

An Introduction to IAD and the Language of the Ostrom Workshop: A Simple Guide to a Complex Framework

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This guide provides definitions or brief explanations of all the major terms and concepts used in the Institutional Analysis and Development (IAD) framework. Also included are terms from the closely related frameworks on local public economies, public service industries, grammar of institutions, and social-ecological systems (SES).

KEY WORDS: institutional analysis, governance, policy theory, concepts, systems

This guide summarizes the conceptual categories and analytical perspectives that have been developed by Vincent and Elinor (Lin) Ostrom and other scholars affiliated with the Workshop in Political Theory and Policy Analysis (hereafter *Ostrom Workshop*). The *Institutional Analysis and Development (IAD) Framework* encapsulates the collective efforts of this intellectual community to understand the ways in which institutions operate and change over time. The IAD framework assigns all relevant explanatory factors and variables to categories and locates these categories within a foundational structure of logical relationships. Although designed as a tool to simplify the analytical task confronting anyone trying to understand institutions in their full complexity, over time this framework itself has become quite complicated. This guide highlights the foundational principles upon which this framework for analysis has been built, so as to help newcomers to this tradition better appreciate how its myriad parts fit together into a coherent whole. (A longer and more comprehensive version is posted at http://php.indiana.edu/~mcginnis/iad_guide.pdf.)

The specific form of this framework has varied over time; see Kiser and Ostrom (1982), E. Ostrom (1986, 1989, 1990, 1998, 2005, 2007b, 2010), E. Ostrom et al. (1994), McGinnis (2000), and Poteete, Janssen, and Ostrom (2010). The IAD framework was developed in conjunction with earlier work on public service industries and local public economies (McGinnis, 1999; Oakerson, 1999; E. Ostrom, 1983; V. Ostrom & E. Ostrom, 1977; E. Ostrom, Schroeder, & Wynne, 1993; V. Ostrom, Tiebout, & Warren, 1961) and it has helped inspire more recent work on social-ecological systems (McGinnis, 2010; E. Ostrom, 2007a, 2009).

1. Institutional Analysis, Development, Design, and Diagnosis

- 1.1 *Institutions* are human-constructed constraints or opportunities within which individual choices take place and which shape the consequences of their choices.
- 1.2 *Analysis* involves decomposition of institutional contexts into their component parts as a prelude to understanding how these parts affect each other and how institutions shape outcomes.
- 1.3 *Development* is interpreted broadly as referring to the processes of dynamic changes of institutions as well as changes in their effects over time.
 - 1.3.1 *Design* is part of the development processes through which institutions are established, maintained, and transformed.
 - 1.3.2 *Diagnosis* has become a focus of recent applications of IAD and especially the related SES framework, where particular attention is placed on the identification of missing institutions as a source of dysfunctional performance.

2. Epistemological and Ontological Foundations

- 2.1 *Political Theory* encompasses all efforts to understand the institutional foundation for governance, specifically involving efforts to relate philosophical principles and normative values to the practical challenges of implementing these principles and values in real-world political institutions (V. Ostrom, 2008).
- 2.2 Framework—Theory—Model: Distinctions among these three analytical tools are especially important for analysts to remember.
 - 2.2.1 *Framework* identifies, categorizes, and organizes those factors deemed most relevant to understanding some phenomenon.
 - 2.2.2 *Theory* posits general causal relationships among some subsets of these variables or categories of factors, designating some types of factors as especially important and others as less critical for explanatory purposes.
 - 2.2.3 *Model* specifies the specific functional relationships among particular variables or indicators that are hypothesized to operate in some well-defined set of conditions.
- 2.3 *Behavioral Rational Choice*: A second generation of rational choice theory that incorporates effects of visual and verbal cues, norms of reciprocity and fairness, and willingness to sanction rule violators.
 - 2.3.1 *Bounded Rationality*. Individuals pursue goals but do so under constraints of limited cognitive and information-processing capability, incomplete information, and the subtle influences of cultural predispositions and beliefs.

- 2.3.2 *Adaptive Learning*. Fallible individuals are capable of learning from their mistakes but these processes of learning do not operate perfectly.
- 2.3.3 *Artisanship*. Since institutions are constructed, maintained, and transformed by humans, institutional analysis is necessarily a creative process through which the image or artistic vision of an artisan can be imperfectly realized in the real world (V. Ostrom, 1980).
- 2.3.4 *Public Entrepreneurship*. Since institutional processes necessarily require the concerted action of many individuals, an especially critical function is filled by those entrepreneurs who offer appealing new visions or innovative practical solutions to governance problems.

3. Governance

Governance is process by which the repertoire of rules, norms, and strategies that guide behavior within a given realm of policy interactions are formed, applied, interpreted, and reformed. A useful shorthand expression, with apologies to Lasswell, is that “*governance determines who can do what to whom, and on whose authority.*”

- 3.1 *Self-Governance*: The capacity of communities to organize themselves so they can actively participate in all (or at least the most important) decision processes relating to their own governance.
- 3.2 *Monocentric Governance*: Ideal type conceptualization of unitary sovereignty, as articulated in Hobbes’ *Leviathan*. No real-world governance system is fully monocentric, yet some governance systems concentrate a great deal of power in the hands of a small number of authorities at the national level.

4. Polycentricity

Polycentricity is a system of governance in which authorities from overlapping jurisdictions (or centers of authority) interact to determine the conditions under which these authorities, as well as the citizens subject to these jurisdictional units, are authorized to act as well as the constraints put upon their activities for public purposes. Typically, a polycentric system of governance combines the following characteristics:

- 4.1 *Multi-Level*: Local, provincial, national, regional, global units of governance.
- 4.2 *Multi-Type*: general purpose nested jurisdictions (as in traditional federalism) and specialized, cross-jurisdictional political units (such as special districts).
- 4.3 *Multi-Sectoral*: public, private, voluntary, community-based and hybrid kinds of organizations.

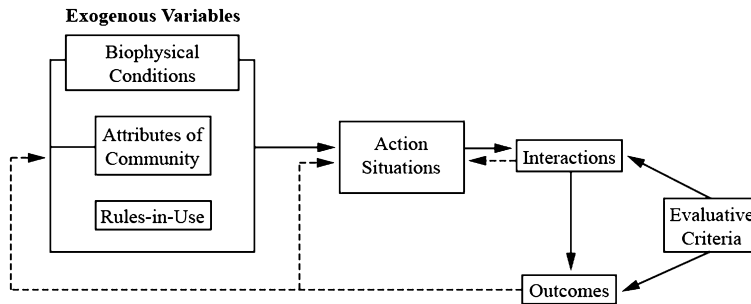


Figure 1. Basic Components of the IAD Framework.

Source: E. Ostrom (2010, p. 646).

4.4 *Multi-Functional*: incorporates specialized units for provision (selection of goals), production (or co-production), financing (taxes, donors), coordination, monitoring, sanctioning, and dispute resolution.

5. Overview of Key Components (See Figure 1)

The IAD Framework has its origins in a general systems approach to policy processes, in which inputs are processed by policymakers into outputs that have outcomes that are evaluated, with feedback effects. Each of the following components is described more fully in subsequent sections of this guide.

- 5.1 *Inputs* include the *contextual factors* (attributes of the community, nature of the good/biophysical conditions, and rules-in-use) that encompass all aspects of the social, cultural, institutional, and physical environment that set the context within which an action situation is situated.
- 5.2 The *action situation* is the “black box” where policy choices are made. Originally the action situation was enclosed within an *action arena*, which also included the set of actors as a separate component; however, since the capabilities of actions can be attributed to the effect of the position rules defined below, E. Ostrom (2010) recommends abandoning this distinction between action situation and arena.
- 5.3 *Outcomes* are shaped by both the outputs of the action situation and by exogenous factors.
- 5.4 Participants *evaluate* actions, outputs, and outcomes, and these evaluations may affect any stage of the process.
- 5.5 *Feedback and adaptive learning* may affect inputs and processes within the action situation.

6. Levels of Analysis/Arenas of Choice

The IAD framework defines a nested arrangement of action situations, based on the scope of the activities conducted within them, with the expectation that those choice situations of broader scope (such as constitution-making) will elicit a more inclusive or cooperative mode of behavior than narrower issues of implementation (in which immediate practical implications for an actor's self-interest may loom larger). Opportunism and other forms of strategic behavior will never be completely absent, but the relative combination of selfish and other-regarding motivations should vary under different circumstances.

- 6.1 *Operational Choice*: implementation of practical decisions by those individuals who have been authorized (or allowed) to take these actions as a consequence of collective choice processes.
- 6.2 *Collective Choice*: the processes through which institutions are constructed and policy decisions made, by those actors authorized to participate in the collective decisions as a consequence of constitutional choice processes, according to the procedures as established by constitutional choice processes.
- 6.3 *Constitutional Choice*: the processes through which collective choice procedures are defined, including legitimizing and constituting all relevant collective entities involved in collective or operational choice processes.
- 6.4 *Meta-Constitutional Level of Analysis* encompasses long-lasting and often subtle constraints on the forms of constitutional, collective, or operational choice processes that are considered legitimate within an existing culture; many of these factors may not be amenable to direct change by those individuals under the influence of these cultural predispositions, but these cultural factors do change over time, in part as a consequence of changing patterns of behavior.

7. Action Situation

Action Situation is the core component of the IAD Framework, in which individuals (acting on their own or as agents of organizations) observe information, select actions, engage in patterns of interaction, and realize outcomes from their interaction.

- 7.1 *Working Components* of an action situation specify the nature of the relevant actors as well as the resources and options they face, and thereby serve as a generalization of the "rules of a game" (E. Ostrom et al., 1994, p. 29)
 - 7.1.1 Participants in
 - 7.1.2 Positions who must decide among diverse
 - 7.1.3 Actions in light of the
 - 7.1.4 Information they possess about how actions are

- 7.1.5 Linked to potential
- 7.1.6 Outcomes and the
- 7.1.7 Costs and Benefits assigned to actions and outcomes.
- 7.2 *Rules* that specify the values of the working components of an action situation; each rule has emerged as the outcome of interactions in an adjacent action situation at a different level of analysis or arena of choice (E. Ostrom et al., 1994, pp. 41–42)
 - 7.2.1 *Position rules* specify a set of positions, each of which has a unique combination of resources, opportunities, preferences, and responsibilities.
 - 7.2.2 *Boundary rules* specify how participants enter or leave these positions.
 - 7.2.3 *Authority rules* specify which set of actions is assigned to which position.
 - 7.2.4 *Aggregation rules* specify the transformation function from actions to intermediate or final outcomes.
 - 7.2.5 *Scope rules* specify a set of outcomes.
 - 7.2.6 *Information rules* specify the information available to each position.
 - 7.2.7 *Payoff rules* specify how benefits and costs are required, permitted, or forbidden to players.

8. Nature of the Good or Physical/Material Conditions

The IAD framework incorporates distinctions among different types of goods that were initially introduced in V. Ostrom and E. Ostrom (1977).

- 8.1 *Two Defining Characteristics* of Goods or Services
 - 8.1.1 *Subtractability*: Does A's consumption of a unit of that resource lower B's potential enjoyment?
 - 8.1.2 *Exclusion*: How costly is it for A to exclude B from access to that resource?
- 8.2 *Four Types of Goods or Services* and the dilemmas most commonly experienced in their production or consumption:
 - 8.2.1 *Private Goods*: Subtractability and low costs of exclusion.
 - 8.2.2 *Public Goods*: Nonsubtractability and high costs of exclusion.
 - 8.2.3 *Toll Goods*: Nonsubtractability and low costs of exclusion.
 - 8.2.4 *Common Pool Resources (CPRs)*: Subtractability and high costs of exclusion;
 - 8.2.4.1 The term *commons* is informally used to refer to public goods, common pool resources, or any area with uncertain property

rights. For analytical purposes it is necessary to be more specific.

8.2.4.2 *Appropriation Externality*: One person's use of a resource can affect availability of resource to other users.

8.2.4.3 *Rent Dissipation* occurs when actors in a CPR extract higher levels of resources than would be taken under the net maximum level (or optimum for the group as a whole).

8.2.4.4 *Assignment Problems* arise whenever appropriators face a variety of "appropriation spots" that are differentiated in productive yield.

8.2.4.5 *Technological Externality*: Consequences of unequal access to appropriation technologies of differing levels of effectiveness.

8.2.4.6 *Provision* of infrastructure that may improve availability of resource and/or productivity of appropriation (includes construction and maintenance activities).

8.2.4.7 *Tragedy of the Commons*: In an open access CPR with no governance arrangements in operation, appropriators will tend to over-exploit the resource and may destroy it entirely.

9. Rules-in-Use

Rules-in-Use designate all relevant aspects of the institutional context within which an action situation is located.

9.1 *Formal Rules* (or rules-on-paper) in contrast to the rules that tend to be used in actual settings.

9.2 *Repertoire* of Strategies, Norms, Rules being used on a regular basis by participants (see Grammar of Institutions)

9.3 *Property Rights* (see below)

10. Attributes of the Community

Attributes of the community is a term used to encompass all relevant aspects of the social and cultural context within which an action situation is located.

10.1 *Trust*: a measure of the extent to which members of this community feel confident that other members will not take maximum advantage of their vulnerabilities and/or will come to their assistance when needed; or that others will live up to their agreements even if doing so may not be in their immediate interest.

10.2 *Reciprocity*: a norm of behavior that encourages members of a group to cooperate with others who have cooperated with them in previous encounters.

- 10.3 *Common Understanding* (or shared understanding): the extent to which members of a community share the same core values or goals as a member of that community?
- 10.4 *Social Capital* can be used in two senses:
 - 10.4.1 Resources that an individual can draw upon in terms of relying on others to provide support or assistance in times of need;
 - 10.4.2 A group's aggregate supply of such potential assistance, as generated by stable networks of important interactions among members of that community.
- 10.5 *Cultural Repertoire*: set of strategies, norms, rules, organizational templates, and other remembered or imagined practices that are readily available to the members of that community for their use in processes of deliberation and implementation.

11. Outcomes

Outcomes are generated by the conjuncture of the outputs of a given action situation, other closely related action situations, and exogenous influences that may not always be subject to effective control of human intervention.

12. Evaluative Criteria

Evaluative criteria may be used by participants or external observers to determine which aspects of the observed outcomes are deemed satisfactory and which aspects are in need of improvement.

- 12.1 *Efficiency* in use of resources, especially capture of economies of scale.
- 12.2 *Equity* in distributional outcomes and processes.
- 12.3 *Legitimacy* as seen by participants in decision processes.
- 12.4 *Participation* tends to increase legitimacy; co-production can be an especially effective form of participation.
- 12.5 *Accountability*, especially to direct users of resource.
- 12.6 *Fiscal equivalence*: the extent to which the beneficiaries of a public good or service are expected to contribute toward its production.
- 12.7 Consistency with the *moral values* prevalent in that community.
- 12.8 *Adaptability, Resilience, Robustness, or Sustainability*: Loosely speaking, a system's capacity to suffer a disturbance and yet still continue to function, without losing its basic structural or functional integrity. Of these terms, robustness is the term most appropriate for use as a performance criterion for human-designed systems.

13. Feedback and Learning

Feedback and learning processes are triggered by actors' evaluation of actions and outcomes, based on the information they are able to observe and process. Feedback may impact any component of the IAD framework, and different levels of learning loops may be used to distinguish more extensive processes of reconsideration.

14. Grammar of Institutions

The *grammar of institutions* is an effort to develop a common framework for understanding strategies, norms, and rules as different types of institutional statements, which are governed by an underlying grammatical structure (Crawford & Ostrom, 1995).

14.1 Components in the Original Formulation of ADICO Framework

- 14.1.1 A = *Attributes* of the actors to whom this institutional statement applies.
- 14.1.2 D = *Deontic content* of the statement, specifying which actions may, must, or must not be undertaken by the relevant actor. A *delta parameter* is used to designate the effects of internalized norms on the utility levels experienced by boundedly rational individuals.
- 14.1.3 I = *Aim or Target* denotes the action or outcome to which the action in question is to be applied.
- 14.1.4 C = *Conditions* under which this particular statement is deemed appropriate or relevant for application.
- 14.1.5 O = *Or Else* specifies the actor or actors to whom is given the responsibility of imposing sanctions on those who fail to implement the statement as intended.

14.2 Institutional Statements

- 14.2.1 *Strategies*: AIC only
- 14.2.2 *Norms*: AIC plus D
- 14.2.3 *Rules*: Full ADICO

15. Property Rights

Property rights are an especially important form of institution for anyone studying the use of natural resources.

15.1 Goods, Rights, and Rights-Holders are Logically Separable Concepts

- 15.1.1 *Nature of good*. Public, private, toll goods, CPR; primarily determined by physical nature of that good or service, but a good's de facto type

may be affected by the way in which consumers use (or conceptualize) it.

- 15.1.2 *Property rights system.* Systems of interrelated rights as defined by legal and institutional context: public, private, common property, open-access. Although these terms are commonly used in various literatures, they can introduce confusion when they do not refer to specific bundles of rights (see below).
- 15.1.3 *Rights-holder.* Representational claims of entity claiming property rights: may be individual, private corporation, voluntary association, community-based organization, or public agency (government organizations of all types and at all levels).
- 15.1.4 The type or nature of a good is separate from the property rights used to manage it and from the nature of relevant rights-holders. For example, common pool resources (CPRs) are not automatically common property, nor do CPRs have to be managed by community-based organizations.
- 15.2 *Property rights* determine which actors have been authorized to carry out which actions with respect to a specified good or service.
 - 15.2.1 *Components* of rights out of which more complex bundles can be built:
 - 15.2.1.1 *Access:* Right to enter a defined area and enjoy its benefits without removing any resources.
 - 15.2.1.2 *Withdrawal:* Right to obtain specified products from a resource system and remove that product from the area for proscribed uses.
 - 15.2.1.3 *Management:* Right to participate in decisions regulating resource or making improvements in infrastructure.
 - 15.2.1.4 *Exclusion:* Right to participate in the determination of who has right of access or withdrawal or management.
 - 15.2.1.5 *Alienation:* Right to sell, lease, bequeath, or otherwise transfer any of the preceding component rights.
 - 15.2.2 *Bundles of Rights* or positions (in context of CPRs)
 - 15.2.2.1 *Authorized Entrant:* Access rights only
 - 15.2.2.2 *Authorized User:* Access and withdrawal rights
 - 15.2.2.3 *Claimant:* Access, withdrawal, and management rights
 - 15.2.2.4 *Proprietor:* All rights except alienation
 - 15.2.2.5 *Owner:* All components held in combination.
 - 15.2.3 *Types of Property Rights Systems* (in context of CPRs)

- 15.2.3.1 *Open Access*: No effective restrictions on use of resources.
- 15.2.3.2 *Private Property*: Bundles of rights held by and exchanged among individuals or legally recognized corporate entities; typically including full rights of alienation.
- 15.2.3.3 *Public Property*: Bundles of rights held by official agents of some unit of government.
- 15.2.3.4 *Common (or communal) Property*: Bundles of rights held, defined, and exchanged by some communal entity as a whole.

16. Local Public Economies

The IAD framework builds upon concepts originally developed by scholars associated with the Ostrom Workshop whose research was focused not on resource management but instead on local public economies and other forms of public service industries.

16.1 General Terminology

- 16.1.1 *Local Public Economy* consists of a mixture of provision and production units and their dynamic interactions in the context of a metropolitan or rural area.
- 16.1.2 *Public Economy*: generalization of political economy or market economy; incorporates all relevant public, private, voluntary, and community-based organizations active in a given area of public policy.
- 16.1.3 *Public Service Industry*: generalization of market sector to cover all organizations actively engaged in some identifiable area of public policy, specifically including the provision or production of public or toll goods or the management of common-pool resources.
- 16.1.4 *Public* used in sense of Dewey (1927): a group, of any size, that is affected by some substantive problem or issue.

16.2 Core Activities and Units in a Public Economy

- 16.2.1. *Collective Consumption Unit*. Public goods and services are necessarily consumed or enjoyed by some collective unit as a whole; the same can be said for tool or club goods.
- 16.2.2. *Provision*. Selection of the bundle of public goods/services for a collective consumption unit.
- 16.2.3. *Production*. Physical process of constructing a public good/service.
 - 16.2.3.1 *Co-Production*. Consumers actively participate in the actual production of a good or service (examples: health, education, community security).

- 16.2.4. *Financing*. Source of financial and other resources that the providers need to give the producers of a public good/service; may involve cross-jurisdictional transfers (as are common in intergovernmental relations).
- 16.2.5. *Coordination*. The activities of different units need to be coordinated in some fashion, but no single center of authority is responsible for making final decisions.
- 16.2.6. *Monitoring*. Many units in a public economy monitor the activities of other units; some units (media, police, auditors, etc.) are specialists in this activity.
- 16.2.7. *Dispute Resolution*. As disputes will inevitably arise among different units in a public economy, some mechanisms or processes must be in place to help the disputing parties come to some resolution. Specialized agencies (courts, arbiters, etc.) may be established for this purpose.

17. Design Principles for Sustainable Management of Common-Pool Resources

Elinor Ostrom (1990) introduced a set of *Design Principles* for sustainable management of common-pool resources (perhaps better described as good practices). These principles identify characteristics of common-pool resource management systems that have been observed to be regularly associated with the long-term sustainability of that system. Not all principles need to be realized in all circumstances, but the prospects for sustainable governance tend to increase when more of these principles are in place.

- 17.1 *Boundaries* (biophysical and social) are clearly defined.
- 17.2 *Congruence* between appropriation and provision rules (for fairness considerations) and fitness to local conditions (for practicality).
- 17.3 *Collective choice processes* enable most affected individuals to participate in making rules.
- 17.4 *Monitors* are accountable to appropriators (or are the appropriators themselves).
- 17.5 *Graduated sanctions* are applied to rule violators (in increasing levels of intensity).
- 17.6 *Dispute resolution mechanisms* available to participants at low cost.
- 17.7 *Minimal recognition* by “higher” authorities that appropriators have rights to self-organize and devise their own institutions.
- 17.8 *Nested enterprises* for appropriation, provision, monitoring, enforcement, conflict resolution, and governance.

18. The SES (Social-Ecological Systems) Framework

The *SES (Social-Ecological Systems) Framework* is an ongoing effort to revise the IAD framework so as to give equal attention to the biophysical and ecological foundations of institutional systems. The large number of factors or variables that researchers have identified as being potentially relevant to the dynamic patterns of interaction between human groups and their environment are arranged in a nested series of tiers, using a set of generic categories intended to be applicable to diverse resource sectors, geophysical regions, political entities, and cultural traditions.

18.1 *Focal Action Situation*: the pattern of interactions among resource users and the particular resources upon which their livelihood relies; both the social and the ecological components of this focal action situation can be decomposed into smaller components as well as situated within the context of broader aggregations.

18.2 *First Tier Components of the SES Framework* (E. Ostrom, 2007a, 2009)

18.2.1 *Action Situation (Interactions and Outcomes)*: see focal action situation above.

18.2.2 *Resource Units (RU)*. Characteristics of the units extracted from a resource system, which can then be consumed or used as an input in production or exchanged for other goods or services.

18.2.3 *Resource System (RS)*. The biophysical system from which resource units are extracted and through which the levels of the focal resource are regenerated by natural dynamic processes.

18.2.4 *Users (U)*. The individuals who routinely extract resource units from that resource system; these users may or may not be organized into a single user group. Note: for purposes of generality, the category name Users should be replaced by the term *Actors* (see McGinnis, 2010).

18.2.5 *Governance System (GS)*: The prevailing set of processes or institutions through which the rules shaping the behavior of the users are set and revised.

18.2.6 *Social, Economic, and Political Settings (S)*: The broader context within which the governance system per se is located, including the effects of market dynamics and cultural change.

18.2.7 *Related Ecosystems (ECO)*: The broader ecological context within which the focal resource system is located, including the determinants of many potential exogenous influences.

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