

# **Institutional Resource Economics VI: Institutional Analysis & Development Approach**

DAAD Workshop on:  
**“Developing Multi-level and Decentralized  
Implementation Capacity for Natural Resource  
Management and Environmental Policies: a contribution  
to polycentric governance in an emerging democracy“,  
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# What is IAD?

- The Institutional Development and Analysis Approach (IAD) is a framework for organising research on institutions and governance structures
- It has been developed by **Elinor and Vincent Ostrom** and their colleagues at Indiana University
- The framework has been used and successively improved by numerous empirical case studies
- IAD has originated in the **Workshop in Political Theory and Policy Analysis** in Bloomington, Indiana, an international academic center



# Institutional Analysis and Development (IAD) Framework

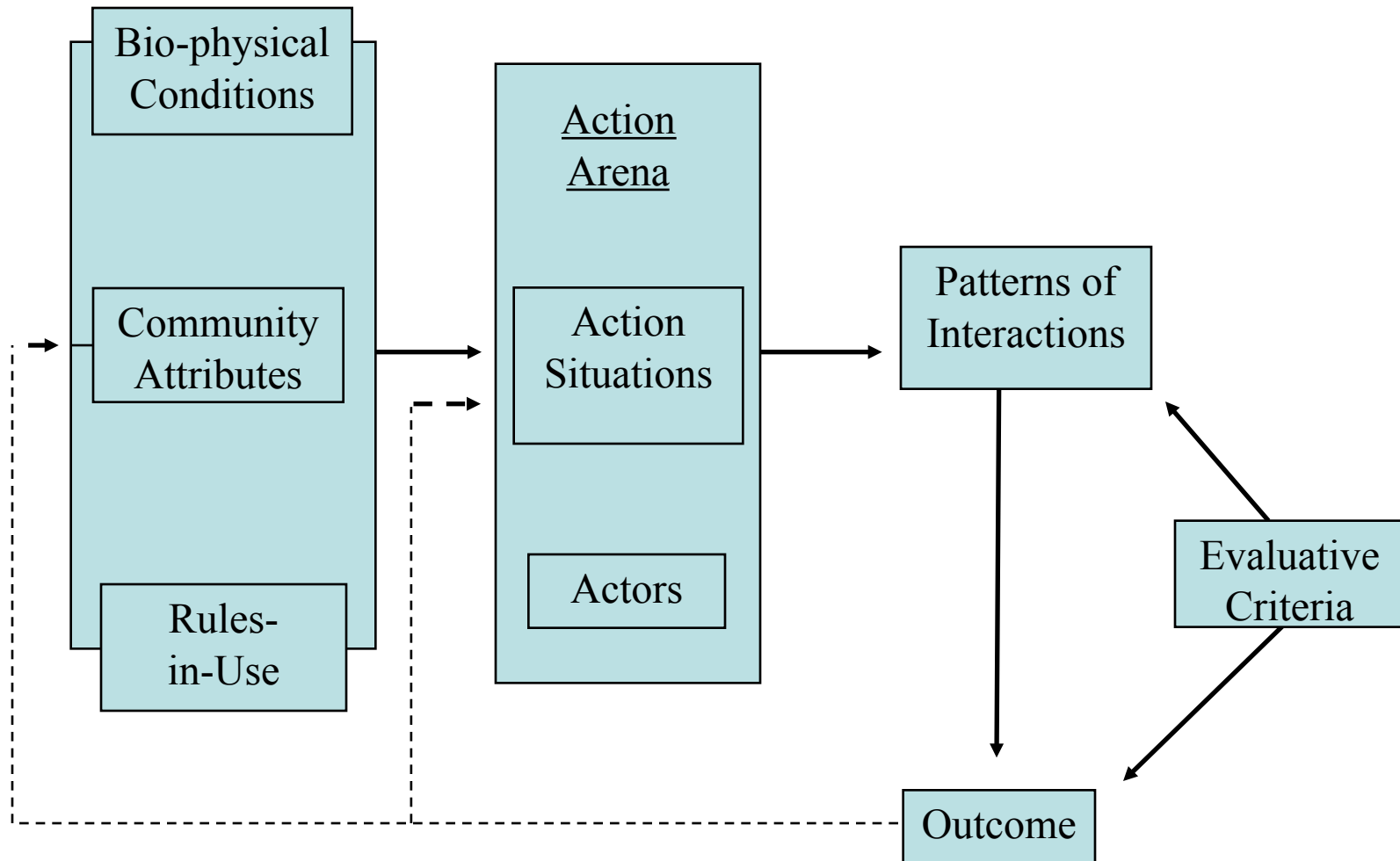
- Discourse in Social Sciences often resembles the **Tower of Babel** – different languages
- IAD helps to organize research on institutions
- Identifies broad categories of variables to be included in theories and models
- The meta language to talk about theories
- Conceptual subassemblies of part-whole units characteristic of social life
  - **Holons** within **holons** within **holons**
  - **Nested subassemblies**
  - **Dissecting complex systems**

# Holons in IAD

“The focal level for this book is **the holon called an action arena** in which **two holons -participants and an action situation—interact** as they are **affected by exogenous variables** (at least at the time of analysis at this level) and **produce outcomes** that in turn affect the participants and the action situation” (Ostrom 1995).

**Action arenas** = Family, markets, firms, class, cooperative, local community, irrigation system, government, international agreement, summer school - **where is interaction between actors!**

# Institutional Analysis and Development (IAD) Framework



Source: Kiser and Ostrom, 1982; Ostrom, Gardner, and Walker 1994

# Action Situation in the IAD Framework

- **Action situations:** individuals within biophysical, social and institutional context
- **Action situations** influenced by three categories of **contextual factors** (= exogenous):
  - Nature of the resource (physical conditions)
  - Rules-in-use (institutional arrangements)
  - Attributes of the community (social and cultural context)

# IAD Framework (cont.)

- **Levels of analysis** (arenas of interaction):
  - operational choice
  - collective choice
  - constitutional choice
  - metaconstitutional choice
- **Feedback** across levels

# IAD Framework (cont.)

- **Evaluative Criteria:**
  - Efficiency
  - Equity
  - Adaptability/Resilience
  - Accountability
  - Conformance to General Morality





# Linking Levels of Institutions

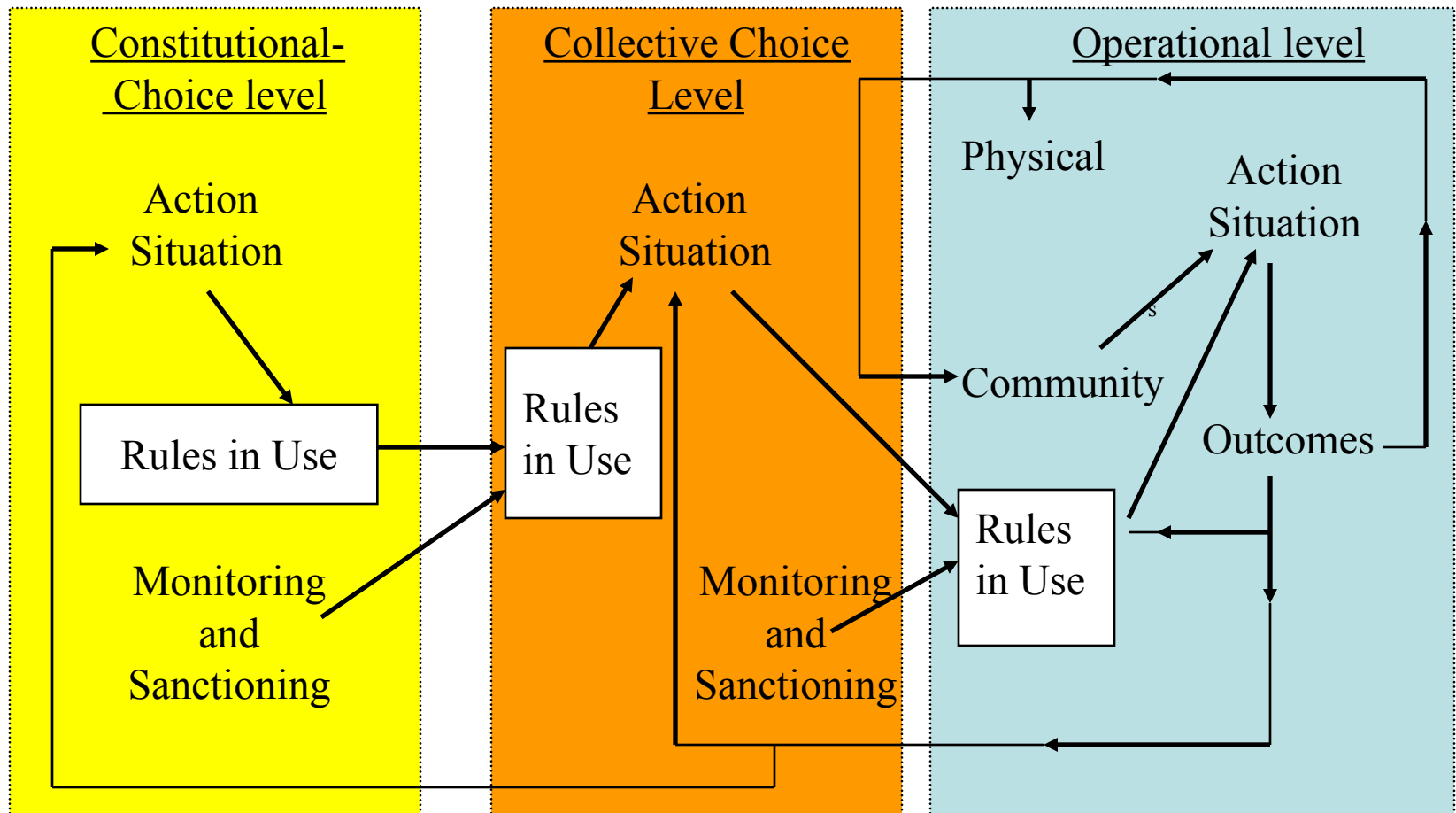
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- ***Operational rules*** govern day-to-day decisions
- ***Collective choice rules*** affect how operational rules are to be changed, and who can change them, thereby indirectly affecting operational activities and results
- ***Constitutional choice rules*** are the rules to be used in crafting collective rules that in turn regulate the operational rules

***Institutional change is a continuous process of adjustment across nested levels of rules***

# Linking Levels of Institutions

(Ostrom 1998)





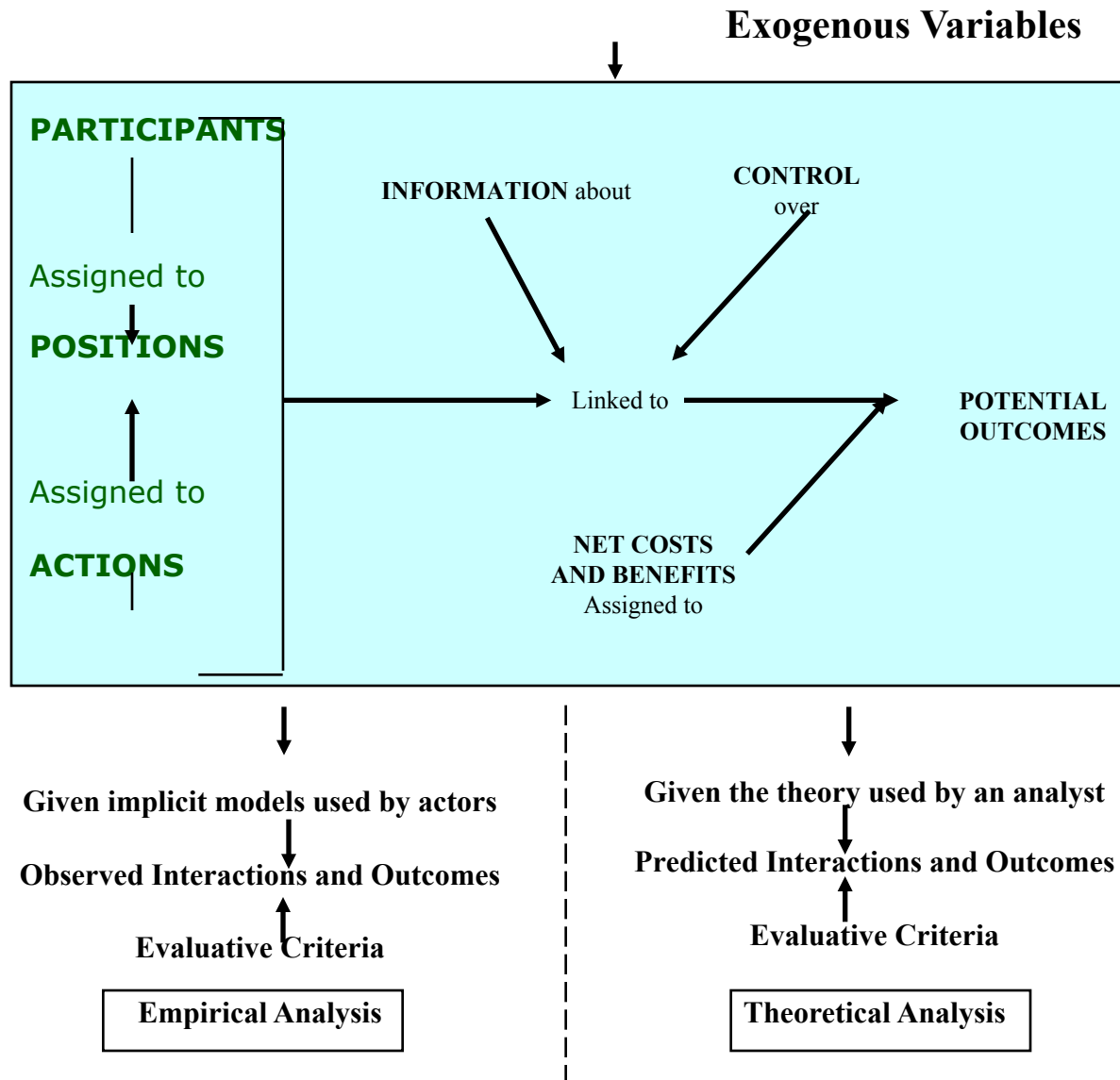
# Unpacking an Action Situation

- Participants
- Positions
- Actions
- Outcomes
- Transformations
- Information
- Payoffs
  - **How are these related to one another?**

# Common Set of Variables in Action Situations

- The set of participants
  - the positions to be fulfilled by participants
  - the potential outcomes
  - set of allowable actions and the function that maps actions into realised outcomes
  - the control that an individual has in regard to this function
  - the information available to participants about actions and outcomes and their linkages
  - the costs and benefits – which serve as incentives and deterrents – assigned to actions and outcomes
- ➔ In addition, frequency of the situation is relevant.

# The Internal Structure of an Action Situation



# Components of All Action Situations and Relationships

- *Participants* who hold
- *Positions* can select with more or less
- *Control* from a set of
- *Alternative actions* in light of
- *Information* about the general structure and
- *Outcomes* that may be affected in light of
- *Benefits and Costs* assigned to actions selected and outcomes

***These “A/M relationships” are usually regularized by norms and rules; but what happens if norms and rules are missing***

**➡ GAME OF SNATCH**

# A Simple Game

- Game of Snatch
  - Helps us illustrate
    - A game involving potential beneficial exchange in a state of nature?
    - How we can define **norms** carefully?
    - How norms may help to change predicted outcomes
  - Factors that affect size and stability of norms
  - What it means to create **property rights** and how many rules have to be changed to do so.

# The Game of Snatch

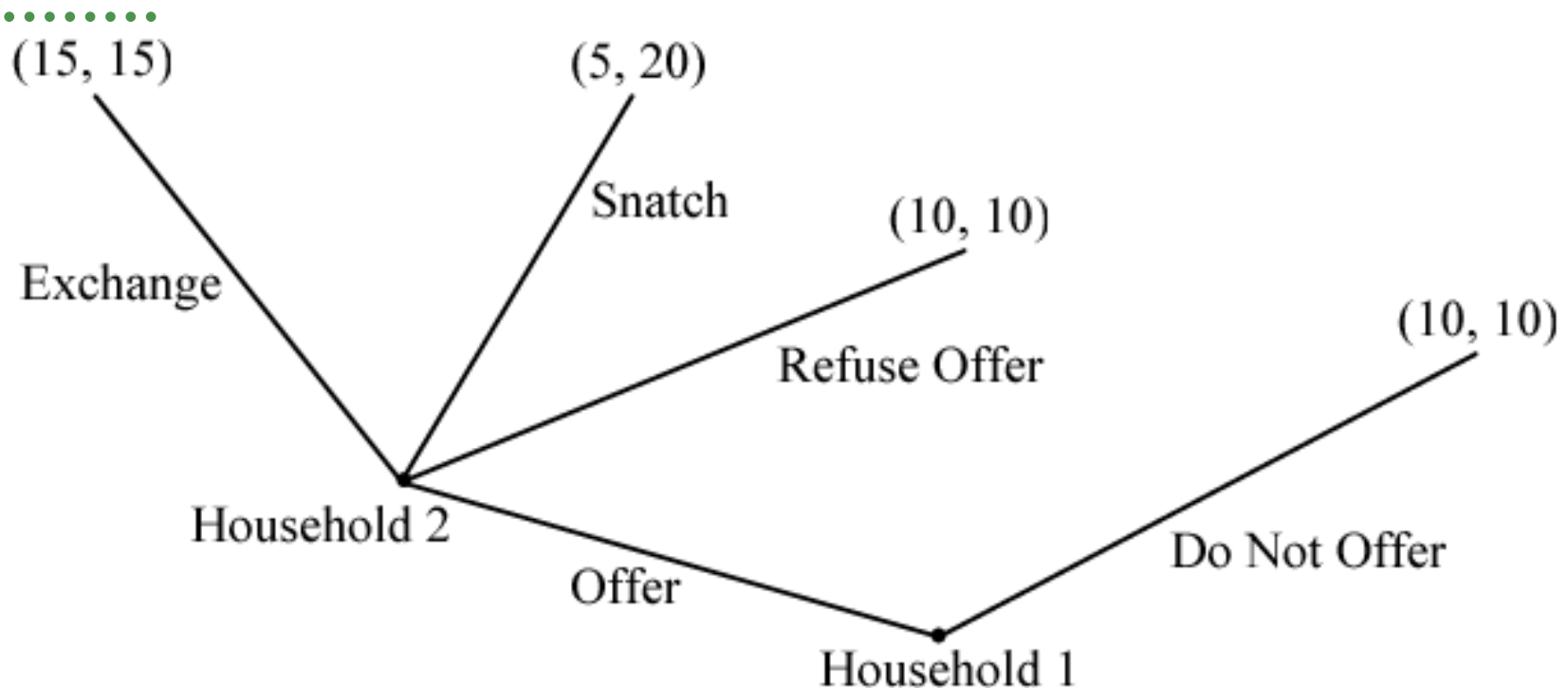


Figure 2.2 The snatch game. *Based on STEAL in Plott and Meyer [1975, 70].*





# Strangers in a “State of Nature” Do not Obtain Mutually Beneficial Outcomes

- While a very simplified version of exchange – it does illustrate
  - **Essential role of trust** in all exchanges that are not undertaken at one time period with everything being feasible – and with strong family or friends able to intervene
- Now, what do we mean by norms and how could they help?

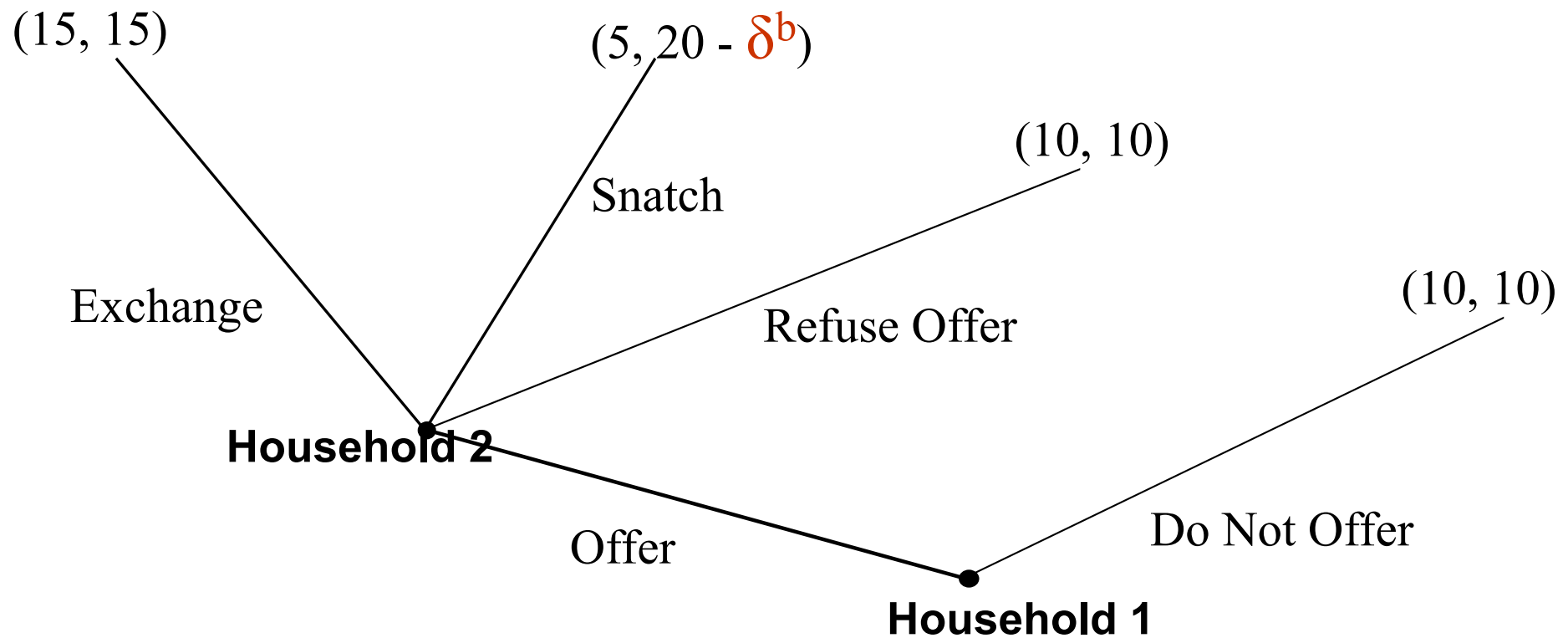
# Norms and Delta Parameter

- Related to **deontic** logic
  - Focus only on the world of the possible
  - Add costs or benefits to an individual preference related to:
    - What one *must*, *must not*, or *may* take a particular action or reach a particular outcome
- Can be represented by a **delta parameter** that the individual places on outcomes depending on actions taken or the outcomes

# Aspects Related to Delta Parameter

- **SIZE** of change in evaluation of the costs (or benefits) of an action and the benefits (or costs) of an outcome that affects final internal payoff – just having norms not sufficient to reach better outcomes
- **DIRECTION** – positive or negative related to breaking or observing a deontic
- **SOURCE** – Internal or external
  - Change in internal payoffs from own guilt or pride
  - Change in external payoffs from external loss (shaming) or gain in respect of others
- In the literature – called **warm glow**, honor, reputation, sense of obligation, guilt, .....
- **Norms** may change Game of Snatch

# .....The Snatching Game with Norms



# Whether A Different Equilibrium Exists Depends On

- **Size of delta parameter** – must be negative & larger than increase in outcomes from snatching the goods alone – must be more than 5
- **Knowledge of HH 1** that HH2 has a sizeable delta parameter against snatching goods placed out for exchange
- Depends on **regular communication** among members of a community with similar norms
- May be challenged by **changes** in:
  - **Value of goods**
  - **Composition of population**



# .....Norms Alone May Not Be Sufficient!

- Delta parameters have to be large
- Have to teach all children to be ashamed of stealing
- Need to keep stable community of folks who share same norms or adopt obvious “tags” that identify those who share the same norms
- Norms may be “part” of the solution
- What rules do you need to change to a better equilibrium to the Game of Snatch?



# Policy Prescriptions Made

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- **When trust has not been established to facilitate active exchanges among strangers need to impose:**
  - “Law and order”!!!!
  - What does that mean????
- **Formal institutions and governance structures required = Making and Implementing Sets of Rules**

# Classification of Rules

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**Objective of classification:** linking rules and the action situation (game) created by rules (and by the biophysical world plus communities)

*All regulatory rules have the **syntax** of:*

**ATTRIBUTES of PARTICIPANTS who are OBLIGED, OR PERMITTED to ACT (or to AFFECT an outcome) under specific CONDITIONS, OR ELSE.**



# Components of All Action Situations and Relationships

- *Participants* who hold
- *Positions* can select with more or less
- *Control* from a set of
- *Alternative actions* in light of
- *Information* about the general structure and
- *Outcomes* that may be affected in light of
- *Benefits and Costs* assigned to actions selected and outcomes

*These “A/M relationships” are regularized by institutions = sets of rules*

# Types of Rules

- Boundary rules affect *participants*
- Position rules affect *positions*
- Authority rules affect *actions*
- Scope rules affect *outcomes*
- Aggregation rules affect *transformations*
- Information rules affect *information*
- Payoff rules affect *benefits and costs*

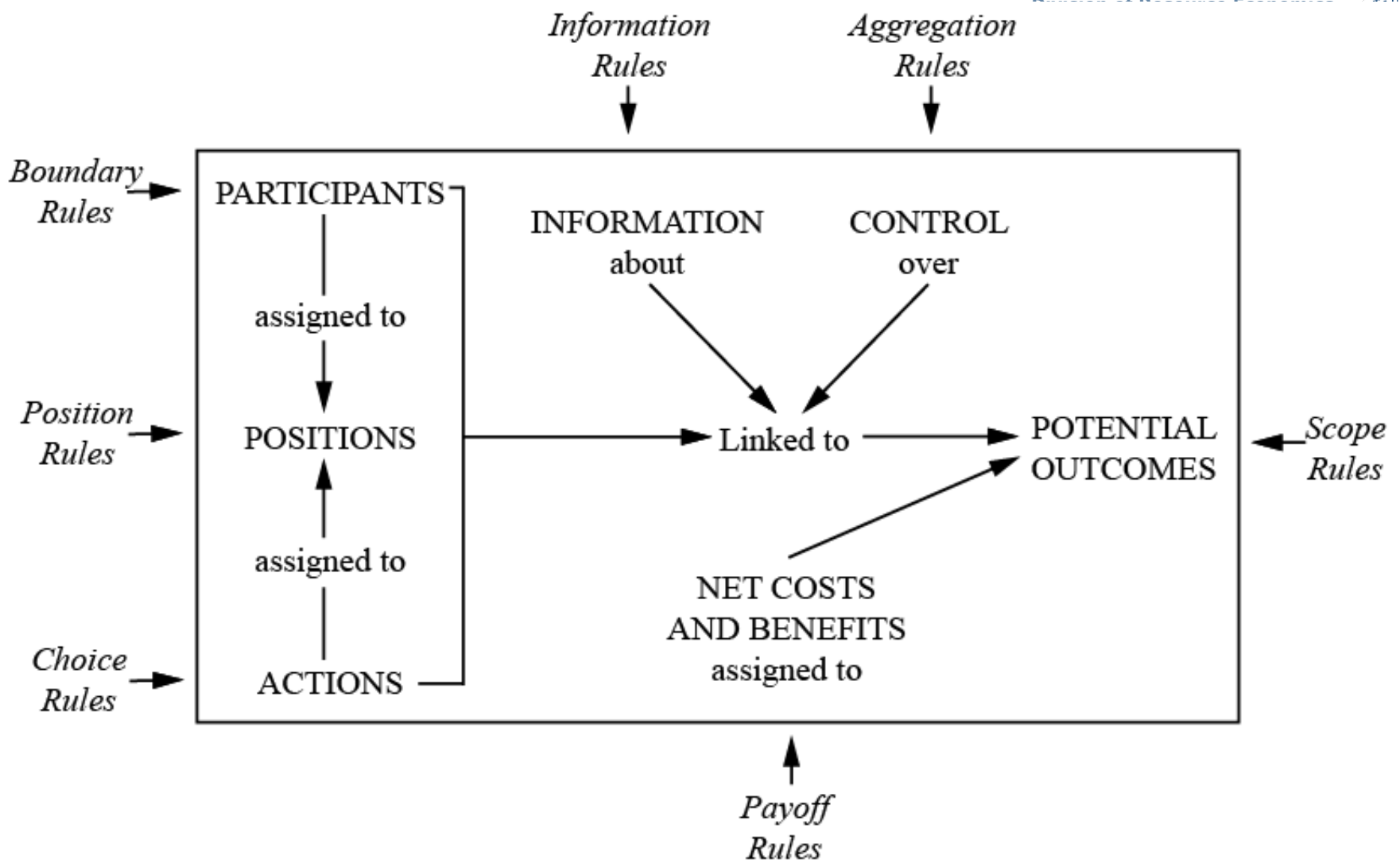


Figure 7.1 Rules as exogenous variables directly affecting the elements of an action situation.



# How Institutions Affect Situations

- Let's start with absence of institutions
  - The important thought experiment of a “state of nature”
  - What are the default conditions when there are no rules



# Table 7.2. Default Conditions

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..... <i>Default Position Condition</i>	One position exists.
<i>Default Entry Condition</i>	Anyone can hold this position.
<i>Default Choice Condition</i>	Each player can take any physically possible action
<i>Default Aggregation Condition</i>	Players act independently. Physical relationships present in the situation determine the aggregation of individual moves into outcomes.*
<i>Default Information Condition</i>	Each player can communicate any information via any channel available to the player.
<i>Default Payoff Condition</i>	Any player can retain any outcome that the player can physically obtain and defend.
<i>Default Scope Condition</i>	Each player can affect any state of world that is physically possible.

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\*If a rule configuration contains only a default authority condition, the default aggregation condition *must* be present.

# Why This is Important

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- Rarely ever change all of the rules at one time
- Some rules may remain at default conditions for a long time (because set-up costs, or second order social dilemma)
  - Need then to be included in analysis
  - May be interactive with rules that are chosen
  - That old problem of a configuration (Gestalt)
  - Let's look at a problem of shifting from default conditions

# Rules changed to create elementary property rights for agricultural commodities

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- Position Rules** There exist two positions: (1) an eligible exchange participant and (2) a judge.
- Entry Rules** (1) All farmer households are permitted to become exchange participants or else those refusing their entry may be punished. (2) The judge must be selected on the basis of merit and integrity by the households in the community or else the other rules will not be in effect.
- Choice Rules** (1) All exchange participants are permitted to offer to exchange goods they own for goods owned by others or else those forbidding the exchange may be punished. (2) If a household's goods are snatched, it can report to a judge or else those preventing the report may be punished. (3) If a judge finds that a household has snatched goods illegally, \* the judge must ensure that goods are returned and forfeit their own commodities or else the judge will be replaced.
- Aggregation Rules** All parties to an exchange must agree before a legal exchange can occur or else the exchange does not occur.
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\*Now we could use the term *stealing* instead of simply snatching.

# Snatch Game with Minimal Property Rights

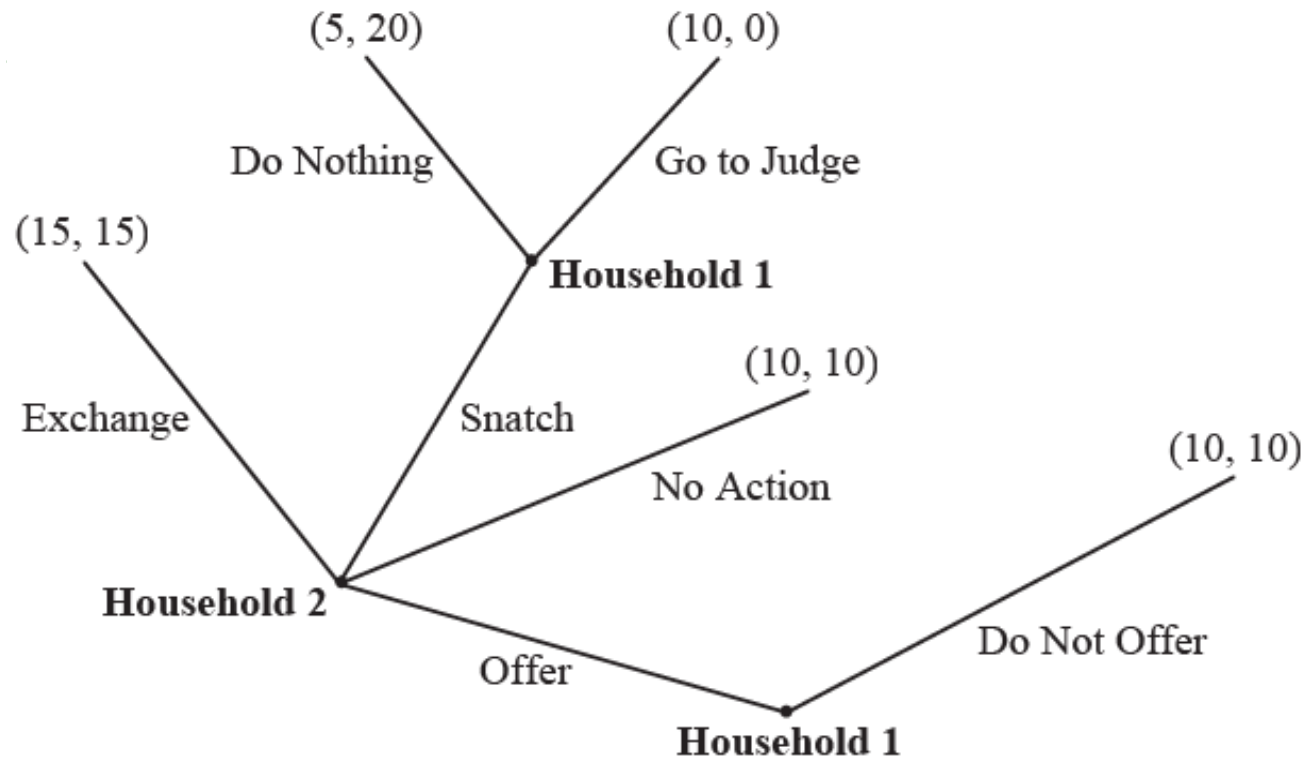


Figure 7.2 The snatch game with minimal property rights.





# Not the Final Settlement !!!

- What if HH2 offers the judge a bribe?
- What if there is a long time delay between action and access to court?
- What if the court is located far away?
- What if we are in a transition country where the legal system does not work properly?

# ..... What Do We Learn from This Simple Example?

- Importance of default conditions – physical world dominates the structure of a game when “in a state of nature”
- Rules operate together
  - Took **four changes** to transform the structure of the game to one where outcomes are likely to be efficient

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# **THANK YOU**

# **for your attention!**

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