Building Networks of Action Situations for the Analysis of Policy Processes and Institutions

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From Games to Action Situations to Networks

• **Game models of strategic interaction** require analysts to define all rules of the game: players, available choices, sequence of choice, available information, outcomes, utility, decision process (typically expected utility optimization)
  – Analysts must also specify conditions for equilibrium
  – Useful to understand conflicts of interest, including individual/social

• In IAD Framework an **action situation** generalizes a game, allowing the following additional opportunities:
  – Players are boundedly rational, and need not always optimize exp. utility
  – Role expectations and other normative considerations in costs/benefits
  – **Participants** can endogenously change the rules of the game, esp. at “higher” levels of analysis: collective choice and constitutional choice
  – Contextual factors (nature of goods, rules-in-use, and attributes of community) jointly construct action situations, and these contextual factors are set by processes in other action situations
Figure 2. A framework for institutional analysis. Source: Adapted from E. Ostrom, 2005: 15.
Everything that affects the focal action situation comes from somewhere else in the framework.

Additional complication: We may have multiple action situations at each level of analysis.

**Question:** Is it possible (and useful) to represent all this in the form of a network of action situations?
Goal of this project:

Facilitate systematic investigation of how simultaneously occurring decision processes interact with each other to shape governance systems and policy implementation.
Definition of adjacency in action situations:
Action situation $X_i$ is adjacent to $Y$ if
1. the outcome of $X_i$ directly influences the value of one or more of the working components of $Y$;
2. Resources flow directly from $X_i$ to $Y$ (or vice versa?);
3. The outcome of $X_i$ satisfies a function necessary for the function completed in $Y$ (or vice versa?).

A network of adjacent action situations (NAAS) can be constructed on the basis of this adjacency relationship.

• Action situations are the nodes;
• Connections via one of three general options:
  1. structural changes in rules,
  2. resource flows,
  3. functional stages of a policy process.
Too Many Options?: Structure, Function, Process

1. **Structural Linkages**: outputs of Xi determine working components of Y
   - Generic example in *PSJ* article
   - But this would include many different kinds of links

2. Classify action situations by *governance function*
   - Identify which *actor types* are involved in each function
   - Examples in *PSJ* article of lobster fisheries, development aid, and the faith-based initiative in U.S. welfare policy
   - For each case I collected functions & actors together as needed

3. **Process**: flows of resources, information, or rules
   - Locate action situations in *stages* of policy process?
   - Distinguish Direct and Intermediate *Services* and identify *stakeholders* primarily involved in each type of service
   - Represent in form of *systems dynamics* model?
Question on Network Design

- Do I need to pick one primary mode of connections between action situation nodes to build a network model?

- OR is it possible to find some way to integrate connections via structure, process, and function into a broader representation?
Links via Structure

Working components of an action situation constitute its structure.

Rules link one action situation to another (adjacent) one.
## Compositional Rules and Working Components

<table>
<thead>
<tr>
<th>1. Boundary rules</th>
<th>specify how participants enter or leave these positions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Position rules</td>
<td>specify a set of positions, each of which has a unique combination of resources, opportunities, preferences, and responsibilities.</td>
</tr>
<tr>
<td>3. Authority/choice rules</td>
<td>specify which set of actions is assigned to which position.</td>
</tr>
<tr>
<td>4. Aggregation rules</td>
<td>specify the transformation function from actions to intermediate or final outcomes.</td>
</tr>
<tr>
<td>5. Scope rules</td>
<td>specify set of feasible outcomes.</td>
</tr>
<tr>
<td>6. Information rules</td>
<td>specify the information available to each position.</td>
</tr>
<tr>
<td>7. Payoff rules</td>
<td>specify how benefits and costs are required, permitted, or forbidden to players.</td>
</tr>
</tbody>
</table>

### Participants/Actors
1. Participants/Actors
2. Positions
3. Actions
4. Control over outcomes
5. Outcomes
6. Information generated and available to participants
7. Costs and benefits assigned to actions and outcomes
Action Situations Adjacent to a Focal Action Situation, with Connections to Working Parts and Associated Rules

Construction of Collective Entities and/or Definition of Jurisdictions

Policy Evaluation

Actions of Other Groups which Directly Affect Outcomes

Boundary Rules

Position Rules

Choice Rules

Policies that Define Feasible Options and Shape Incentives

Information Rules

Aggregation Rules

Scope Rules

Payoff Rules

Socialization Processes

Markets and Other Valuation Processes

Source: Interior figure taken from Ostrom 2005: 189; additional components added by author.
1. **Establishment** of collective entities, including collective consumption units (constitutional level)

2. **Selection of and Motivation for Providers**

3. **Provision** (or Procurement): Selection of the bundle of public goods/services for a collective consumption unit

4. **Production**: Physical process of constructing a good or service (steps from appropriation to transformation to distribution)

5. **Financing** (may combine multiple sources)

6. **Rule-Making** (and related collective choices)

7. **Monitoring** (and other information generation)

8. **Sanctioning** (based on information from monitoring)

9. **Dispute Resolution** (including appeals)

10. **Coordination** (and related management tasks)
<table>
<thead>
<tr>
<th>Actor Types</th>
<th>Primary Motivations</th>
<th>Consumption</th>
<th>Financing</th>
<th>Production</th>
<th>Provision</th>
<th>Monitoring, Sanctioning</th>
<th>Rule-Making</th>
<th>Coordination</th>
<th>Dispute Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumers</td>
<td>Best value, lowest price</td>
<td>Individuals, households</td>
<td>Prices – retail</td>
<td>Harvesting</td>
<td></td>
<td>Routine observation, minor sanctions</td>
<td>Rules-in-use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fishermen</td>
<td>Sustainable livelihood</td>
<td>Important part of diet</td>
<td>Prices – wholesale</td>
<td></td>
<td>Informal goals</td>
<td>Regular interactions, impose direct sanctions</td>
<td>Rules-in-use</td>
<td>Local, informal basis</td>
<td>Informal channels</td>
</tr>
<tr>
<td>Harbor Gangs</td>
<td>Protect territory</td>
<td></td>
<td></td>
<td></td>
<td>Informal goals</td>
<td>Rules-in-use</td>
<td></td>
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</tr>
<tr>
<td>Merchants</td>
<td>Profit, reputation</td>
<td></td>
<td>Profits</td>
<td></td>
<td></td>
<td>Can be sanctioned for rule violations</td>
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<td></td>
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</tr>
<tr>
<td>State Regulators</td>
<td>Maintain health of state economy</td>
<td></td>
<td>Context of overall state policies</td>
<td>Sporadic monitoring, can start legal proceedings</td>
<td>Formal regulations</td>
<td>Minimal role</td>
<td>Formal procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-Management Boards</td>
<td>Coordination</td>
<td></td>
<td>Sustainable rules</td>
<td></td>
<td></td>
<td>Formal regulations</td>
<td>Important role</td>
<td>Formal procedures</td>
<td></td>
</tr>
<tr>
<td>National Regulators</td>
<td>Implement environmental policy</td>
<td></td>
<td>Context of national priorities</td>
<td></td>
<td></td>
<td>General guidelines</td>
<td>Federal courts as final resort</td>
<td></td>
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</tr>
<tr>
<td>Environmental Activists, Scientists</td>
<td>Ecological health, sustainability</td>
<td>Donations, Grants</td>
<td>Advocate specific limits</td>
<td></td>
<td></td>
<td>Focus on environmental conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecological Dynamics (non-strategic)</td>
<td>(Growth, reproduction)</td>
<td>(Growth, Reproduction)</td>
<td>(Growth, Reproduction)</td>
<td></td>
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</tbody>
</table>
Figure 2. Network of Adjacent Action Situations in Maine Fisheries

**Key Actors:**
- Fishermen
- Harbor Gangs
- State Legislators
- State Regulators

**Outcomes:**
- Property Rights
- Environmental Targets
- Limits on harvesting levels, technology, V-notch

**Rule-Making and Coordination**
- Key Actors: Fishermen, Harbor Gangs, State Legislators, State Regulators
- Outcomes: Property Rights, Environmental Targets, Limits on harvesting levels, technology, V-notch

**Dispute Resolution**
- Key Actors: State & National Regulators, Co-Management Boards, NGOs, Activists, Scientists, Lobster Industry Groups
- Outcomes: Lobbying, Legal Suits, Scientific Info.

**Provision, Production, and Monitoring/Sanctioning**
- Key Actors: Fishers, Harbor Gangs, [Ecological Dynamics]
- Outcomes: Harvesting Levels, Limits on Appropriation, Compliance with Rules, Conflicts

**Consumption and Financing**
- Key Actors: Consumers, Merchants, Fishermen
- Outcomes: Prices & Profits, Consumer Tastes

Source: Compiled by author based on material in Acheson 2003.
Key Stakeholders and Organizations in Health Policy

1. Physicians and Other Healthcare Professionals
   a. Primary care professionals
   b. Specialists
   c. Other health professions (nurses, pharmacists, etc.)

2. Facility administrators
   a. Specialized clinics and general-purpose hospitals
   b. For-Profit and Non-Profit
   c. Academic and Community and Government-Owned
   d. Stand-alone or Consolidated Hospital Systems

3. Purchasers (Employers, Government programs, Citizens)

4. Insurers (Private and Public)

5. Other private companies (drugs, medical equipment, R&D, management)

6. Government agencies (facility managers, program administrators, regulators, public health officials, courts)

7. Certification organizations

8. Professional associations

9. Medical schools

10. Health Information Exchanges (HIEs) and other information services

11. Community Service Organizations (CSOs)

12. Consumers/Citizens/Patient Populations
Stakeholder Participation in Critical Healthcare Governance Functions

1. **Establishment:** Government regulators, govnt. program managers, facility administrators, employers

2. **Selection and Socialization:** Medical schools, professional associations

3. **Provision/Procurement:** Govnt. Regulators, Facility Administrators

4. **Production:**
   a. **Facilities/Physical Capital:** Facility administrators (including govnt.)
   b. **Professionals/Human Capital:** Medical schools, physicians and other health professionals
   c. **Information Resources:** all stakeholders

5. **Financing:** Insurance companies, Employers, Govnt. purchasers, citizens, Community Service Organizations

6. **Rule-Making:** Govnt. Regulators, Professional Associations

7. **Monitoring:** Govnt. Regulators, Certification Orgs, Prof. Assoc.,

8. **Sanctioning:** peers, malpractice suits

9. **Dispute Resolution:** courts?

10. **Coordination:** potentially all stakeholders
Dynamic processes within an action situation are triggered by inputs and generate outputs, of three fundamental types:

1. Resources, products, goods, services
2. Economic and other forms of valuation
3. Information on changes in structure & flows

Could represent flows of resources between action situations, perhaps in form of systems dynamics model

Need to identify key actors and services/processes

**Note:** One colleague insists that rule changes can also be treated as a form of resource flow between action situations.
Direct Services (To Consumer/Patients)

1. **Primary care:** consultation with preferred health care provider (from family physician to nurse practitioner to chiropractor to school nurse, etc.), simple tests, initial diagnosis, referral to specialists, care coordination, etc.

2. **Secondary or specialist care:** tests, surgery, therapy, etc.

3. **Emergency or urgent care:** time-sensitive services

4. **Chronic care:** maintenance in cases of long-lasting medical conditions

5. **Palliative care:** nursing homes, hospice, home health

6. **Preventive care:** promotion of public health, health information, behavior change, healthy communities

7. **Household based co-production:** parents’ administering over the counter medications to children and provision of nutritious meals

8. **Alternative medicine:** chiropractors, acupuncture, etc.
Intermediate Services (To Producer/Providers/Payers)

1. Testing and lab services: implementation and interpretation of results
2. Professional training: medical, nursing, dental, osteopathic, chiropractic schools as well as training for radiology technicians, nursing assistants, etc.
3. Facility construction and operations: hospitals, clinics, emergency facilities, surgical and test centers
4. Research and development: drugs, devices, diagnostic technology, quality improvement methodologies
5. Provision of financing: Private insurance, Medicare, Medicaid, self-insurance, self-payment, etc.
6. Support operations: management services, etc.
7. Information systems: health information exchange, electronic medical records, performance monitoring systems, consumer information
8. Regulation of health care industries: government agencies, professional organizations, certification agencies
9. Lobbying and advocacy
10. Community level coordination: burden-sharing agreements, emergency planning
Some further complications

• Each service type (direct and intermediate) can be represented as an action situation, with actors, positions, outcomes, etc.

• Resource pools of physical, human, financial, and informational capital are generated and maintained by intermediate services
  – Each direct service situation requires all resources in some fashion
  – These resources flow throughout the system, along inter-related paths

• Direct services can be arranged to represent sequence of decisions or changes in a patient’s condition (and interactions with different health professionals)
  – Do actors in each action situation internalize effects on other action situations, or just optimize current situation?
Sequencing of Direct Services

Household Based Care

Preventive Care

Primary Care

Secondary and Tertiary Care

Chronic Care

Emergency or Acute Care

Palliative Care

Note: In each action situation, patients interact with different kinds of healthcare professionals and engage in different kinds of activities.
Key Decision Points

**Individual patients**
- Buy insurance
- Healthy life-style
- Regular check-ups
- Threshold for seeking help
- Compliance with advice

**Primary Care Professionals**
- Number/time of patients seen
- Threshold for ordering tests
- Independent or Association
- Oppose new entrants
- Use electronic records

**Specialists**
- Threshold for intervention
- Set up/join specialized clinic
- Partner with PCPs
- Expand areas of activities

**Community Based Organizations**
- Set up clinics or focus on advocacy

**Hospital administrators**
- Legal status: profit, nonprofit
- Ties to training programs
- Independent or consolidated
- Relationship with physicians
- Build new facilities?
- Build specialized clinics or partner
- Participate in gov. programs

**Health plans**
- Reimbursement options
- Relationship with hospitals, IPAs

**Employers**
- Offer insurance to employees
- Self-insure or partner with plan

**Government Regulators**
- Medical legal system
- Tax breaks
- Anti-trust exemptions

**Public health officials**
- Encourage healthy cmt. dvlpt.

**Health Information Exchanges**
- Inclusive or club structure
<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Constitutional</th>
<th>Collective (Policy)</th>
<th>Operational (Direct Services)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>•Lifestyle choices</td>
<td>•Insurance coverage</td>
<td>•Regular checkups</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>•Threshold for seeking help</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>•Compliance with advice</td>
</tr>
<tr>
<td>Physicians</td>
<td>•Join physician’s assoc</td>
<td>•Number of patients seen</td>
<td>•Threshold for tests, prescriptions</td>
</tr>
<tr>
<td></td>
<td>•Attitude to new entrants</td>
<td>•Fee schedule</td>
<td>•Use electronic records</td>
</tr>
<tr>
<td>Facility Administrators</td>
<td>•Profit or nonprofit</td>
<td>•Build new facilities</td>
<td>•Quality control measures</td>
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<td></td>
<td>•Consolidation</td>
<td>•Community outreach</td>
<td>•Use electronic records</td>
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<td></td>
<td>•Physician relationships</td>
<td>•Government programs</td>
<td></td>
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<tr>
<td>Insurers</td>
<td>•Eligibility requirements</td>
<td>•Cost of premiums</td>
<td>•Timeliness of payments</td>
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<td></td>
<td>•Ties to hospitals, IPAs</td>
<td>•Coverage limits</td>
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<tr>
<td></td>
<td></td>
<td>•Reimbursement policies</td>
<td></td>
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<tr>
<td>Employers</td>
<td>•Offer insurance?</td>
<td>•Portability conditions</td>
<td>•NA</td>
</tr>
<tr>
<td></td>
<td>•Self-insure or health plan</td>
<td></td>
<td></td>
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<tr>
<td>Government</td>
<td>•Malpractice limits</td>
<td>•Tax policies</td>
<td>•Extent of monitoring</td>
</tr>
<tr>
<td>Regulators</td>
<td>•Anti-trust exemptions</td>
<td>•Grants and programs</td>
<td></td>
</tr>
<tr>
<td>Public Health</td>
<td>•Community planning</td>
<td>•Disease control policies</td>
<td>•Information campaigns</td>
</tr>
<tr>
<td>HIEs</td>
<td>•Inclusive or club</td>
<td>•Scope of coverage</td>
<td>•Implementation &amp; effectiveness</td>
</tr>
<tr>
<td>Community Orgs</td>
<td>•Build social capital</td>
<td>•Advocacy</td>
<td>•Scope of services</td>
</tr>
</tbody>
</table>
Setting the Context for Direct Healthcare Services

- **Government Regulators Define Legal Forms and Responsibilities of Healthcare Organizations**
- **Public Health Officials**
- **Employers and Public Officials Select Insurance Plans**
- **Health Information Exchanges**
- **Professional Socialization and Monitoring**

**Diagram:***
- **Boundary Rules**
- **Position Rules**
- **Choice Rules**
- **Information Rules**
- **Aggregation Rules**
- **Scope Rules**
- **Payoff Rules**

**Flow Chart:**
- Household Based Care
  - Preventive Care
  - Primary Care
  - Secondary and Tertiary Care
  - Emergency or Acute Care
  - Palliative Care
- Chronic Care