

Resource Management: INSTITUTIONS AND INSTITUTIONAL DESIGN

SOS3508

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A grammar of institutions

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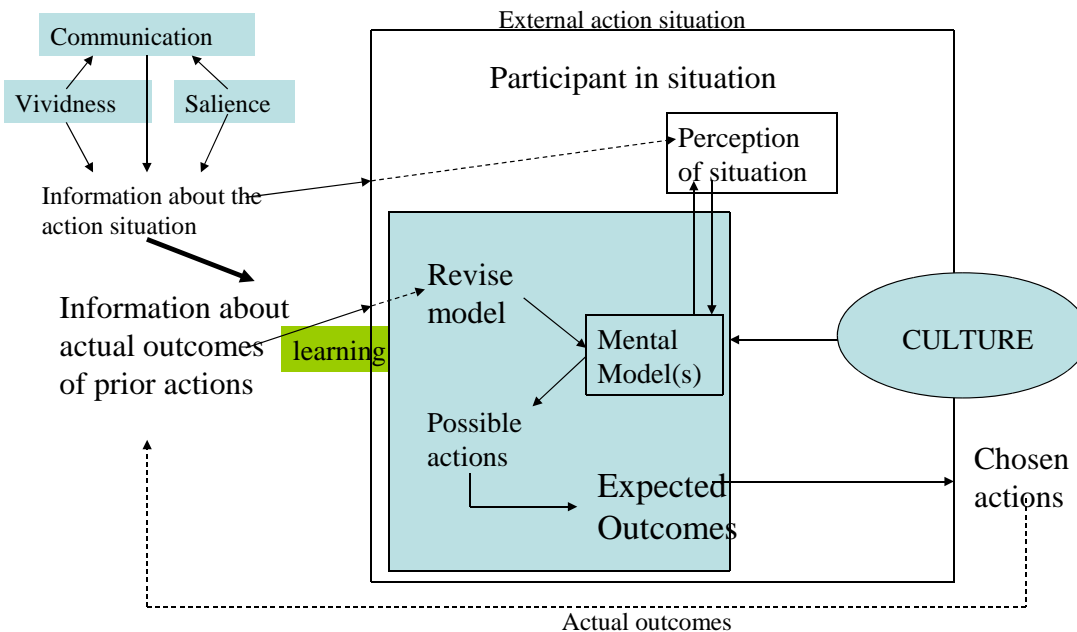
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Literature

Ostrom, Elinor 2005, *Understanding
Institutional Diversity*, Princeton
University Press, Princeton, Ch 5

– A grammar of institutions

Impact of communication, vividness and salience



Adapted from Figure 4.2 from Ostrom 2005:108

Institutional statements

- Shared strategies, norms, rules: what is the difference?
- Rules-in-force vs Rules-in-use
- Institutional statements as attributes of a community (norms, shared strategies)
- Institutional statements as rules
- Changing rules is often easier than changing the bio-physical world
- Two ways of expressing rules:
 - Generative rules: “Let there be an X” (creating positions)
 - Regulative rules: regulative rules will be the focus ...

The Syntax of a Grammar of Institutions

- ADICO
- A: attribute [default: all participants/ positions]
 - Any value of a participant level variable that distinguishes to whom the institutional statement applies
- D: deontic (déon= that which is binding or proper)
 - One of three modal verbs: may (or permitted), must (or obliged), must not (or forbidden)
- I: aim
 - Describes particular actions or outcomes of actions to which the AD is assigned
- C: conditions [default: everywhere and all the time]
 - Variables describing where and when the ADI applies
- O: or else
 - Consequences of not following the ADIC stipulations

Shared strategies, Norms, Rules

There are 5 elements of ADICO

- Shared strategies contains 3 elements:
AIC
- Norms contain 4 elements: ADIC
- Rules contain all 5 elements: ADICO

- All rules can be rewritten as [attributes]
[deontic] [aim] [conditions] [or else]

Attributes

- Defines how an institutional statement applies to all or to a subset of the participants/ positions in an action situation
- Default: if nothing is said all participants/ positions are included
- The attribute component maps the authority or prescription of an institutional statement to particular positions or to all positions
- This implies that there are other institutional statements assigning participants to positions
- There is always a default value of the attribute

Deontic logic

- D (= the set of deontic operators) = (P, O, F)
 - P (=permitted) [= tillate] (X can be done if the actor wants)
 - O (=obliged) [= påbode] (X has to be done by the actor)
 - F (=forbidden) [= forbode] (X cannot be done by the actor)
 - Actor is defined by the attribute

Deontic operators are logically interrelated (symbols are to be read: \cap = or, \cup = and, \emptyset = empty set) [\sim means negation]

- $D = P \cup O \cup F$
- $F \cap P = \emptyset$; $O \cap P = O$; and $F \cap O = \emptyset$
- If O then P
- Deontic operators relate to the physically possible (e.g. in actions, outcomes, communication channels, ...)
- Deontic operators are interdefinable

Permission rules affect actions situations

Permission rules affect opportunities and
constrains in action situations

- Permission rules usually establish conditions where permission exist
- Permission rules may sometimes constitute an action (create a social reality)
- If permission is defined as a right to act it implies that others have duties to recognize this right

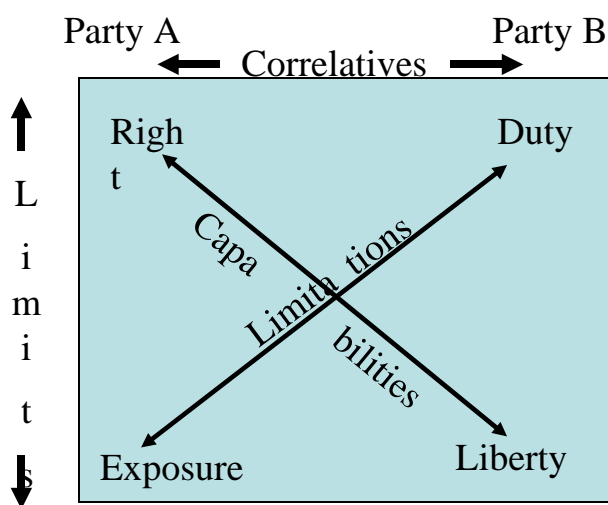
Rights and duties The “Hohfeld-Commons” conception

Defining the relation <small>(jural correlates)</small>		and it's limit <small>(jural opposite)</small>
OWNER	NON-OWNER	
claim-rights	duties	exposure
liberty	exposure	duties
powers/ authority	liability	disability/ no authority
immunity	disability/ no authority	liability

Ref.: Hohfeld, W. N. 1913. & .1917. *Yale Law Journal*

Commons, John R. 1932. *Legal Foundation of Capitalism.*

Authorised relationships: authority to act



- Rights depends on correlative duties.
- Rights have limits. Stepping over the limit the claimant is exposed.
- Duties have limits. Outside the limit the duty bearer has liberties.
- Liberties depend on correlative exposures.

Source: V.Ostrom and E.Ostrom 1999:46

Deontic: limits and correlatives

- Correlatives –means reciprocity in relations
 - If something is permitted for actor A it implies that some actor $\sim A$ has an obligation, or duty, to $\sim F$ (not forbid) this something for A
- Limits – of a right defines the area of decision making outside of which a claimant stands exposed. Non-claimants are at liberty to inspect and verify that the claimant is within the bounds of his or her rights. If that is verified they have the duty not to interfere with the exercise of the right. If the claimant is not within the bounds of his rights the non-claimant is at liberty to act on that information

Deontics in formal game analysis

- Institutional statements including deontics imply that payoffs are seen as different from situations where there just is a shared understanding of the situation
- This is captured by adding a **delta parameter** representing the rewards or costs of obeying (o) or breaking (b) a prescription:

Delta parameters added to payoffs I

$$\forall \Delta = \delta^o + \delta^b$$

$\forall \Delta$ = sum of all the delta parameters

$\forall \delta^o$ = the change in expected payoff from *obeying* a prescription

$\forall \delta^b$ = the change in expected payoff from *breaking* a prescription

Delta parameters added to payoffs II

- The changes in payoff can further usefully be divided into externally and internally generated payoffs, indexed by e and i (ref.: Coleman 1987)
- $\delta^o = \delta^{oe} + \delta^{oi}$
- $\delta^b = \delta^{be} + \delta^{bi}$
 - Internal forces affecting the size of the delta
 - If breaking the norm: shame, guilt;
 - If obeying the norm: pride, warm glow
 - External forces affecting the size of the delta
 - If breaking the norm : fine, exclusion, ostracism, physical punishment;
 - If obeying the norm : pride, warm glow

AIM, CONDITIONS, OR ELSE

- The aim part of an institutional statement specifies the actions or outcomes to which the action is directed (process, formula, state of the world, outcome). It must be physically possible, more than one outcome must be possible and both action and inaction must be allowed.
- Conditions defines when and where the institutional statement applies. **Default** is everywhere and all the time.
- **OR ELSE** specifies what happens in case of non-compliance

Rules defined by “or else”

1. **Requires a sanction** that is decided in a collective choice situation, often sanctions are graduated depending on some conditions
2. Must be backed by another rule or norm that changes the DEONTIC assigned to some AIM for at least one actor if individuals fail to follow the rule: This is the **sanctioning prescription**
3. This SP requires a norm or rule that affects the constraints and opportunities facing an actor or actors to take the responsibility to monitor the conformance of others to the prescription: the **monitoring prescription**

Using the grammar in game-theoretic analysis I

- In game theory the games without norms or rules uses a concept of strategy conforming to AIC
- To analyse games with norms or rules delta parameters need to be included
- Including players doing enforcing requires a delta parameter assigned to the action “not sanctioning”
- Using enforcement players also requires a monitoring rule and a monitoring player

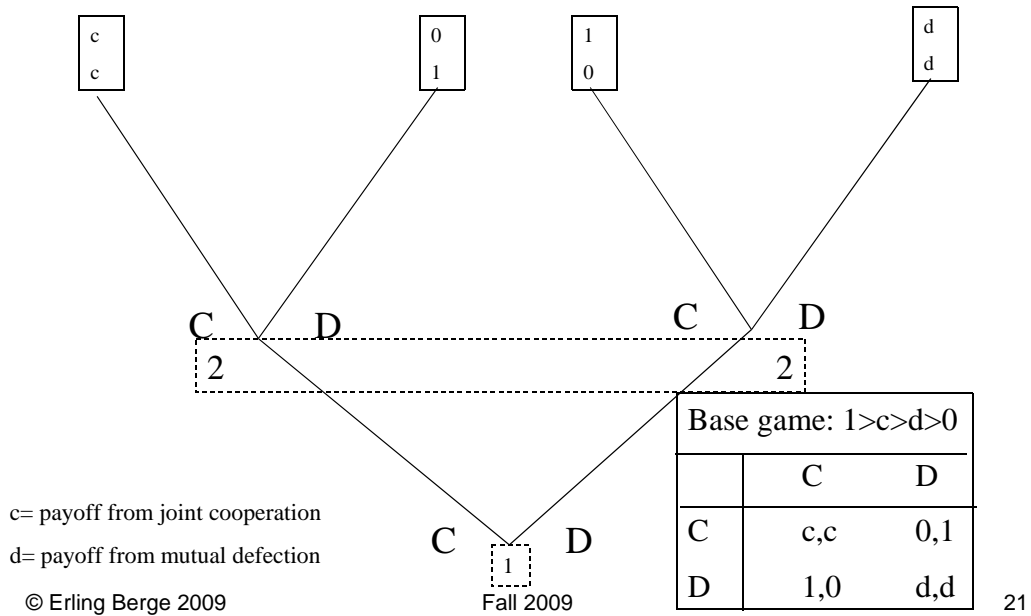
Using the grammar in game-theoretic analysis II

- Costly sanctioning/ monitoring may require that
 - Monitors/ sanctioners face the possibility of being subject to sanctions
 - There is a large and salient pressure to monitor/ sanction (large external deltas)
 - Monitors/ sanctioners hold strong moral commitment (large internal deltas)
 - Payments to monitors/ sanctioners create prudent awards high enough to offset costs
- When an “or else” clause is backed by norms, the monitoring and enforcement rests solely on normative delta parameters and payment schemes for monitors and sanctioners

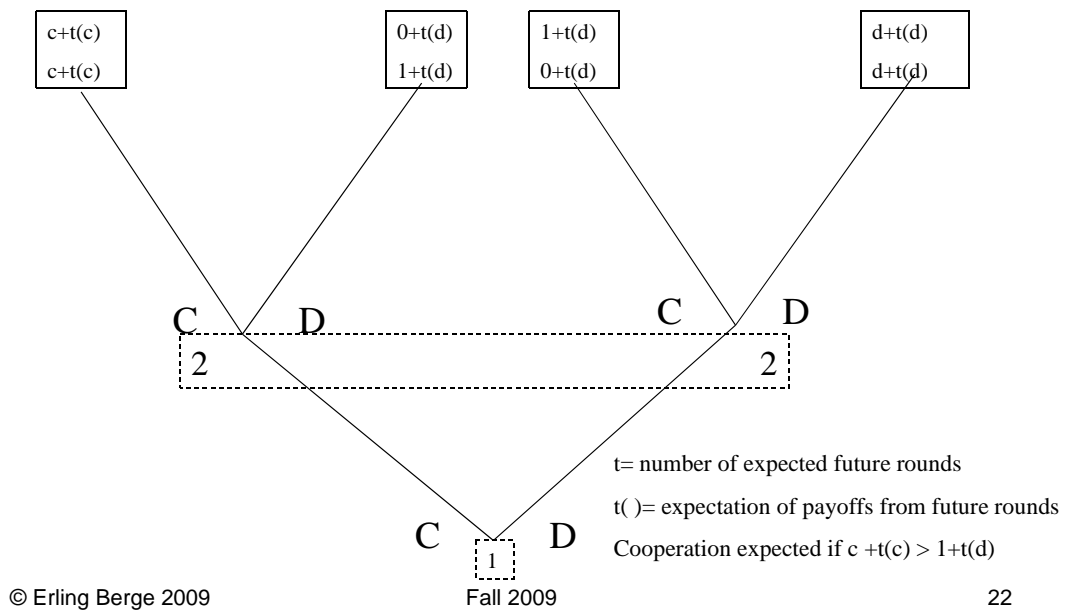
Collective action problems

- Two person prisoner dilemma
Statements about rules are on the form [A][D][I][C][O]
 1. Base game: No institutional statements
 2. Shared strategies game: AIC Statements:
 - a. [All players] [] [Cooperate] [first round] []
 - b. [All players] [] [Cooperate] [if all C in previous round] []
 - c. [All players] [] [Defect] [all rounds after a D] []
 3. Norms game: ADIC statement:
 - a. [P1 and P2] [must] [Cooperate] [always] []
 4. Rules game: ADICO statements:
 - a. [P1 and P2] [must] [Cooperate] [always] [f(= fine)]
 - b. ADIC statements:
 1. [P3] [must] [monitor] [always] []
 2. [P4] [must] [impose f on defector] [when P3 reports a D] []

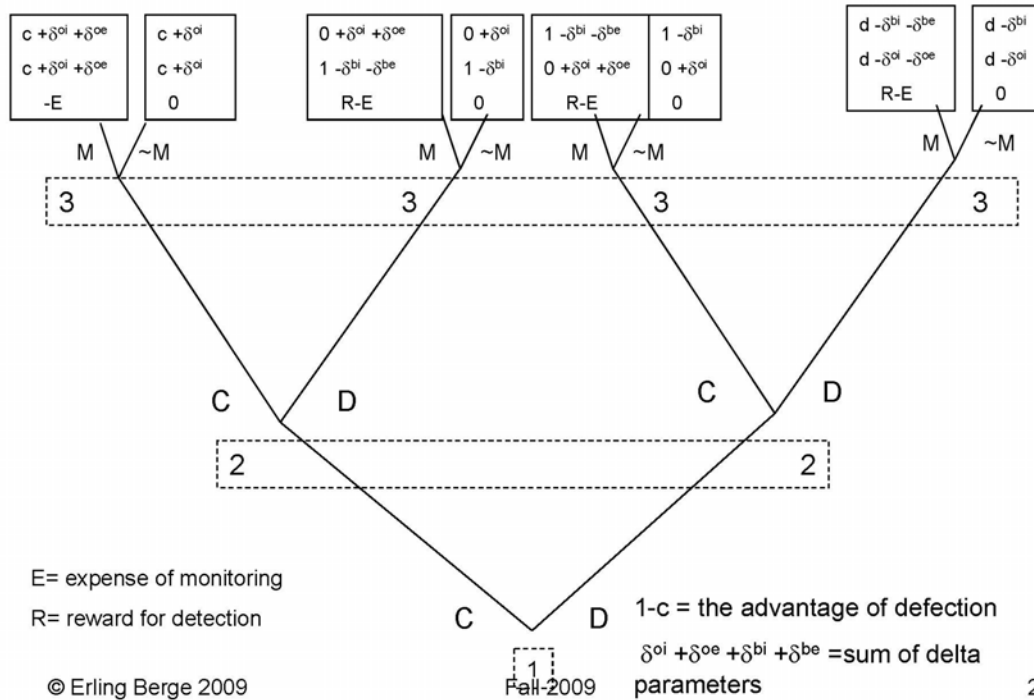
Base game payoff



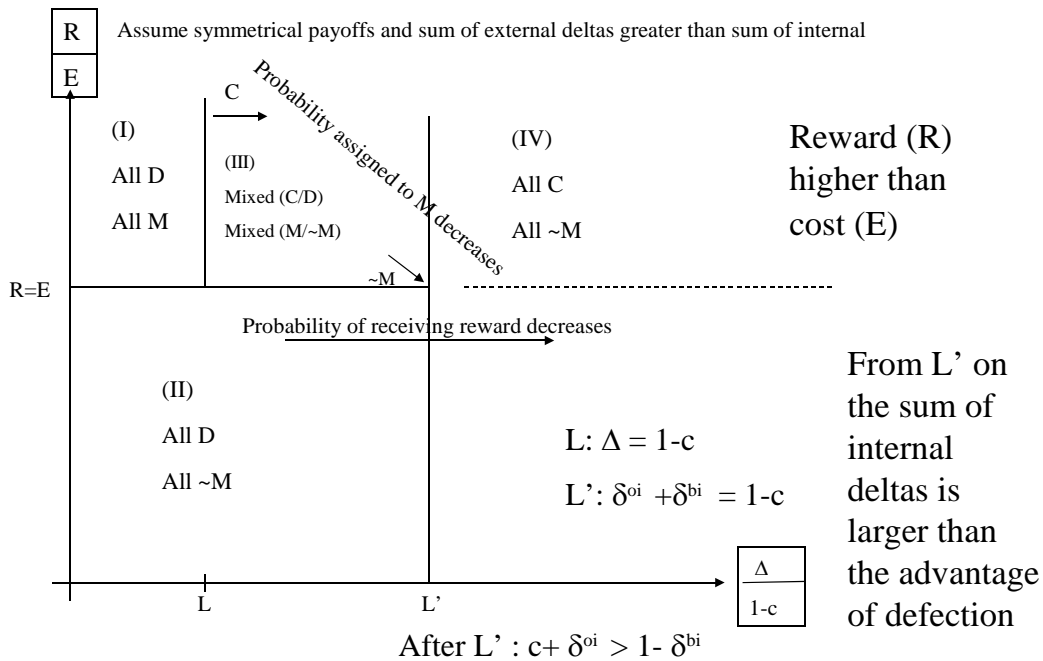
Shared strategies payoff



Game with a norm and monitoring



Equilibrium diagram in game with norm and monitoring

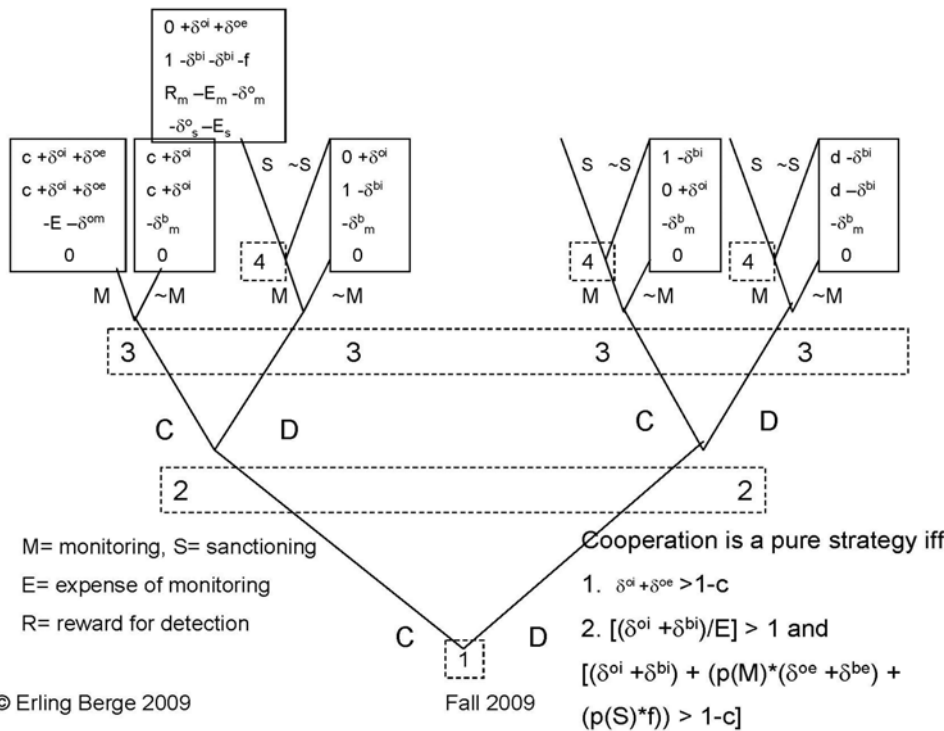


Rules changing a PD base game

Predictions of cooperation must be based on

- Changes in payoffs due to at least one delta parameter
- Addition of institutionally assigned consequences for breaking a rule: e.g.
 - Rule: [Players 1&2] [must] [cooperate] [always] [OR ELSE f]
- The possibility of detection
- At least one player has the authority to monitor: e.g.
 - Norm: [Players 3] [must] [monitor] [always] []
- At least one player has authority to impose the [OR ELSE f]: e.g.
 - Norm: [Players 4] [must] [impose f on a player] [when player 3 reports that player has defected] []
- The base game payoffs

Game with a rule; monitoring and sanctioning norms



Using the grammar I

- Disentangling formal laws and informal institutions
 - Is there a shared understanding?
 - If there is an “OR ELSE” clause, what about monitoring and sanctioning?
- Legitimacy and compliance (legitimacy linked to internal δ)
 - How are internal deltas and “OR ELSE” related?
 - Are there limits to formal rules?

Using the grammar II

- Basic normative assumptions
 - Sign, size and interpretation of deltas
 - Warm glow, honour, duty, social sanctions, moral duty, reputation, ---
 - Types of players reflected in deltas
 - Zealot, egoist, elite or mass participant,
 - Creation and maintenance of deltas
 - Are Δ resources that deteriorate or increase by use?

Using the grammar III

- Freedom and constraint
- Institutional configurations
 - Rules are nested
- Field studies:
 - Listen for normative discourse
 - From what is “best” to what is “proper”
 - The “know and use” condition for formal/
written prescriptions
 - Precision of institutional statements and scale
of problem

Next steps

- Delta parameters arise from commitments to the norms and rules of a community
- They do not incorporate concern for the welfare of other community members
- How can this be incorporated?
-
- How does this way of analysing institutions relate to a theory of knowledge and a theory of action?