1990:

Table 5.2. *Design principles and institutional performances*

Site	Clear boundaries & member-ships	Congruent rules	Collective-choice arenas	Monitoring	Graduated sanctions	Conflict-resolution mechanisms	Recognized rights to organize	Nested units	Institutional performance
Törbel, Switzerland	yes	yes	yes	yes	yes	yes	yes	NR[a]	robust
Japanese mountain villages	yes	yes	yes	yes	yes	yes	yes	NR	robust
Valencia, Murcia, & Oriheula, Spain	yes	yes	yes	yes	yes	yes	yes	yes	robust
Raymond, West, & Central basins (current)	yes	yes	yes	yes	yes	yes	yes	yes	robust
Alicante, Spain	yes	yes	yes	yes	yes	yes	yes[b]	yes	robust
Bacarra-Vintar, Philippines	yes	yes	yes	yes	yes	yes	yes	yes	robust
Alanya, Turkey	no	yes	weak	yes	yes	weak	weak	NR	fragile
Gal Oya, Sri Lanka	yes	yes	yes	yes	[c]	weak	weak	yes	fragile
Port Lameron, Canada	yes	yes	weak	yes	yes	yes	no	no	fragile
Bay of Izmir & Bodrum, Turkey	no	no	no	no	no	no	weak	no	failure
Mawelle, Sri Lanka	no	yes	no	yes	yes	no	no	no	failure
Kirindi Oya, Sri Lanka	yes	no	no	no	no	no	no	no	failure
Raymond, West, & Central basins (earlier)	no	no	no	no	no	yes	yes	no	failure
Mojave groundwater basins	no	no	yes	no	no	yes	yes	no	failure

[a]NR = not relevant.
[b]With two major exceptions, from 1739 to 1840 and 1930 to 1950.
[c]Missing information.

Thus, no more than three of the design principles characterized any of the cases in which CPR appropriators were clearly unable to solve the problems they faced.

Property rights in CPR regimes: more than just the right to sell

1)access—the right to enter a specified property
2)withdrawal—the right to harvest specific products from a resource
3)management—the right to transform the resource and regulate internal use patterns
4)exclusion—the right to decide who will have access, withdrawal, or management rights
5)alienation—the right to lease or sell any of the other four rights.

So, no state control and Privatization?

- Sometimes a solution, but not the *only* answer, evidence shows (Ostrom 2010). Moreover:

- **Privatization can be complex/impossible**:
  How to privatize a lake or a forest?
- **State control can be destructive:**
  - Externally imposed rules can "crowd out" voluntary behaviour to cooperate
  - Nepalese villagers began free-riding, overexploiting their forests, after forest nationalization (Ostrom 1990).
  - Uniform control can lead to discretion, bribing, corruption.
- **But States can be complementary:**
  - They can provide reliable information about the CPR structure.
  - They can provide external enforcements of local CPR rules.

Past, present and future challenges

CPR regimes can't develop when there is:

- no (means of building) mutual trust
- no capacity to create monitoring and sanctioning mechanisms (reciprocity is not enough).

CPR regimes can break when there is:

very rapid population growth

changes in the market value of the products harvested from the CPR

- "forests with a higher probability of regeneration are likely to be small to medium in size with [...] *low commercial value*".

no recognition by formal political regimes

For discussion

?

Commoning as support in struggle against capitalism

"In conclusion, various forms of commoning, some traditional and some not, provided the proletariat with means of survival in the struggle against capitalism. Commoning is a basis of proletarian class solidarity, and we can find this before, during, and after both the semantic and the political birth of communism."

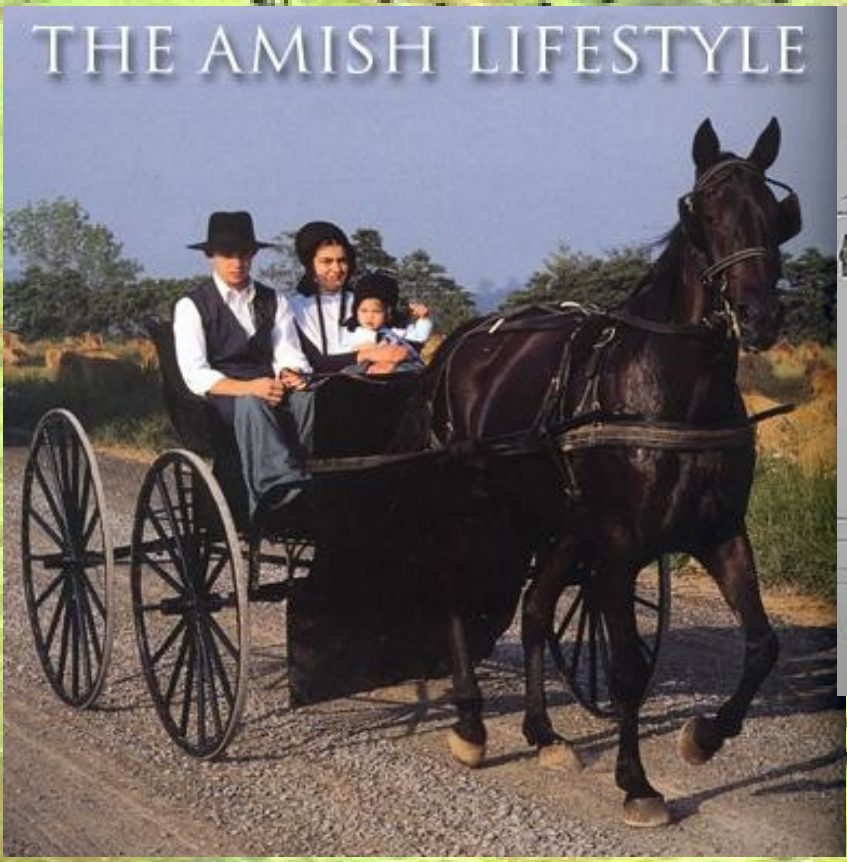
- "MEANDERING ON THE SEMANTICAL-HISTORICAL PATHS OF COMMUNISM AND COMMONS" Peter Linebaugh December 2010)

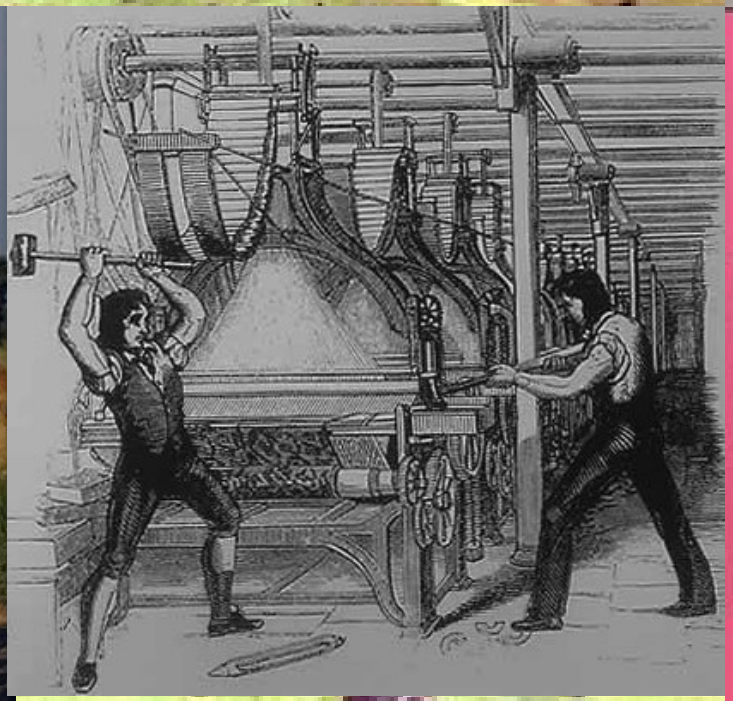
Capitalism uses commoning

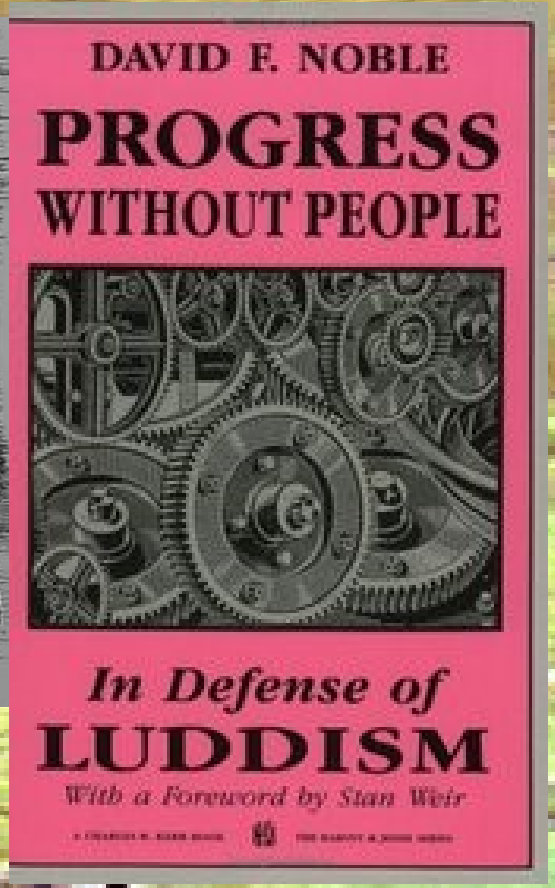
“To be paranoid, we could even say that neo-liberalism is all about allowing commons to arise for the sole purpose of their subsequent economic privatization”.

- Artist Dmitri Vilensky, 2009, Chto Delat

Technology & the Commons







References:

Ostrom, E. “Beyond Markets and States: Polycentric Governance of Complex Economic Systems”. American Economic Review Vol. 100, No. 3, June 2010

Ostrom, E. *Governing the Commons: The Evolution of Institutions for Collective Action* Cambridge University Press, 1990

Ostrom, Elinor, and Gardner, Roy, and Walker, James. *Rules, Games, and Common Pool Resources.* Editors, Ann Arbor, University of Michigan Press, 1994