Introduction to theories of institutions

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Defining institutions

- North(1990,3): "Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction." … "Institutional change shapes the way societies evolve through time and hence is the key to understanding historical change."
- Ostrom(2005,3): "Institutions are the **prescriptions** that humans **use to organise** all forms of repetitive and structured **interactions**, including those within families, neighbourhoods, markets, firms, sports leagues, churches, private associations, and governments at all scales" (my emphasis)
  - Great diversity of institutions
  - Great diversity of scientific approaches
  - IAD (institutional analysis and development) framework

Another way of defining institution: Institutions confer ***a feeling of security***

- An institution comprise all that makes you feel that what you do is the right thing to do and you have every right to do it. What you do is **legitimate**. If anyone prevents you from doing it you feel wronged. Preventing you from doing it is illegitimate.
- The sources of this feeling are many.

Sources of legitimacy

…but basically they come from

- Other peoples opinions
- Informal rules of behaviour (conventions)
- Formally defined rules of behaviour
- Specific interpretations of rules as laid out by courts or bureaucracies
- This is quite similar to **the logic of appropriateness** (March and Olsen 1984)

March, James G., and Johan P. Olsen. 1984. The New Institutionalism: Organizational Factors in Political Life. *The American Political Science Review* 78 (3):734-749.

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Institutions are different from Organisations

- Organisations are groups of people bound by some common purpose to achieve objectives

Example:

- The game of football: there are rules, judges and players
  - Institutions (rules+judge) – organisations (teams)
  - Football require monitoring and sanctioning of deviant behaviour
- Institutions may or may not have specialized roles for monitoring and sanctioning

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If institutions are the rules of the game, organisations are the players of the game.

Organisations comprise:

- Political bodies (political parties, the parliament, a municipal council, a regulatory agency)
- Governance bodies (administrative offices of ministries, county and municipal administrations, directorates, courts, police, public supervisory bodies)
- Economic bodies (firms, trade unions, family farms, cooperatives)
- Social bodies (churches, clubs, athletic associations)
- Educational bodies (schools, universities, vocational training centres)

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Kinds of organisations

- The kinds of organisations that are created, and how they evolve, are fundamentally affected by the institutional framework.
- Over time their collective activities shape the development of the institutions.
- Therefore the interaction of organisations and institutions are important for the study of institutions.

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The costs of exchange

- Institutions affect the costs of exchange and production, and hence the performance of an economy. Institutions and technology determine significant fractions of both **transaction and transformation costs.**
- Therefore designing institutions that minimize transaction costs is important for economic performance

Institutions evolve by incremental changes in rule configurations

From informal to formal

- Conventions
- Codes of conduct
- Norms of behaviour
- Contracts
- Common law
- Statute law

Institutional change I

- Institutions provide stability, but are nonetheless constantly changing.
- Conventions, Codes of conduct, Norms of behaviour, Contracts, Common law, Statute law are all evolving – sometimes slow and glacial, sometimes (almost) revolutionary. **Changes at the margin** may be a consequence of change in formal rules, informal constraints, as well as the kind and effectiveness of enforcement.
- Frequently the consequences of changes are not anticipated

Institutional change II

- Formal rules may change overnight, but informal constraints evolve slowly with the culture, rather impervious to formal polities.
- These culturally defined constraints are the key to **path dependence** of historical change.
- Path dependent trajectories of development.
- How does the past affect the future?
- How does incremental change in institutions affect the choice set at any moment in time?

Footnote on changes in North's view

- 1973 North and Thomas (The Rise of the Western World): institutions determine economic performance and changes in relative prices create incentives for institutional change. **Efficiency is the key determinant**.
- 1981 North (Structure and Change in Economic History) **Efficiency is abandoned.** In history **rulers have devised property rights in their own interest.** Transaction costs resulted in typically inefficient property rights prevailing. But why do not rulers of inefficient economies emulate more efficient economies?

Path dependence

- A mechanism explaining **path dependence** is described in North 1990. The mechanism depends on the difference between institutions and organisations and the interaction between them shaping the direction of institutional change.
- North(1990:7) "The resultant path of institutional change is shaped by (1) the **lock-in** that comes from the symbiotic relationship between institutions and organisations that have evolved as consequence of the incentive structure provided by those institutions. And (2) the feedback process by which human beings perceive and react to changes in the opportunity set." (my emphasis)

Institutions determine the opportunities of a society.

- Organisations are created to take advantage of those opportunities.
- As organisations evolve they change the institutions. The path of change is determined by
  - A lock-in between institutions and the populations of organisations evolved to exploit the institutions
  - Feedback processes from perception of and reaction to changes in the opportunity set.
- "The increasing returns characteristics of an institutional matrix that produces lock-in come from the dependence of the resultant organisations on that institutional framework and the consequent network externalities that arise." North(1990:7)

Footnote on **network externality**

- A network effect (also called network externality or demand-side economies of scale) is the effect that one user of a good or service has on the value of that product to other people. When a network effect is present, the value of a product or service is dependent on the number of others using it. The classic example is the telephone. The more people own telephones, the more valuable the telephone is to each owner.

Perceptions and beliefs

- The mutual dependence of organisations and institutions produces an institutional matrix or organisational network with increasing returns to scale and network externalities Profitability of some or most organisations will depend on particular characteristics of the institutional matrix.
- **If entrepreneurs in business or politics perceive that they could do better with different institutional rules**, they will devote time and resources to alter the institutional framework and thus contribute incrementally to institutional change.

Information and interpretation

- The process of perception is crucial. Actors have incomplete information and interpret it by means of mental constructs that may deviate more or less from how the true world works. The result often is **persistently inefficient paths**.
- **Transaction costs** in political and economic markets make for **inefficient** property rights. The imperfect subjective models used by players in attempt to understand the problems they confront can lead to persistence of inefficiency.

Economic Performance

- How is it possible to explain or understand the various developmental trajectories of e.g. North American and Latin American countries?
- Why is there no convergence of economic systems in comparisons of developing and developed countries?

Case 1: USA in the 19th century

- The constitution and the North West Ordinance
- Norms of behaviour rewarding hard work
- Political organisations (congress, local bodies, family farms, merchant houses, shipping firms)
- Economic growth led to demand for education, which led to public education.
- Changes in the organisational population and characteristics of organisations led to changes in institutions both formal and informal (e.g. changing attitudes to slavery, the role of women, and temperance)
- Not all changes were in the direction of more efficient institutions. Changes usually will open opportunities both for productive activities and for activities reducing productivity.

- On balance: ***the institutional framework persistently rewarded productive activities***.

Case 2: Some developing country today or most states in known history

- Economic opportunities are also here a mixed bag, but on balance they favour activities that
  - o Promote redistribution rather than production
  - o Create monopolies rather than competitive conditions
  - o Restrict opportunities rather than expand them
  - o Rarely induce investment in education
- ***Organisations will become more efficient, but at redistribution rather than production***
- These organisations will induce institutional changes making the economy even less efficient

Concluding: what is an institution

An institution comprises:

- A suitably defined field of reality
- A set of rules about actions (proscribed, prohibited or permitted) in the field
- A group of actors trying to improve on their welfare by acting within the field of reality and the bounds outlined by the rules
- A group of people committed to monitor the rules and sanction those breaking the rules

Further readings

- Soto, Hernando de. 2000. *The Mystery of Capital. Why Capitalism Triumphs in the West and Fails Everywhere Else*. New York: Basic Books.
- The book was very widely read during the years after it was published and resulted in the creation of a Un "**High Level Commission on Legal Empowerment of the Poor**"
- For a short survey:
  - http://en.wikipedia.org/wiki/Commission_on_Legal_Empowerment_of_the_Poor
- Some of the reports produced are found here:
  - http://www.undp.org/content/undp/en/home/librarypage/democratic-governance/Lep.html

Footnote: on reading de Soto

- North 1990 can be used as a theoretical foundation for understanding the empirical facts presented in De Soto's study of "Why Capitalism Triumphs in the West and Fails Everywhere Else"
- **North** 1990 p 67 refers to de Soto 1989 "The Other Path" on transaction costs in third world countries and how the lack of enforcement leads to a third sector outside the law with mostly self-enforcing transactions.
- **Eggertsson**, Thráinn 1990 "Economic Behaviour and Institutions", Cambridge, Cambridge University Press, p273-275 refers to the same study in addition to Litan, Robert E. and Schuck, Peter H. 1986 "Regulatory Reform in the Third World: The Case of Peru", Yale Journal of Regulation 4(No.1, fall)

A way of thinking about institutions of land tenure and land administration

- North 1990 provides a background for
- Ostrom, Elinor. 2005. *Understanding Institutional Diversity*. Princeton: Princeton University Press.
- Ch 1-4
  - Understanding the Diversity of Structured Human Interactions
  - Zooming in and Linking Action Situations
  - Studying Action Situations in the Lab
  - Animating Institutional Analysis

Goal of the book

- Develop a useful **universal framework** (IAD) composed of nested sets of components within components **for explaining human behaviour**
- Foot note: Frameworks provide a meta-theoretical language necessary to talk about and compare theories
- Using ideas from *game theory and complex adaptive systems theory*
- *Complex systems* have to be studied by agent based modelling
- The usefulness of a universal model of rational behaviour will be challenged (see chapter 4): humans are fallible learners
- Focus on how *rules* affect the structure of action situations

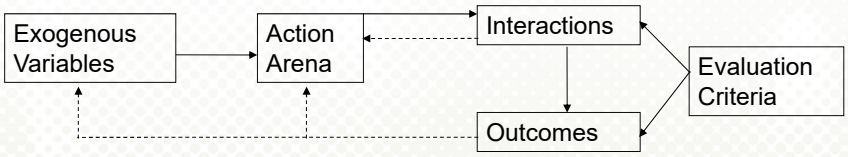
A framework to replace "Tower of Babel" ?

- "If every social science discipline or sub-discipline uses different language for key terms and focuses on different levels of explanation as the "proper" way of understanding behaviour and outcomes, one can understand why discourse may resemble a Tower of Babel rather than a cumulative body of knowledge." (Ostrom 2005, 11)

Complex Adaptive Systems: Holons

- The term "holon" may be applied to any stable sub-whole in an organism or social hierarchy, which **displays rule-governed behaviour** and/ or structural **Gestalt constancy**
  - Environment
  - System
  - Sub-system
- In repeated layers: multilevel complex systems

Holon: The action arena

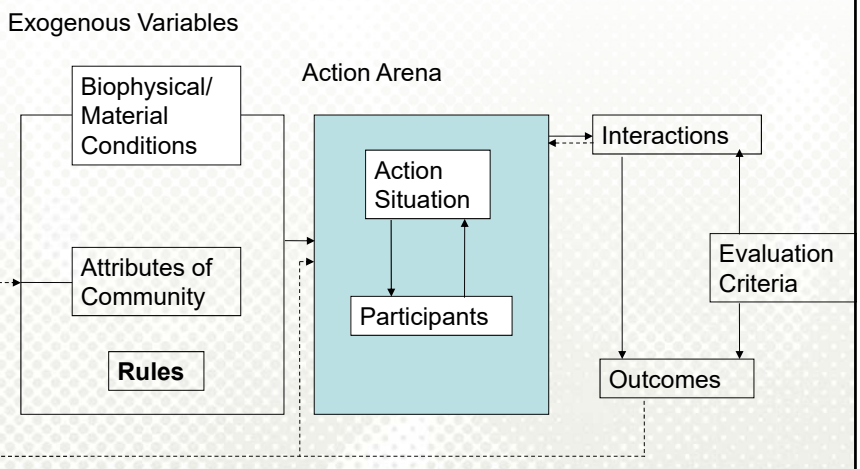


The **action arena** will be the focal unit for our theory

Examples of evaluation criteria:

- **Positive utility of outcome**
- **Outcome seen as unfair or inappropriate**
- **Other feasible procedures will give more utility**
- **Procedures used seen as unfair**

The environment of action situations



The action arena

The action situation:

- Positions
- Potential outcomes
- Available actions and action-outcomes linkages
- Control over outcomes
- Information generated in the situation
- Cost-benefit attached to actions and outcomes

The participant (individual or corporate unit)

- Preferences
- Status/ command of resources
- Individual attributes
- Age, sex, education, culture, etc
- # participants in the situation

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Rules: what are they?

- Rule is not a very specific concept
- Rules, written or unwritten, may be used about
  1. Regulations (prescriptions, prohibitions, permissions)
  2. Instructions/ recipes/ strategies
  3. Precepts/ advice for moral behaviour (norms)
  4. Principles/ laws of nature
- Regulations provide the participants with a shared understanding of what actions/ outcomes are prescribed/ prohibited or permitted
- In some ways rules have an analogous role to that of genes: combining to create a structure for the action situation
- Why is that important? Why do we have rules?

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Rules defined

- **Rules** are the result of explicit or implicit efforts to ***create order and predictability*** among humans by creating
- **positions** who are required, permitted or forbidden to take classes of
- **actions** in relation to outcomes that are ***required, permitted or forbidden***, or face the likelihood of being
- **monitored and sanctioned** in a predictable fashion

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More on rules

- Origin of rules
  - Self-organised groups
  - Externally imposed rules
  - Evolution (from problem solving to designed rules)
- Working rules
  - Working rules explain and justify actions
- Predictability of rules formulated in words
  - Depends on *shared meanings* since **rules are not self-formulating, self-determining, or self-enforcing** (cpr the concept "habitus")
  - System of enforcement
  - System of creation
- Rules can be classified by their impact on the working parts of an action situation

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Biophysical and material conditions

- Attributes of goods and services produced, distributed or consumed
- Excludability from enjoyment of outcomes
  - Free riders
- Divisibility of outcomes (subtractability/ competition)
  - Justice in distributions of benefits and provisions
  - Transferability of utility

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Classification of goods (or bads), entities that people want to obtain (or avoid)

- **Subtractability**
  - Intrinsic
  - Technology dependent
  - Depleteable or reproducible
- **Excludability**
  - Intrinsic
  - Technology
- Political choice

		Subtractability	
		Low	**High**
Excludability	**Low**	**Public**	**Common Pool Resource**
	High	**Club/ Toll**	**Private**

Adapted from:
Ostrom, Vincent, and Elinor Ostrom. 1977. Public Goods and Public Choices. In *Alternatives for Delivering Public Services: Toward Improved Performance*, edited by E. S. Savas, 7-49. Boulder, CO.: Westview Press.

Community and culture

- COMMUNITY
  - Size and composition of population
  - Values in the local culture
  - Common knowledge and understanding of various action situations
  - Degree of homogeneity of preferences
- CULTURE
  - Affects costs of interaction
  - Reputation, trust, etc
- LANGUAGE

Action situations

- Two or more individuals facing a set of actions that jointly produce outcomes can be analysed by studying

- Participants
- Positions
- Available actions and action-outcomes linkages
- Potential outcomes
- Control over outcomes
- Information generated in the situation
- Cost-benefit attached to actions and outcomes

- They can be evaluated empirically by observation of interactions and outcomes (use of implicit models)
- They can be evaluated theoretically by predicting interactions and outcomes (use of theory)

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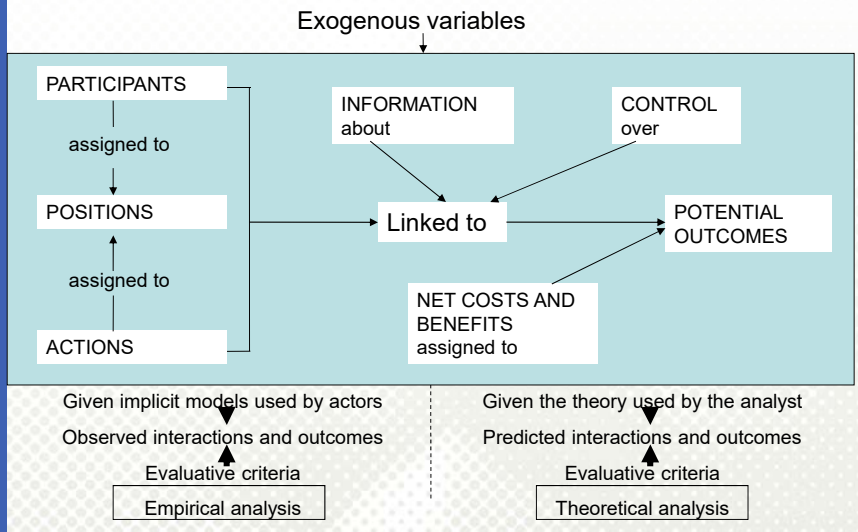
The internal structure of action situations



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An elementary social dilemma: The "snatch" game

- "state-of-nature" = no rules apply, no common understanding or norms
- Household 1 (HH1) produce 10 bags of potatoes
- Household 2 (HH2) produce 10 chickens
- Both HH1 and HH2 prefer to eat chicken and potatoes
- In the "**state-of-nature**" they have a social dilemma:
  - That is a situation where the private return to an optimal strategy based on the assumption that all follow their optimal strategy without regard to what others do is greater than a share from the joint product of a cooperative strategy

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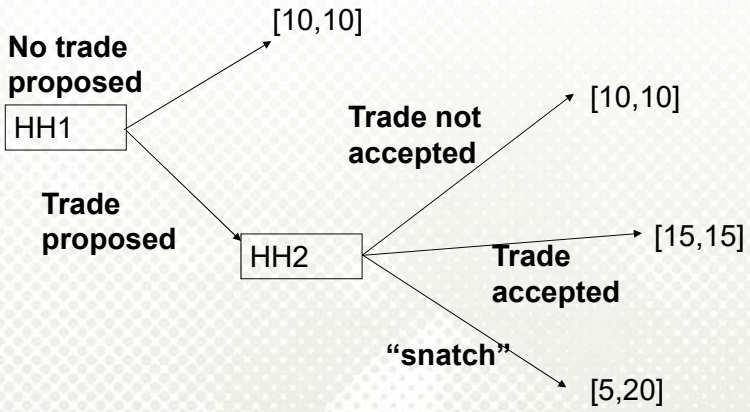
The "snatch" game: illustration of action situation



The working parts I

- **Participants**
  - Numbers matter, individuals or teams
    - A team require collective action, members intend a joint product or have a common purpose
  - Groups, aggregates of individuals or teams
    - If there is variable strength of interest we may get frequency dependent behaviour
  - Attributes: sex, age, education, ...
- **Positions authorise actions**
  - Roles, participants may have more than one
  - Roles allows, prescribes of prohibit actions
  - Participants may or may not choose entry or exit from positions

The working parts II

- **Potential outcomes**
  - Status quo outcome
  - Biophysical outcomes, external payoffs, internal valuations may have to be assessed separately
  - The opportunity of a situation: range of value in outcomes
- Available actions and action-outcomes linkages
  - *Actions*: actors choose one from the set of possible actions. The choice of no action is an option
  - *Action-outcome* linkages: action(s) will "produce" the outcome to some degree (transformation function), control variables
  - Certainty, link is known
  - Risk, probability distribution of outcomes are known
  - Uncertainty, the relation between action and outcome is indeterminate (interdependent actions, number of possible outcomes too large)
  - Uncertainty, risk and certainty are structural characteristics of the situation (not dependent on information)

The working parts III

- Control over outcomes
  - Power = control * opportunity
- Information generated in the situation
  - Complete
    - Perfect: all actions known to all participants
    - Imperfect: the complete situation but not the decisions of other participants
- Incomplete "Who knows what at what juncture"
  - Opportunistic behaviour: deceitful behaviour to improve ones own outcome to the detriment of others
  - Asymmetric information problems
    - Principal — agent problems when the boss do not know completely what his agent does
    - Moral hazard — whenever risk is to be shared based on asymmetric information

Principal-agent problem

- The principal-agent problem or agency dilemma arise under conditions of incomplete and asymmetric information when a principal hires an agent,
- The two may not have the same interests. While the principal is, presumably, hiring the agent to pursue the interests of the former, the agent may shirk some duties to pursue his/her own interests

What is moral hazard?

- Moral hazard is a special case of information asymmetry, a situation in which one party in a transaction has more information than another.
- The party that is insulated from risk generally has more information about its actions and intentions than the party paying for the negative consequences of the risk.
- More broadly, moral hazard occurs when the party with more information about its actions or intentions has a tendency or incentive to behave inappropriately from the perspective of the party with less information.

The working parts IV

- Cost-benefit attached to actions and outcomes
  - Material costs from choosing particular actions
  - **Internal valuations** of particular actions
  - Material rewards from particular outcomes
  - **Internal valuations** of particular outcomes
  - Material or **internal valuations** of the action path chosen
  - **Internal valuations**: shame, regret, joy, guilt
  - Decisions based on net value (utility)
- Number of repetitions of action situation
  - One time, finite number of times, indefinite repetition
  - Tit-for-tat in symmetric social dilemmas
  - Heuristics for asymmetric social dilemmas

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Linking Action Arenas

- Sequential linkages of arenas
  - Facilitates building of reputation for reciprocity
- Simultaneous arenas
- Organisational links, (appears as trees or lattices) long complex chains where output from one arena is input to another
- Competitive links
  - Adaptations to other participants
  - Market interactions (rule governed competition)
- Levels of action arenas: rules at deeper levels are part of the structure of action arenas at a given level
  - Operational — interpreting rules
  - Collective-choice — making rules
  - Constitutional choice — making rules about rules making
  - Meta constitutional choice — procedures for making rules about rule-making

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Levels of analysis

Environmental characteristics that directly affects the situation

For level 1-3:

- RULES IN USE
- BIOPHYSICAL WORLD
- COMMUNITY

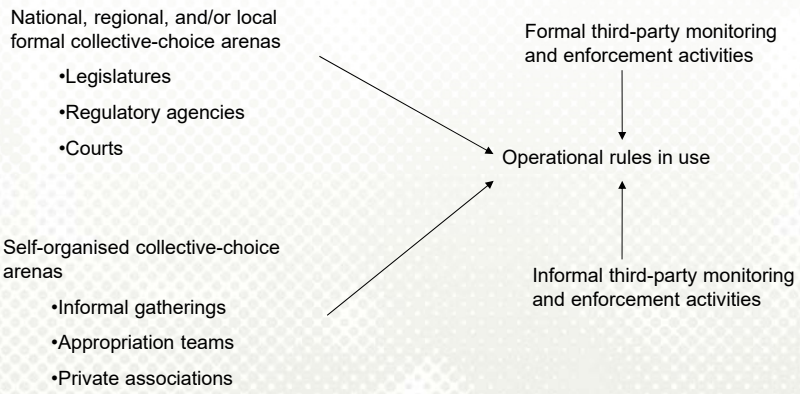
For level 4:

- BIOPHYSICAL WORLD
- COMMUNITY

Individual actions taken that directly affects state variables in the world or the situation:

1. OPERATIONAL SITUATION
   - Provision, production, distribution, appropriation, assignment, consumption
2. COLLECTIVE CHOICE SITUATION
   - Prescribing, invoking, monitoring, applying, enforcing
3. CONSTITUTIONAL CHOICE SITUATION
   - Prescribing, invoking, monitoring, applying, enforcing
4. METACONSTITUTIONAL CHOICE SITUATION (no rules in use)
   - Prescribing, invoking, monitoring, applying, enforcing

Formal and informal collective-choice arenas



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Level shifting strategies

- Contemplating changes in the rules defining permitted, prohibited and proscribed actions in operational situations
- The cost (including transaction costs) of actually changing the rules varies dramatically from arena to arena
  - Costly formal requirements may lead to informal de facto changes at the operational level

Predicting and evaluating outcomes

- Predicting
  - Only very simple situations allow strong predictions
  - Interdependent decisions, linked arenas, communication, learning, changes in strategy: all make it difficult to predict
- Evaluating
  - Economic efficiency, benefits from reallocation of resources
  - Equity, matching ability and requirements, equality of outcomes
  - Adaptability, resilience (from ecosystem), and robustness (from engineering)
  - Accountability
  - Conformance to general morality
  - Needs for trade-offs

Summarizing on collective action

- "The snatch game" illustrates the simplest possible decision situation of the social dilemma type
- A social dilemma obtains whenever the private return to each participant is greater than the individual share of a joint activity no matter what other participants do
- The dilemma resides in the fact that there are feasible alternatives providing larger returns for everybody than the outcome from the individually rational choice described above

The structure of a social dilemma

- Definition
- T>H
- H>L
- L>S

- T= temptation
- S= succer

Social dilemmas	Cooperate	Defect
Cooperate	H ; H	S ; T
Defect	T ; S	L ; L

Experimental studies of action situations with social dilemmas

- Only very simple situations allow strong predictions
- Experiments using social dilemma games (trust games, tragedy of the commons games) to illustrate action situations are used to simplify
  - Showing that small changes in the action situation can produce big differences in outcomes
  - Illustrate how experimental results challenge the presumption that all use the same internal rationality to make decisions
- Results may lead to better rules for institutional design

Additional readings

- Instead of reading again the same book, read another one with a similar content. Sometimes one needs to read a the precursor to get a perspective on the later work:
  - To understand North 2005 read North 1990
  - To understand Ostrom 2005 read Ostrom 1990

Experimental studies of action situations

- Using social dilemma games to illustrate action situations
  - Showing that small changes in the action situation can produce big differences in outcomes
  - Illustrate how experimental results challenge the presumption that all use the same internal rationality to make decisions
  - Will use the trust game (similar to the snatch game) and
  - The commons dilemma game

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The trust game: the baseline

- Participants: two subjects
- Positions: investor and trustee
- Actions:
  - Investor has X. Can choose between
    - Keeping X
    - Giving t to the trustee and keeping X-t
    - Give all X to the trustee (t=X)
  - Trustee can subsequently choose how much to return to investor (Y)
- Outcomes: size of funds resulting from actions
- Action-outcome linkages: rate of return on investment = (1+r)
- Information: all possibilities are known, assurance of anonymity both to players and experimenter
- Potential payoffs (possibilities) [(X-t)+Y] and [(1+r)t-Y]; t>0; Often r=2

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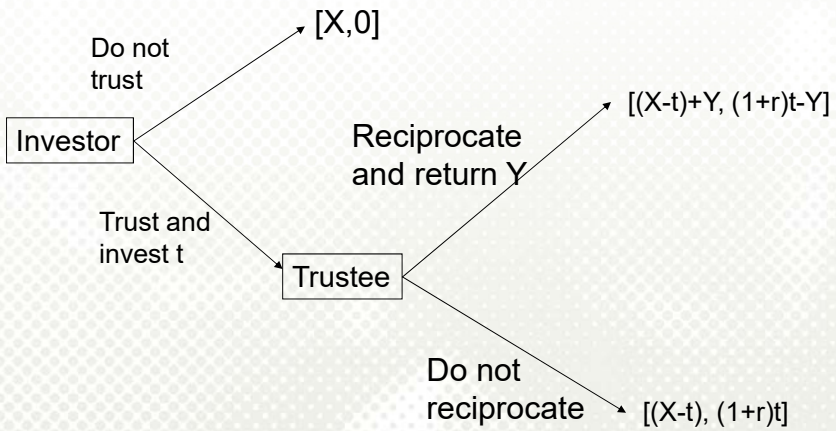
The trust game: illustration of decisions and outcomes



The trust game: Malawi 2007

- Participants: 30 subjects (15 pairs) in 18 villages
- Positions: investor and trustee
- Actions:
  - Trustee has 80. Investor has 80. Investor can choose between
    - Keeping 80
    - Giving t to the trustee and keeping 80-t
    - Give all 80 to the trustee (t=80)
  - Trustee can subsequently choose how much to return to investor (Y)
- Outcomes: size of funds resulting from actions
- Action-outcome linkages: rate of return on investment = 3
- Information: all possibilities are known, assurance of anonymity both to players and experimenter
- Potential payoffs (possibilities) [(80-t)+Y] and [3*t-Y]; t>0

The trust game: variations

- Positions changing to worker-employer
- Participants from different cultures
- Number of repeated plays: building reputation?
- Information:
  - Investor stipulates minimum returns
  - Investor may apply or refrain from applying costly punishment tied to minimum returns. Applying punishment was found to reduce reciprocity.
  - Highest return when punishment was possible but not used: **external sanctions crowd out reciprocity**
- Small changes in conditions create large differences in outcomes (relative positions, information and sanctions available)
- Results challenge the self-interested actor model: high level of trust in situations where none should have been

Prisoners dilemmas, Public goods, Common pool resources

- Definition
- T>H
- H>L
- L>S

- T= temptation
- S= sucker

Social dilemmas	Cooperate	Defect
Cooperate	H ; H	S ; T
Defect	T ; S	L ; L

Common-pool resources

A common-pool resource is a natural or man-made resource from which it is difficult or very costly to exclude or limit users once the resource is provided by nature or produced by humans and removal of a resource unit makes that unit unavailable for others

- Unregulated access leads to overuse and possibly destruction
- Lack of exclusion leads to free-riders in provision

Basics of a commons dilemma I

- Participants: n symmetric subjects without any outside relations with each other
- Positions: appropriator
- Actions: each is endowed with e (=effort, or endowment) units (e.g. working hours) and have to decide on how much to spend on appropriation and how much on earning income from an external source (w = wage rate)
- Outcomes: actions affect the number of resource units that can be appropriated or the returns for working outside
- Action-outcome linkages: 1) wage*work hours 2) the resource function (F) is concave and depends on the total effort allocated to appropriation ($\Sigma_i x_i$): $F(\Sigma_i x_i)$

Basics of a commons dilemma II

- Information: participants know that they are all alike (symmetric) and they know the function linking aggregate effort to individual payoff
  - Information about outcomes are available after each round of allocation
  - No communication is allowed
- Potential payoff with n players
  - Payoff for individual i : $w*e$ if $x_i = 0$
  - It is $w*(e - x_i) + r*(\Sigma_i x_i)$ if $x_i > 0$ and $r<1<r*n$

Behaviour in a basic commons dilemma

- Comparing two games with 10 or 25 tokens endowment
- Overuse of the resource is usually the case
- 25 token experiments do considerably worse than 10 token
- Observes an unpredicted pulsing pattern (increasing investment until declining returns, then reducing it)
- No theoretically satisfactory explanation exist
- Some subjects say they use CPR return over or below 0.05 as guide to investment in the next round (w=0.05)
- Results replicated by agent based simulation
- Social psychology suggests cognitive processes are important to outcomes
- Subjects use heuristics in complex problems

Variations on a basic commons dilemma I

- Conditions that according to conventional theory should not affect outcomes but does:

1. Allowing face-to-face communication before each session of investment
2. Allowing costly sanctions increase compliance
3. Allowing subjects to covenant to determine investment levels and adopt sanctioning

- Communication improves outcomes where there is heterogeneity of endowments
  - If subjects are kept out of the communication much less compliance is observed for all

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Variations on a basic commons dilemma II

- Voluntary sanctions is chosen even if it is costly to the person proposing it, sanctioning and fines wipe out gains from better performance
- Crafting rules to solve commons dilemmas is costly (second order dilemma) but do occur frequently. Those who covenant do considerably better than those who do not
- Electronic communication do not do as well as face-to-face
- Experiments using real farmers replicate findings
- Experiments based on heterogeneous preferences giving incentives to inspect and punish deviations from covenants explained by a heterogeneous, linear other-regarding model

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Animating institutional analysis

- Rational choice:
- Starting with the full-information, rational behaviour focusing on material outcomes in open, competitive, posted price markets
- Adding complications
  - **Information processes**
  - **Valuation mechanisms used by individuals (preferences)**
  - **Selection processes used by individuals (choice of actions)**

Open competitive processes

- Repetitive situations where complete information and adequate models of the situation can be assumed
  - Explaining learning has proved very difficult
- **Assumptions for a rational egoist**
  1. Individuals possess as much information about the structure of a situation as is contained in the situation
  2. Internal valuations of outcomes are complete and consistent based on a monotonous mapping of external payoff
  3. Individuals choose actions to maximise expected net benefits based on what resources they have and the actions others are expected to take

Challenges

- It has been shown that **it is the structure of the situation** that produces efficient choices, not the internal calculations of individuals
- Social dilemmas evoke positive or negative internal valuations not conforming to assumption 2 above
- Imperfect information is rampant, including
  - Asymmetric information,
  - Risk and uncertainty
  - Repetitions and constancy of participants

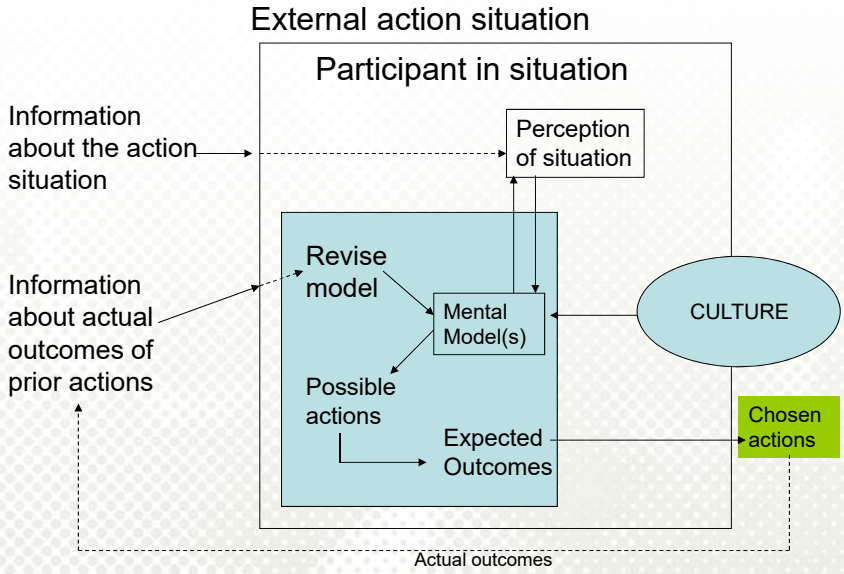
Extending rational choice

- Modelling how participants acquire, process, represent, and use information
- Modelling how participants value actions and outcomes
- Modelling the processes participants use (maximizing, satisficing or using diverse heuristics) to select particular actions or strategic chains of actions in light of their resources

Information processing and mental models

- Due to individual limits on cognitive capacity in pursuing goals, analysts may have to assume bounded rationality rather than full information
- Mental models develop and change from
  - Feedback from the world
  - Shared culture/ belief system
  - ---
- See next slide

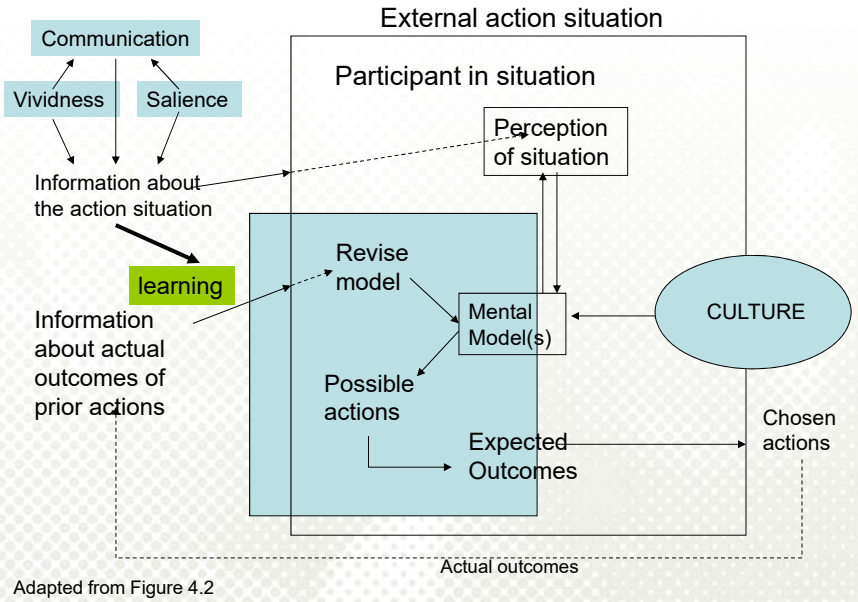
Information, action-outcome linkages, internal mental models
Figure 4.1 p. 105 in Ostrom 2005



Differences in mental models

- Number of participants large
- Situation is complex
- Situation change frequently or participation is infrequent
- Externally induced need for increased performance
- Information is costly
- Information processing capabilities limited
- Errors of perception
- Errors in understanding a complex structure
- Errors in prediction
- Each participant may choose among several models of
- the situation
  - What determines the choice? Paying attention is costly.
  - See next slide

Impact of communication, vividness and salience



Adapted from Figure 4.2
Ostrom 2005 p.108

Change in mental models

- Disproportionate information processors (information and decision making do not link directly to output)
- Adaptive strategies and information do not match
- The inner cognitive and emotional architecture of the brain is "showing through" in responding to information
- Change in human institutions tends to be conservative but is subject to occasional large punctuations: "punctuated equilibrium"
- Internal models tend to be stable, until some event triggers a large change
- Rules and routines may help to structure a situation so as to increase the likelihood that individuals will share a mental model of the situation

Valuation processes

- Why trust and reciprocity?
- Why other-regarding preferences and norms backed by emotions (pride, guilt, shame, anger)?
- Why the consistent differences in response to the same conditions?
- Special neural/ emotional reactions to cooperative behaviour is documented

The dark side of trust

- The dark side of reciprocity, trust, and emotional actions: envy, vengeance, and desire to dominate
- Intrinsic motivations are increased if subjects feel self esteem and self determination is enhanced
  - External interventions crowd out intrinsic motivations if they are perceived as controlling
  - External interventions crowd in intrinsic motivations if they are perceived as supportive
- People must be expected to differ in the ways they value trust, reciprocity, the welfare of others, equity, etc.

The selection process

- Heuristics studied
  - Measured reaction (subjects seemed to follow this)
  - Grim trigger (after discussions this was rejected)
- Inherent problems of inference in studies of "black boxes" by observing external behaviour

Heuristics tested

- Eight heuristics tested with variable time constraints, based on cue-values
  - LEX the lexicographic strategy ("take the best")
  - LEX-semi (small differences are not ranked)
  - EBA elimination by aspects
  - FEATURES Take alternative with highest no of good features
  - ADD highest sum of cue values
  - LEX-ADD LEX-semi used to select two alternatives, ADD to choose one
  - PROS highest no of "pros" (as in pro&contra)
  - WADD weighted ADD
- LEX do very well compared to an optimised regression approach

Variety and complexity

- The diversity of assumptions must be consistent with deeper more general patterns of human behaviour
- Need to understand how specific situations trigger internal models for selecting actions and valuing outcomes
- Humans are fallible and learning
  - With complex motivations including narrow self-interest, norms of proper behaviour and other-regarding preferences
- Institutions matter!

Collective action and social dilemmas

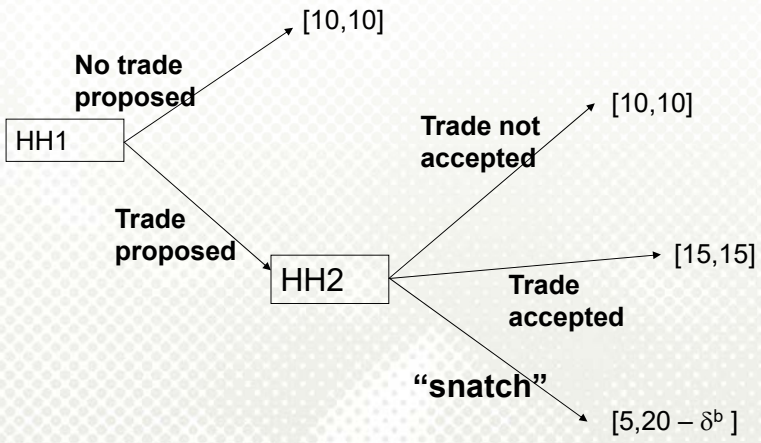
- Also outside the market there are highly competitive situations where rational choice theory applies (voting, legislative decisions)
- Engagement in collective action to overcome social dilemmas is not among these
- Behaviour in social dilemmas needs much better explanations
  - Evolution of norms for trust, other-regarding preferences
  - Rules regulating norms: e.g. backing good or counteracting bad reciprocity

Norms

- Norms in formal theory is currently problematic but not inherently impossible
- Norms are individual beliefs about permitted, prohibited or possible actions or outcomes in particular situations
- Snatch game with norms
  1. Utility of HH2: $U_2 = \pi_2 - \delta^b$
  2. π_2 = payoff obtained by HH2
  3. δ^b = decrease in the value of π_2 due to breaking of norms
- This means that not only presence of norms but also strength matters to behaviour

The "snatch" game with norms

Is δ^b >5 or <5 ?



Heterogeneity

- Heterogeneity of norms
  - Individual variations
  - Situational variations
- Strength of norms
  - Socialization
  - Type of community
  - Institutional backing or counteracting
- Saints, conditional co-operators, sociopaths
  - Cooperators need to be able to find each others
  - Spatial and/ or institutional clustering
- Institutions matter!

Evolution of norms I

- Model: individuals inherit strategies, individuals with more successful strategies have a higher rate of reproduction and increase in frequency in the next generation
  - Good at face recognition
  - Good at detecting cheating
  - Keep internal accounts of goodwill and threats
  - Deontic reasoning (permitted, prohibited or proscribed) looks for cheating and violations
  - Reasoning about what is true or false looks for confirmation
- Good at learning language

Evolution of norms II

- Language represents a new way of inheriting strategies: "genetic change ceases to be the main basis of change: history begins" (Maynard Smith and Harper 2003:140)
  - Good at learning norms and rules
  - Cultural and situational variations
- Norm of reciprocity is often (always?) present
  - Reward cooperation
  - Punish defectors and those who do not punish defectors

Smith, John Maynard, and David Harper. 2003. Animal Signals. Oxford: Oxford University Press.

Indirect evolutionary approach to adaptation through experience

- Model: players receive objective payoffs but make decisions based on the transformation of these material rewards into their own intrinsic values. Over a generation the intrinsic values are adjusted in the direction of the objective payoff

Evidence suggest

- With full information or knowledge of past history of the players rational egoists will not survive in an indefinitely played game
- With no information and many players rational egoists will dominate
- Known probabilities of trustworthy players or a "noisy" signal (better than random) of trustworthiness (e.g. from face-to-face communication) may help *conditional cooperators* to survive in substantial proportions

More on informal institutions …

- The nature of informal institutions:
- Probably the most important aspects of institutions are in peoples heads and exist only because we believe them to be real
- Searle, John R. 1995, *The Construction of Social Reality*, The Free Press, New York

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