

# Integrating core concepts from the institutional analysis and development framework for the systematic analysis of policy designs: An illustration from the US National Organic Program regulation

Journal of Theoretical Politics

2016, Vol. 28(1) 159–185

©The Author(s) 2015

Reprints and permissions:

[sagepub.co.uk/journalsPermissions.nav](http://sagepub.co.uk/journalsPermissions.nav)

DOI: 10.1177/0951629815603494

[jtp.sagepub.com](http://jtp.sagepub.com)



**David P Carter and Christopher M Weible**

School of Public Affairs, University of Colorado Denver, USA

**Saba N Siddiki**

School of Public and Environmental Affairs, Indiana University-Purdue University Indianapolis, USA

**Xavier Basurto**

Nicholas School of the Environment, Duke University, USA

## Abstract

Public policies are structured by policy designs that communicate the key elements, linkages, and underlying logic through which policy objectives are to be realized. This paper operationalizes and integrates core concepts from the institutional analysis and development framework, including the institutional grammar, the rule typology, action situations, and levels of decision making, to provide a systematic approach for analyzing policy designs. The approach is illustrated through an application to the United States Department of Agriculture's National Organic Program regulation, which outlines an unusual semi-voluntary regulatory program that relies on independent

---

## Corresponding author:

Christopher M Weible, School of Public Affairs, University of Colorado Denver, 1380 Lawrence Street, Suite 500, Denver, CO 80238, USA.

Email: [Chris.Weible@ucdenver.edu](mailto:Chris.Weible@ucdenver.edu)

third-party organizations for Program administration. The conclusion identifies opportunities and a research agenda for the institutional analysis of policy designs.

### **Keywords**

Implementation; institutional analysis and development framework; organic farming; policy analysis; policy design

## **I. Introduction**

Every written public policy has a policy design, defined as the policy's textual content. This textual content communicates key elements, such as policy agents, targets, and incentives and sanctions that link together and structure the underlying logic through which policy objectives are to be realized (Schneider and Ingram, 1988). Policy designs both reflect the politics of policy formulation and provide instructions for implementation. Integral to the operation and performance of a government, policy designs offer an opportunity for understanding, and perhaps improving, how a society governs.<sup>1</sup>

A tradition among political science and policy scholars seeks to identify the interaction between policy designs and the political environments that generate them, successes and failures in policy implementation, and the politics that are stimulated by the adoption of different policy designs (Hood, 1983; Linder and Peters, 1989; Lowi, 1972; Mazmanian and Sabatier, 1981; Pierson, 2000; Salamon, 2002; Schneider and Ingram, 1997). Among the more productive attempts to conceptualize policy designs are simplification strategies that sort policies within typologies according to their textual content (e.g. Lowi, 1964, 1972). Current proponents of the typology approach categorize policies as various governance 'tool' or 'instrument' types, compared across dimensions such as the coerciveness and directness generally associated with a specific design category (Salamon, 2002).

Other approaches to the analysis of policy design seek within-type design comparisons based on one or more dimensions, such as stringency (Lester et al., 1983; Meier, 1987; Rinqvist, 1994). For example, Koski (2007) assesses various environmental regulatory policy designs by the scope of activities they pertain to, regulatory stringency, and the level of prescription a design exhibits toward policy agents and targets. Although typology and within-type policy design methods serve as effective approaches for the categorization and comparison of policy designs, both are limited in their ability to account for and conceptualize policy designs that are communicated through hundreds or thousands of directives made up of numerous words, sentences, and phrases. The advantage of simplification that these approaches offer undermines their ability to provide, as described by Schneider and Ingram (1988: 67), 'a more systematic analysis of the structural logic' embedded within policy design.

This paper offers a systematic approach to analyzing the elements, linkages, and underlying logic of policy designs. The approach integrates and applies multiple concepts from the institutional analysis and development (IAD) framework, including the institutional grammar, the rule typology, action situations, and levels of

decision making (Basurto et al., 2010; Crawford and Ostrom, 1995, 2005; Kiser and Ostrom, 1982; Ostrom, 1986, 2005; Siddiki et al., 2011). Through an integration of these core IAD concepts, the approach addresses and moves beyond a central limitation uncovered in past institutional grammar tool (IGT) analyses of policy designs (e.g. Basurto et al., 2010; Siddiki et al., 2011, 2012) – the deconstruction of a policy document into a potentially unwieldy number of statements composed of an even greater number of components. The approach begins with the deconstruction of a policy document, allowing for the individual elements of a policy design to be understood and sorted, and then reconstructs these elements so as to reveal the structural logic of the policy design in question.

The result is an integrative approach for deconstructing and reconstructing policy designs, presented here in four steps. The first step is the application of the IGT to dissect a policy design into institutional statements and syntactic components (Basurto et al., 2010; Siddiki et al., 2011). The second step involves the classification of the institutional statements by their functional properties based on the rule typology (Kiser and Ostrom, 1982; Ostrom, 1986, 2005). The third step involves configuring the institutional statements according to the target action situations that they are intended to structure, and then linking these target action situations into sequences of inputs and outputs (McGinnis, 2011; Pressman and Wildavsky, 1973; Ranney, 1968). The final step classifies the institutional statements as operational, collective, and constitutional levels of decision making (or analysis) to allow, for instance, the identification of design adaptation paths over time (Kiser and Ostrom, 1982).

The approach is illustrated through a study of the United States Department of Agriculture's (USDA's) National Organic Program (NOP) regulation. The primary purpose of the NOP is to establish and enforce uniform standards for the production and marketing of the term 'organic' on food products in the USA. While many issues are governed by multiple policies, organic food labeling is governed principally by the NOP regulation and, thus, its coding and analysis represent a fairly comprehensive description of the design of one of the most recognized food labeling programs in the USA. To demonstrate the utility of the integrative institutional analysis of the policy design approach, analysis results are discussed in comparison with existing regulatory policy design literature. The paper conclusion outlines limitations of the approach and offers a research agenda for the integrative institutional analysis of policy designs.

## 2. Institutional analysis of policy designs

The contribution sought in this paper is the operationalization, integration, and application of multiple core IAD framework concepts as a reliable method for systematically analyzing policy designs, described in four steps. Presented here in sequence, these four steps are in practice applied in an iterative process. Analysis procedures and examples are provided in the appendices. More detailed descriptions for IGT coding can be found in Basurto et al. (2010) and Siddiki et al. (2011, 2012).<sup>2</sup>

### *2.1 Step 1: identifying and dissecting rules with the IGT*

The first step starts with the deconstruction of policies into institutional statements using the IGT, an extension of Crawford and Ostrom's (1995, 2005) institutional grammar. The IGT allows one to isolate the individual directives embedded within a policy design pertaining to policy agents and targets. The unit of observation is the institutional statement, defined as a textual unit of observation that requires, permits, and forbids potential action.<sup>3</sup> An institutional statement consists of up to six components: (1) attribute, the animate actor charged with performing an action; (2) object, the receiver of the action; (3) deontic, the prescriptive operator that indicates whether the action is required, allowed, or forbidden; (4) aim, the action itself; (5) condition, the spatial, temporal, and procedural circumstances under which the action is executed; and (6) or else, the punitive sanction resulting from noncompliance with the institution (Siddiki et al., 2012: 169; see Appendices 1 and 2 for coding detail).

### *2.2 Step 2: classifying rules based on the rule typology*

The next step is to categorize statements according to their functional characteristics. To facilitate the comparison of rules, and how they operate in configurations or across settings, the IAD framework classifies rules into seven categories, collectively referred to as the rule typology (Kiser and Ostrom, 1982; Ostrom, 1986, 2005). The primary indicator for categorizing an institutional statement by rule type is the statement aim (Ostrom, 2005). Table 1 defines the rule types and provides an example of the aim(s) describing the action associated with the rule, the component of the action situation (described later) affected by the rule, and additional indicators that help identify the rule.

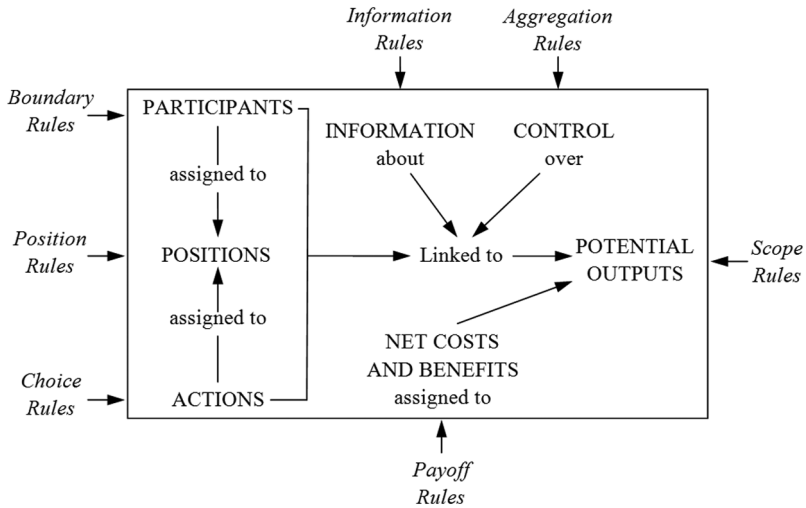
The relationship between rule types and the components of an action situation is displayed in Figure 1, where (1) positions are assigned by position rules, (2) participants enter and exit positions according to boundary rules, (3) participant actions are affected by choice rules, (4) joint action is affected by aggregation rules, (5) information communicated is affected by information rules, (6) the costs and benefits assigned to specific outcomes are affected by payoff rules, and (7) potential outcomes are affected by scope rules (Kiser and Ostrom, 1982; Ostrom, 1986, 2005).<sup>4</sup> Ostrom (2005) holds that these components and corresponding rules govern the interdependencies among actors in an action situation. For example, information rules direct the flow of information, while boundary rules specify the criterion required to enter into certain positions.

### *2.3 Step 3: creating and linking target action situations*

According to the IAD framework, action situations represent the focal unit of analysis for understanding collective action and how rules interact in shaping outputs and outcomes. Action situations are generally conceptualized as the social space in which individuals interact strategically to realize anticipated outputs and outcomes. Within policy designs, a similar conceptual space can be constructed in

**Table 1.** Definition and identification of rule types (adapted from Ostrom, 2005).

Rule type	Definition	Basic aim verb	Component of the action situation	Additional indicators to help code institutional statements by the rule typology
<b>Position</b>	Identify roles to be filled by individuals. Position rules also identify the absolute, minimum, or maximum number of individuals that can occupy a given position (Ostrom, 2005).	Be	Positions	Statements related to the number of individuals that can occupy a position.
<b>Boundary</b>	Identify the prerequisites (characteristics, skills, possessions) of individuals eligible to occupy a position (Ostrom, 2005).	Enter or leave	Participants	Statements delineating requirements for entry to a position, such as permit fees.
<b>Choice</b>	Specify specific actions – what an actor must, must not, or may do. Often such situations will also indicate the conditions that affect what an actor must, must not, or may do (Ostrom, 2005).	Do	Control	Statement cannot be confidently classified as a position, boundary, aggregation, information, or payoff institution, but identify specific actions or action sets.
<b>Aggregation</b>	Aggregation rules relate to actions or decisions that require two or more individuals (Ostrom, 2005).	Jointly affect	Actions	Statements that address how multiple actors make decisions together
<b>Information</b>	Statements that indicate what is the permitted, obliged, or prohibited channel of communication, how the information is to flow, to whom, and when. They also may indicate the form that the information is to take (Ostrom, 2005).	Send or receive	Information	Statements that combine a form of information and communication
<b>Payoff</b>	Assign external rewards or sanctions to specific actors relative to distinct actions (Ostrom, 2005).	Pay or receive	Costs/benefits	Statements that contain all IGT components. Statements that allocate benefits or costs.
<b>Scope</b>	Identify required, desired, or prohibited outcomes. They may identify the parameters, or range, of outcome variables that can be affected, or identify limits or parameters to a required, desired, or prohibited outcome (Ostrom, 2005).	Occur	Outputs	Statement cannot be confidently classified as a position, boundary, aggregation, information, or payoff institution, and that refer to outcomes, goals, or results. Statements that do not identify defined action sets or limit the processes that lead to an outcome. May also identify specific actions or action sets if coded as choice/scope rules.



**Figure 1.** Institutional effects on action situation components  
Adapted from Ostrom (2005).

the form of a written target action situation. A written target action situation refers to the intended action situation structured by a configuration of institutional statements identified within a policy text through the IGT and the rule typology. Some policy designs will structure one target action situation, others will focus on several, and still others will not target any action situation. Target action situations may be clearly or unclearly specified with regards to time, setting, and actors. They may be intended to construct new action situations or to influence existing action situations, and may correspond to an observable action situation or one that is entirely socially constructed.<sup>5</sup>

When identifying one or more targeted action situations, the analyst should first identify the desired policy outcome. The outcome is the intended change or achievement in the condition of the world as a result of the policy (often identified in the preamble of the policy). The analyst should then identify the intended outputs of the policy’s target action situations. These outputs serve as the measureable result or results produced by the public policy, are assumed by the designers of the public policy to link to the desired outcome, and often serve as proxy indicators of the outcome (Koontz and Thomas, 2012). Sample outputs of targeted action situations include individuals changing positions, the exchange or sending of information, a collective decision, and authoritative declarations. Outputs of a target action situation can cycle back into the same target action situation, lead to a different target action situation structured by different rules, or result in an exit of the system.

Target action situations will always have at least two outputs from a potential decision in some form of compliance or noncompliance.<sup>6</sup> For example, a configuration of institutional statements pertaining to a target action situation labeled *application for organic certification* could result in an application being approved

(output 1) or an application being denied (output 2). Sometimes the target action situations are independent of each other, while in other cases target action situations can be linked in sequences. For example, if an application for organic certification is approved (output 1), the applicant enters a new target action situation (*organic food production*), assuming the responsibilities relevant to the new position of *certified organic operation*. If the application is denied (output 2), the applicant may enter into one of three new target action situations: *re-apply for certification*, *mediation*, or *appeal*, or may choose to relinquish interest in pursuing certification altogether and exit the system. The target action situation, *application for organic certification*, therefore, is linked to target action situation *organic food production* through the output *application granted*, and linked to the target action situations *re-apply for certification*, *mediation*, or *appeal* through the output *application denied*. In this manner, the target action situations can be identified and linked to one another, to create a map of policy-related processes.

This description is indicative of analyzing target situations at the meso scale where institutional statements are configured around target action situations and target action situations are then linking through outputs.<sup>7</sup> Such a projection can be conceived as a sequence of intended events that link together by outputs that result from compliance or noncompliance with rules within the target action situations or, possibly, that serve as proxy indicators for the outcomes.

Working at the meso scale, however, results in difficulty in understanding how actors proceed from one target action situation to the next, as the target action situations at the meso level may consist of dozens or hundreds of institutional statements. Once the target action situations have been identified and linked through inputs and outputs at the meso scale, the analyst selects a target action situation and zooms in to analyze the configuration of institutional statements at the micro scale. By zooming into the micro scale within the confines of a single action situation, the analyst is faced with a manageable and limited number of institutional statements. At the micro scale, the analyst can focus on the rules that are configured around the situation that establish the in-form constraints and incentives resulting in the outputs of interest (see Figure 1).

#### 2.4 Step 4: determining levels of decision making

Institutional statements in target action situations are often structured to affect the day-to-day behaviors, but are occasionally written to enable adaptation of the policy design. The IAD framework offers a conceptual distinction that accounts for such adaptation through hierarchical linkages, referred to here as the levels of decision making.<sup>8</sup> The IAD framework identifies three distinct levels as analytically useful: the operational level, collective-choice level, and constitutional level (Kiser and Ostrom, 1982; Ostrom, 2005; Ostrom et al., 1994).<sup>9</sup> The operational level is the routine day-to-day decisions of individuals, resulting actions, and outputs. Decisions made at the collective-choice level structure the opportunities and constraints that affect decisions and actions made at the operational level. Decisions

made at the constitutional level structure and affect decision making at the collective-choice level.

This fourth step involves the determination of the level of decision making at which the institutional statements or the target action situations are situated. To illustrate, many institutional statements are directed at affecting operational decisions of individuals, such as the selection of fertilizer type or how much time a cow has access to pasture. Other statements are intended to structure collective-choice situations that alter the institutional statements affecting operational-level activities, such as the decision process and criteria by which the synthetics that are allowed in organic practices can be approved or denied. The institutional statements and target action situations that operate at different levels of decision making can be analyzed at both the meso and micro scales, as described in Step 3.

### **3. Case study: National Organic Program regulations**

The four-step approach is illustrated with the USDA's NOP regulation. With the objective of encouraging an organic foods market, the NOP regulation dictates the production and processing practices, as well as the allowed and prohibited input substances, that can be used in the production of food products labeled 'organic'. A central motivation for selecting the NOP is its deviation from traditional regulatory arrangements, highlighting the importance of understanding the Program's design.

As in the case of the NOP, traditional regulatory arrangements begin with a government agency rule-making process that results in regulations to be administered by identified agents and with which target individuals are expected to comply. Traditional regulatory structures then seek to impel compliance through a reliance on hierarchical agency monitoring for behavioral congruence with required rules (May, 2002; Selznick, 1985). The NOP, in contrast, is best described as a quasi-voluntary program, as producers and processors are subject to NOP regulations only if they desire to market their products as organic.<sup>10</sup> The NOP, therefore, faces the challenge of encouraging regulatory compliance without burdening participating operations to the point that they evade regulatory directives or exit the Program altogether (Potoski and Prakash, 2004). This challenge is accentuated by the fact that the NOP must establish standard practices for a diverse market that is evolving with the entrance of organic products previously not addressed by the NOP (Dimitri and Oberholtzer, 2009) and of large industrial production and processing firms (Darnhofer et al., 2010).

Furthermore, the NOP incorporates the unusual monitoring and sanctioning arrangement that existed prior to the Program's implementation. As such, the NOP accredits certification bodies from across the public, private, and nonprofit sectors to certify operations as organic, and to inspect operations for compliance with the NOP regulation. The reliance on third-party certifiers highlights a central concern of adequate oversight mechanisms of accredited certification agents (ACAs) to ensure adherence to, and consistency in the application of, the NOP (Levi-Faur, 2011; May, 2002). Indeed, the issue of adequate NOP oversight of ACAs was



highlighted in a recent USDA audit (United States Department of Agriculture Office of the Inspector General, 2010).

As traditional regulatory arrangements are increasingly supplanted by a variety of regulatory arrangements that incorporate deviations such as those that characterize the NOP (Levi-Faur, 2011), there is a need to better understand the designs that structure them. The NOP regulation provides the opportunity to investigate the design implications of a quasi-volunteer regulatory program that relies on accredited third-party regulatory monitors from across the public, nonprofit, and private sectors. The NOP regulation's design, as analyzed according to the method proposed in this paper, is discussed in the following section.

## 4. Results

The results of the integrative institutional analysis of the NOP regulation policy design are presented in this section. Results from Steps 1–3 are combined into a single section.

### 4.1 Steps 1, 2, and 3: IGT, rule types, and target action situations

The results of Steps 1–3 are depicted in Table 2 in which the rule type distribution is presented according to the appropriate target action situation. The number of each rule type per target action situation is provided, as well as a total count of rule types per target action situation. While the majority of the institutional statements are each associated with a single target action situation, some institutional statements span multiple target action situations. A clear example of this is the institutional statement 'fees and other charges equal as nearly as may be to the cost of the accreditation services rendered under the regulations, including initial accreditation, review of annual reports, and renewal of accreditation, shall be assessed with the following provisions...' This statement spans two target action situations identified in the analysis: *certifier accreditation* and *report and accreditation renewal*. Statements that spanned multiple target action situations were coded in each.

Approximately 70% of the institutional statements in the NOP regulation are choice rules ( $n = 657$ ), which determine what actions must, must not, or may be undertaken, and thus provide guidance related to compliance or non-compliance. Given that the NOP regulates the behavior of those involved in the organic labeling system, it is not surprising that a majority of the statements dictate choice. Indeed, the majority of choice rules are directed toward production and handling or labeling and product sales. Notably absent are position rules ( $n = 2$ ), which create positions in a particular target action situation and often include qualifiers to actors that may hold such position (e.g. the exact number, or the upper or lower limit, of individuals that can occupy a given position; Ostrom, 2005). One interpretation of this low number of position rules is that they are determined by a different policy, such as the 1990 Organic Foods Production Act (OFPA). The second largest category is information rules ( $\approx 13\%$  of total), affecting the level of information available to actors about actions and the link between actions and outputs. Nearly half

**Table 2.** Rule types within National Organic Program regulation target action situations.

	Position	Boundary	Aggregation	Payoff	Information	Scope	Choice	Total
Certifier accreditation & operator certification	-	24	-	14	14	-	58	110
Certifier accreditation	-	7	-	12	-	-	32	51
Report & accreditation renewal	-	1	-	-	4	-	4	9
Noncompliance procedure	-	-	-	-	-	-	1	1
Appeal (certifier)	-	4	-	-	-	-	4	8
Reapply for accreditation	-	5	2	3	8	2	34	55
Operator initial certification	-	10	-	3	11	4	307	337
Production & handling	-	6	3	2	9	2	35	58
Continuation of certification	-	10	-	3	46	2	124	198
Labeling & product sales	-	6	-	-	6	-	18	30
Appeal (operator)	-	-	2	-	3	-	8	13
Mediation	-	1	-	-	11	-	18	30
Reapply for certification	-	-	-	-	-	-	-	-
State organic programs	-	2	2	-	2	-	6	10
State program proposal	-	1	-	-	-	-	-	1
Revision & resubmission	-	-	-	-	1	-	3	4
State program amendment	-	-	-	-	1	-	1	2
Review of state program	-	-	-	-	-	-	-	-
National list of allowed & prohibited substances	-	-	1	-	-	-	6	7
NOSB	-	-	-	-	-	-	-	-
Peer review panel	2	-	-	-	1	-	4	5
Peer review panel	2	77	10	37	117	10	657	929
Totals								

NOSB: National Organic Standards Board.

of the information rules are directed toward required communication of information among actors within the labeling and product sales target action situation.

The mapping of linked NOP regulation action situations and associated rule configurations is represented visually in Figure 2. The diamond figures denote target action situations, and inside each diamond the number of institutional statements pertaining to the target action situation is provided. For example, the *certifier accreditation* target action situation consists of 110 statements. Configurations are linked by outputs, represented in the oval figures. Each target action situation is linked directionally with another target action situation with an arrow.

A certifier organization seeking to gain entry to the system enters through the *certifier accreditation* target action situation. The certifier moves from the *certifier accreditation* target action situation to the *operator initial certification* target action situation through the oval output *accreditation granted*. If accreditation is denied, the certifier can either appeal the decision by entering the *appeal* target action situation, or may choose to cease pursuit of accreditation and exit the system.

The point of entry to the system for operations seeking organic certification is the *operator initial certification* target action situation, leading to two possible outputs: *certification granted* and *certification denied*. If certification is granted, the operation enters the target action situation *production and handling*, which is linked to *production inspection and testing* and *labeling and product sales*. Assuming the operation is compliant, it cycles through the *continuation of certification* target action situation.

Within the largest system of linked target action situations related to certification and accreditation, 12 meso-scale action situations were identified, representing the bulk of the target action situations the NOP rule is intended to structure (see left-hand side of Figure 2). These target action situations represent the processes that certifiers go through in the accreditation process, organic operations go through in the certification process, and production, handling, labeling, and sales processes, all of which describe much of the operational processes for executing an organic labeling program under the NOP.

For example, the *operator initial certification* target action situation process begins with the operation's development of an organic systems plan, which details all operational activities and their adherence to NOP organic practices. The organic systems plan is submitted to a certifier, who reviews it and either approves it or requests changes. After approval of the organic systems plan, the certifier sends an inspector to the operation, who inspects the operation for congruence with the plan. The inspector holds an exit interview with an operation representative and relays this information to the certifier. After inspection results indicate operation practice congruence with the organic system plan, and operation payment of all relative fees, the operation is granted organic certification for the products outlined in the plan.

The state organic program system identifies the process of creating, operating, and maintaining a state organic program. The rules in the National List target action situation pertain to the decision process of the National Organic Standards

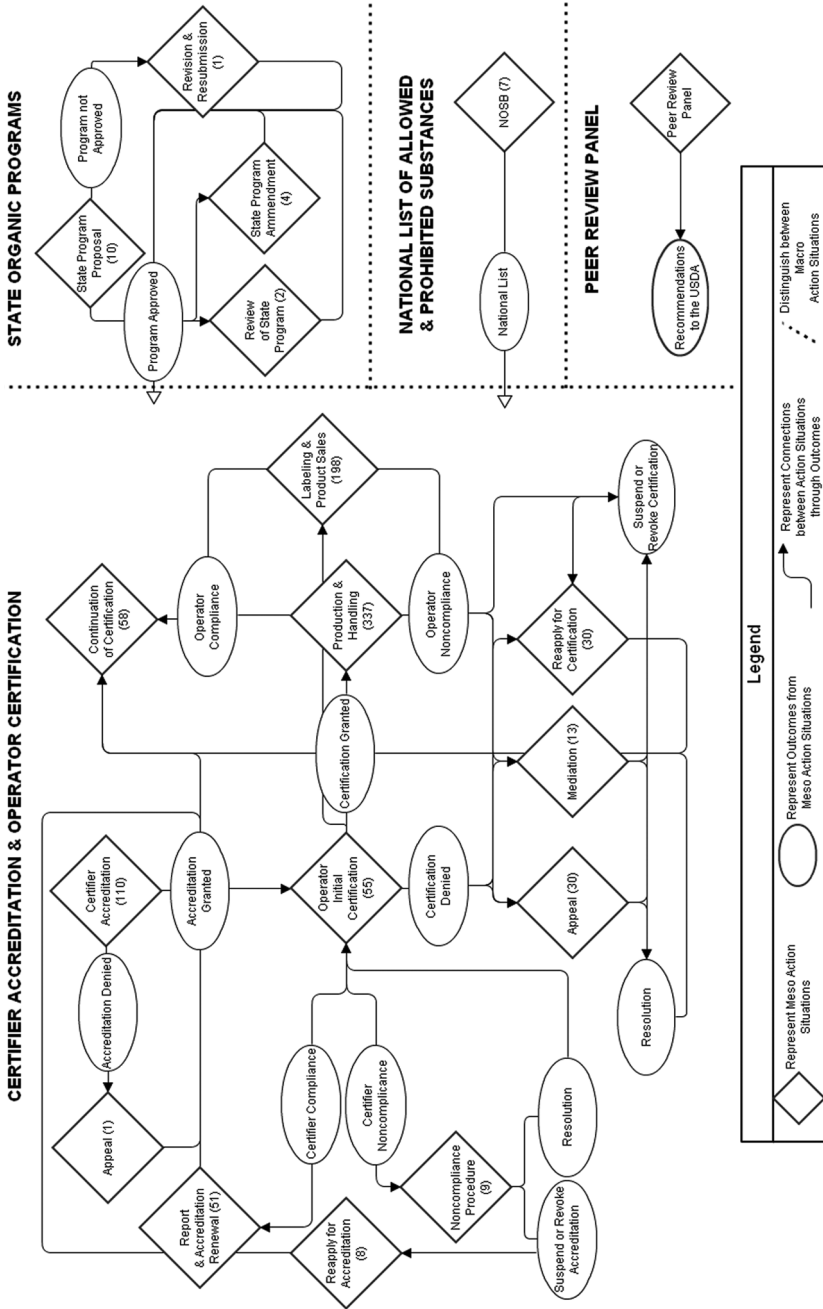


Figure 2. Linked target action situations in the National Organic Program regulations.

Board (NOSB), which determines the National List. For instance, institutional statements detail the criteria against which synthetic substances to be used as processing aids are evaluated. Finally, the peer review target action situation establishes and outlines the duties of a NOP peer review panel. According to the regulations, the peer review panel is to conduct an annual evaluation of the NOP's adherence to its accreditation procedures and report the finding to the NOP Program Manager.

Whereas Figure 2 provides a summary of all target action situations and the count of institutional statements therein, Figure 3 zooms into one target action situation (*continuation of certification*) to illustrate a micro-scale depiction of some of the rules directed toward specific actors in the target action situation. For instance, in this rule configuration, operations wishing to continue their organic certification must annually pay certification fees (boundary rule), may resubmit the previous year's pasture plan (choice rule), must submit a summary of deviations made from the organic systems plan (information rule), must seek the certifying agent's agreement on the organic system's plan (aggregation rule), and if it withdraws its application, must pay for the cost of services provided up to that point (payoff rule). These rules link to the potential outputs of the target action situation: the granting or denying of the operation's organic certification. While simply descriptive in this paper, the potential is for the analyst to examine such micro-level situations to understand aspects of compliance.

Figures 2 and 3, together, are important because they illustrate the challenges of overcoming the issue of scale with target action situations and associated rule configurations. Figure 2 shows how the NOP regulation can be described in 12 meso-scale configurations. Figure 3 shows how the analyst can zoom into one micro-scale target action situation to describe specific rules, behavior, and outputs. The result illustrates how the institutional analysis approach can be used to present both the broad and narrow interpretations of a policy and how the approach can work across scales.

#### 4.2 Step 4: analysis of target action situations across levels of decision making

Figure 4 presents the results of the analysis with rules linked across levels of decision making structured in the NOP regulations. Within the diagram, three levels of decision making are depicted, and the rules following from each level are represented by the circles bridging two levels. The majority of the institutional statements in the NOP regulations are intended to structure operational target action situations. The few institutional statements that are directed at structuring collective choice target action situations can be grouped according to two target action situations: the NOSB and state organic programs. The NOSB is charged with making collective-choice decisions regarding which organic materials to exclude and which synthetic materials to include in organic operations through the National List. State organic programs can make collective-choice decisions about inspection and enforcement structures, as well as any additional requirements that exceed those outlined by the NOP regulation. In order to capture the three levels of

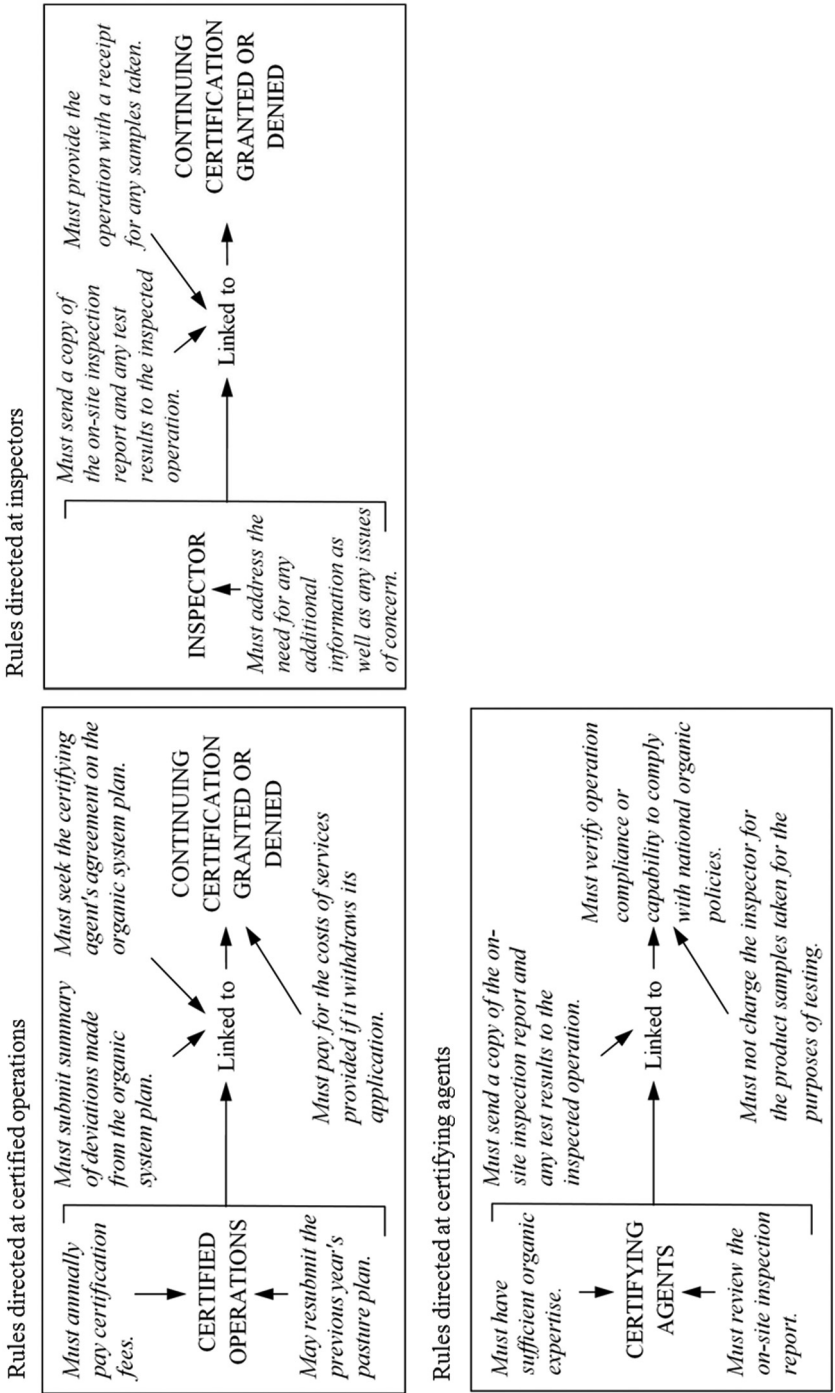
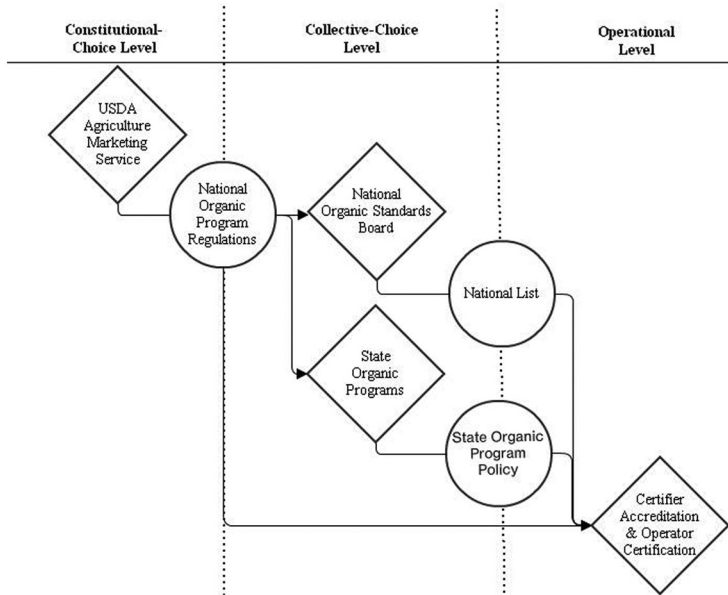


Figure 3. Examples of rules within the 'continuation of certification' target action situation.



**Figure 4.** Target action situations linked across levels of decision making.

decision making most often referred to in IAD framework literature, the NOP regulations are depicted as the output of the USDA Agriculture Marketing Service (AMS), which developed the regulations, and is considered the constitutional-choice level in this analysis.

## 5. Discussion

The primary purpose of this paper is to present an institutional analysis approach to the study of policy designs that integrates and applies multiple concepts from the IAD framework. The preceding integrative institutional analysis of the NOP regulation highlights several lessons regarding the NOP as a voluntary regulatory program that relies on accredited third-party regulatory monitors. The results of the analysis are discussed here, with references to likely divergences from more traditional regulatory arrangement designs, and implications for regulatory and policy design theory are considered.

Firstly, *the NOP regulations consist of an abundance of choice rules detailing specific actions and few scope rules that relate to desired outcomes.* This process-based approach to regulation is generally the most common approach to influencing behavior through regulations (Ostrom, 2005). Likely modeled after the early experiences of organic farmers that found certification through outcome measures such as product testing problematic (Nowacek and Nowacek, 2008), it also reduces the potential for conflicting objectives within the policy, and the need for policy actors

to balance divergent scope rules. The process-based approach, however, does not allow for significant variation in practices according to product type or ecology, which may be attributing to challenges associated with the diversification of the organic market.

As Koski (2007) notes, regulations characterized by more prescriptive detail are not necessarily greater in the range of activities regulated or in regulatory stringency. However, they tend to decrease ambiguity for the agents in charge of regulatory administration, of principle concern in the instance of regulatory programs that rely on third-party monitors (Levi-Faur, 2011). As indicated in Table 2, the certifier accreditation target action situation of the NOP regulation exhibits the third-highest number of choice statements, suggesting that the prescriptive detail of the regulation extends beyond producers and processors as regulatory targets to specify required, prohibited, and allowed actions of certifiers. An examination of the institutional statements that comprise this action situation reveals that many of the regulatory directives detail the practices certifiers follow to maintain accreditation, pertaining to interactions with regulated producers and processors, record-keeping, and personnel procedures. The resulting implication is that regulatory programs relying on third-party monitors for program administration include prescriptive detail not only to clarify regulations for regulatory agents, but in addition it may be important for these agents to be targets of sufficient regulatory prescription.

Secondly, *the NOP regulations emphasize conflict resolution mechanisms over enforcing sanctions*. This is evident in the target action situations linked through the outputs ‘certification denied’ and ‘operator noncompliance’— mediation, appeal, and reapply for certification. Sanctioning in the form of legal proceedings and fines are outputs that flow from target action situations not structured in the NOP regulations, and are performed by the USDA.

Prior regulatory studies of policy design emphasize the relative level of stringency associated with particular designs (e.g. Meier, 1987; Rinquist, 1994). In the case of a voluntary program, however, a balance must be struck between consistently enforcing regulatory standards and accommodating reasonable behavioral deviations, as program administrators are concerned with participant defection in the face of overly strict regulation (Potoski and Prakash, 2004). This analysis of the NOP regulation suggests that one manner in which voluntary regulatory policy designs might balance such a tension is by placing conflict resolution ahead of sanctioning, at least in the case of lesser noncompliances. Such a design may also allow the government agency overseeing third-party monitors, such as the NOP, the opportunity to review and appraise third-party decisions.

Finally, *there may be barriers to adaptive policy change over time in the NOP*. The prevalence of choice rules in combination with a limited number of scope rules, as well as the limited number of collective-choice rules, may indicate a lack of formal flexibility and responsiveness to changes in the organic market structured within the policy (Ostrom, 1988). Empirical research has demonstrated, however, that ‘street-level’ policy implementers often exercise considerable discretion in response to realities not anticipated by policy makers, ignored by the policy, or



encouraged by inappropriate policy directives (Elmore, 1980; Hjern, 1982; Lipsky, 1980). If this is true in NOP administration then it would be the case that policy actors, such as inspectors, are, in reality, making discretionary decisions based on interpretations of NOP regulations relative to specific products and ecologies. The NOP's prescriptive detail targeted at certifiers, as noted earlier, may encourage consistency in third-party monitor behavior; however, evolving environmental and contextual factors not taken into account could undermine the intent behind this prescriptive detail. Although beyond the scope of the current analysis, this raises the more general question of whether a lack of formal adaptive policy design mechanisms undermines the uniformity of third-party regulatory behavior or threatens participant involvement with a voluntary program.

As the primary intent of this paper is to describe and illustrate a methodological approach for systematically analyzing policy designs, this section summarized a few key lessons drawn from the integrative institutional analysis of the NOP regulation. Implications were identified to demonstrate the theoretical development potential through application of the integrative institutional analysis method. Limitations of the approach and possible future research applications are offered in the following conclusion.

## 6. Conclusion

The integrative institutional analysis outlined in this paper brought together and applied multiple core IAD framework concepts to offer an approach for the systematic analysis of policy designs. The effort seeks to address the limitations of alternative policy design approaches, such as typologies (e.g. Lowi, 1964, 1972; Salamon, 2002) and within-type comparisons (e.g. Koski, 2007) and contribute through a method for deconstructing and then reconstructing policy designs. The result is an approach for better uncovering the elements and linkages between these elements that comprise the structural logic communicated through a policy design.

The approach enables a micro-scale focus of how institutional statements functionally interact in a single target action situation. The approach also enables a meso-scale focus of how a collection of target action situations link into sequences and chains of inputs and outputs, thereby offering a systematic way of depicting causal theories embedded in policy designs (Mazmanian and Sabatier, 1981; Pressman and Wildavsky, 1973). This integrative approach to the institutional analysis of policy designs offers a modest contribution in advancing the use of institutional analysis in studying policy designs, but challenges remain.

The primary limitation of the approach offered here is its dependence on the written text of a policy document. Firstly, the scope of inquiry is limited to the policy document(s) in question. For example, the analysis presented in this paper is restricted to the NOP regulation, thereby disregarding the many other policies that impact the experiences and behaviors of organic producers and processors. While this fact is noted as a genuine limitation, if the investigation in question is of a

single policy design, investigation of the design need not take into account peripheral policies. If, on the other hand, the objective is to study the impacts of design on resulting outputs, it may be necessary to account for the moderating or confounding impacts of other pertinent policy designs, among other factors.

Secondly, policy designs are often worded in complex, legal language that can be difficult to decipher. It is for this reason that this method begins with the application of the IGT – in order to dissect and assemble the institutional statements in a manner that facilitates both understanding and further analysis. Nonetheless, as noted by one anonymous reviewer, policy documents may have overlapping, missing, or unclear textual structures. In such situations the current approach is limited by the text in question. It is worth noting, however, that ambiguous or incomplete language can also be an important characteristic of a policy's design.

Finally, while the method proposed in this paper is intended to provide a systematic approach to understanding the elements and linkages that make up the structural logic of policy designs, there are certain situations for which alternative approaches are better suited. For example, Koski's (2007) method for assessing policy design scope, prescription, and stringency is better suited for the comparison of numerous policy designs at once.

Despite the limitations, the integrative institutional analysis of policy designs provides a novel method that opens the potential for new avenues of investigation, or new takes on existing efforts, for developing a better understanding of the nature and role of policy designs. We conclude with four such opportunities.

### ***6.1 Developing policy design theory***

The approach described in this paper is a method and not a theory. Although the approach may be most useful for theories already compatible with the IAD framework, such as common pool resource theory, there are opportunities to contribute to the development of other existing, or original, theories. For example, while past studies of regulatory design have focused on the prescription and stringency of regulatory policy designs (e.g. Koski, 2007), the present analysis suggests that in the case of regulatory arrangements that rely on third-party monitors, it is important for these agents to be targets of sufficient regulatory prescription. In addition, it was proposed that for voluntary programs that seek to balance consistent sanctioning for noncompliances with the risk of participant participation, an emphasis on conflict resolution over penalties may be preferable. Future systematic and detailed investigations of policy design can provide similar insights into policy design theoretical development.

### ***6.2 Accounting for policy design functional diversity***

Typology approaches to policy design conceptualization often characterize policy types according to functional categories, such as regulatory policies that pertain primarily to changing behavior or information policies focusing on restricting or

making public certain data (e.g. Salamon, 2002). The analysis presented in this paper indicates that the regulation in question primarily targets procedural actions (through choice rules); however, the communication of information also appears a prominent concern for the policy design (as highlighted by the number of information rules). The integrative institutional analysis approach thus provides a manner of capturing a policy design's functional diversity, accounting for designs that combine functional elements of different policy types.

### *6.3 Assessing policy design adaptive capacity*

Policy design and institutional scholars, alike, recognize that effective public policy requires a constant 'tinkering' with policy design (Ostrom, 2005; Schneider and Ingram, 1988; Weimer, 1993). In response to this need, and in order to promote design adaptation to contextual and temporal changes, policy developers will often incorporate formal mechanisms by which policy designs can be altered. The integrative institutional analysis approach offered in this paper provides a method for identifying and representing such formal design elements to aid in the assessment of design adaptive capacity.

### *6.4 In-depth comparison of policy designs*

As previously noted, although policy typology and within-type comparisons provide the ability to compare many policy designs at a time, these approaches are limited in their ability to provide in-depth comparisons of the elements, linkages, and structural logic that comprises policy designs. The integrative institutional analysis allows for such in-depth comparison using the incorporated IAD framework concepts. Similarities and differences in the functional foci can be investigated using institutional statement rule typology coding. Likewise, the adaptive mechanisms built into policy designs can be compared by identifying levels of decision making. Finally, the structural logic and causal theories underlying policy designs can be compared through the mapping of target action situations.

The integrative institutional analysis of the policy designs approach offers a methodological way forward in the study of policy designs. Through the integration and application of core IAD framework concepts, the approach allows for the identification and conceptualization of the elements, linkages, and structural logic underlying policy designs. The hope is to continue the effort of Vincent Ostrom (1988) that, through institutional analysis, policy scholars would eventually be able to better explain the source and implications of diverse institutional arrangements and policy practitioners will be better equipped to undertake policy design, creation, maintenance, and revision.

## Appendix I

Examples of institutional grammar tool coding.

---

### Attribute

- The animate actor charged with performing an action.

The applicant for organic certification must develop and implement an organic system plan.

### Deontic

- The prescriptive operator that describes whether the action is required, allowed, or forbidden.

The producer of an organic operation shall provide all ruminant livestock access to pasture.

### Aim

- Describes the action of the statement.

The Secretary will review state organic programs.

### Object

- The receiver of the action.

The certifying agent shall provide all persons inquiring about the application process with a copy of its fee schedule.

### Condition

- Specifies the spatial, temporal, and procedural circumstances under which the action is executed.

The certifying agent may combine the notification of noncompliance and the proposed suspension of revocation in one notification.

### Or else

- The punitive sanction resulting from noncompliance with the institution

Any certified operation that knowingly labels a product as organic, except in accordance with the Act, shall be subject to a civil penalty of not more than \$11,000 per violation.

---

## Appendix 2

A step-by-step method for finding and coding institutional statements by the IGT and into the rule typology is presented below. The description of these procedures is critical for overcoming some of the previous challenges in the literature for uncovering the common forms in policy designs; yet, many of the details of the procedures are not provided, given space constraints in this paper. For a fuller description of the coding using the IGT, we direct readers to the appendices and other publications (Basurto et al., 2010; Siddiki et al., 2011).

- (1) *Identify the institutional statements.*
  - (i) *Identify all definitions, titles, preambles, and headings.* Titles and headings are first identified because they are fairly easy to locate and rarely constitute an institutional statement of theoretical or practical interest. Headers of sections and subsections may be retained as a manner of classifying and categorizing the statements in a given legislation or rule.
  - (ii) *Identify sections and subsections of the bill as initial units of observation.* We call headers of sections and subsections ‘outline indicators’. Outline indicators are titles, subheadings, a capital or lowercase letters, colons, semicolons, or Roman numerals, used to separate sections from subsections and subsections from sub-subsections, etc. These initial units of observation are temporary and may be divided into additional units when there is more than one institutional statement within them.
  - (iii) *Subdivide all initial section or subsection units from Step 2 that have multiple sentences into sentence-based units of observation.* If a section or subsection does not have a complete sentence ending in a period, code the entire section or subsection as one unit of observation. If there are multiple sentences in the section or subsection, code each sentence as units of observation. In some instances, a single norm, rule, or strategy may span outline indicators. For example, a statement may include a colon with a list of objects separated by semicolons. In such examples, the coder will decide, based on the existence of grammar components, whether a statement is bound by the outline indicators, or spans them.
- (2) *Apply the IGT.* Code each institutional statement with respect to the attribute, object, deontic, aim, condition, and or else. Specific instructions can be found in Basurto et al. (2010).
- (3) *Code all possible institutional statements as one of five institution types – position, boundary, aggregation, information, or payoff.* Coding for institution type consists of up to four steps.
  - (i) The first step is to compare the statement’s aim with the basic aim verbs listed in Table 1 (Ostrom, 2005). Determine which basic aim verb best approximates the specifically stated aim in question, and code the statement according to the corresponding type of institution.
  - (ii) Sometimes the aim of the statement is ambiguous or reflective of more than one basic aim verb, requiring a second coding step. For example, both information and payoff rules may have an aim that falls under the ‘receive’ basic aim verb. In instances where the aim is ambiguous, or reflective of more than one basic aim verb, it is necessary to determine the regulated component of the target action situation that the aim is linked to. This may be accomplished by looking

to the *object* and the *condition* of the statement and comparing these with the regulated component categories in Table 1.

- (iii) The third step is to compare the statement with additional indicators, specific to institution type.
  - (iv) Finally, some statements cannot be coded simply as one institution type and may fall under two or more categories. For example: ‘The applicant must pay an entry fee to the organizer’. The statement is reflective of a payoff institution, as it assigns a cost to the applicant, and a benefit to the organizer. The statement is also reflective of a boundary institution, as it identifies a necessary action for the applicant to enter a position. *In such instances, the coder should code the statement in question in according to the following order: position, boundary, aggregation, payoff, information.* This means, for example, that if a statement can be coded as both a boundary and an information institution, the coder will code it as a boundary institution.
- (4) *Code all remaining institutional statements as either choice or scope rules.* Choice and scope rules are default ‘all other’ rules for statements that cannot accurately be classified as position, boundary, aggregation, information, or payoff rules (Ostrom, 2005). Choice rules refer to directives regarding what specific actions must, must not, or may be taken by an actor. The aim of a choice institution is an action. Scope rules outline or affect the outcome variable of action. The aim of a scope institution refers to an outcome (Ostrom, 2005). In addition, one can distinguish scope rules from choice rules by determining if the statement prescribed specific actions to be used in obtaining an outcome – if the statement refers to specific actions, or action sets, it is a choice institution.
- (i) *Possibly code statements with qualities of both choice and scope rules as choice/scope.* If the coder is interested in comparing the desired outcome of the rules, norms, and strategies in question, he or she may wish to track choice rules that also display elements of scope rules. For example, the statement: ‘The student must cite references in a manner that conforms to the university honor code’. In this case, ‘cite references’ is the action set (choice institution), but also references an outcome with ‘conforms to the university honor code’ (scope institution). The coder may choose to code this statement as a choice/scope institution.
- (5) *Multiple coders for inter-coder reliability.* Multiple coders should code shared documents to ensure that the data collected through the coding process is reliable. Coding methods should be revised based on the coding experiences of the coders until an agreed upon percentage of coding similarity is reached. Communication between the coders regarding coding methods is key, as each new document may present new and distinct coding challenges.

Coding rules written into public policy present specific challenges. Notably, the analyst is reliant on the verbiage and sentence structure chosen by the authors of the policy document in question. Reinterpretation and alterations to statement verbiage and sentence structure may, at times, increase the apparent validity of coding the written rules. Such changes to institutional statements interject an element of subjectivity to the coding process, however, and are likely to decrease the reliability of the exercise. In light of these methodological perils, the authors of the current study leaned toward more strict coding decision rules and a minimum of text alterations.

## Appendix 3

Examples of rule type coding.

---

<i>Position</i>	The peer review panel shall <b>be composed</b> of not less than 3 members.
<i>Boundary</i>	A certifying agent whose accreditation is revoked by the Secretary shall <b>be ineligible</b> to be accredited as a certifying agent under the Act and the regulations in this part for a period of not less than 3 years following the date of such revocation.
<i>Choice</i>	The producer must not <b>use</b> lumber treated with arsenate or other prohibited materials for new installations or replacement purposes in contact with soil or livestock.
<i>Aggregation</i>	When a change to an approved pasture plan is contemplated, which may affect the operation's compliance with the Act or the regulations in this part, the producer shall <b>seek</b> the certifying agent's agreement on the change prior to implementation.
<i>Information</i>	A copy of the on-site inspection report and any test results will <b>be sent</b> to the inspected operation by the certifying agent.
<i>Payoff</i>	All costs associated with a reconsideration of application, including onsite inspection costs, shall <b>be borne</b> by the certifying agent.
<i>Scope</i>	The handler of an organic handling operation must <b>implement</b> measures necessary to prevent the commingling of organic and nonorganic products.

---

## Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This material is based on work supported by the National Science Foundation (No.1124541). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

**Notes**

1. The term 'policy design' is used to refer to the textual or written content and structure of a public policy, which can include, but is not limited to, constitutions, city charters, legislative statutes or laws, court decisions, executive orders, and regulations. The term is used for the following reasons. Firstly, this effort seeks to contribute to ongoing efforts within political science and public policy studies to understand policy designs (Hood, 1983; Lowi, 1972; Salamon, 2002; Schneider and Ingram, 1997); this paper offers one approach for analyzing policy design based on the IAD framework. The IAD framework is an appropriate conceptual and analytical lens for studying policy design, as one of its central aims is to uncover the structure and intent of rules (e.g. policies) that govern behavior within collective action settings. Secondly, the IAD framework currently does not have a succinct term that relates specifically to textual content and structure of public policy; for example, institutional arrangements or configurations may or may not refer to written public policies.
2. To assess the effectiveness of our operationalization of the concepts discussed, and our associated coding guidelines, an inter-coder reliability test was conducted. Two training sessions were performed, concurrent with practice coding, with an individual outside of the research team. For the inter-coder reliability test, 77 institutional statements were coded by the research team and the outside individual, slightly over 10 percent of the statements in the NOP regulation. Percent agreement with the research team's coding was calculated in regards to three coding measures – institutional statement identification, level of decision-making coding, and rule typology coding. Inter-coder agreement was 100 percent for identification of institutional statements, 97 percent for levels of decision-making coding, and 91 percent for the rule typology coding.
3. Crawford and Ostrom (1995: 583) define institutional statements as the 'shared linguistic constraint or opportunity that prescribes, permits, or advices actions...' The definition used in this paper is not inconsistent with their definition but is more appropriate for the current application by emphasizing a textual (non-linguistic) orientation and is thus less restrictive by not requiring that the statement be shared as to imply common linguistic understanding.
4. Identifying institutional grammar components is a valuable precursor for coding a rule typology. The aim component of the institutional grammar indicates the action of the participant and how that participant relates to the action situation (Ostrom, 2005). The basic aim verbs in Table 1 are used as a first indicator when coding for institution type. For instance, the aim 'send' in the following institutional statement indicates that it is an information rule: 'The students must send an email to the professor every Tuesday or receive a deduction in their grade' (see Appendices 2 and 3). A second reason is in application. The IGT helps understand the incentives and inhibitions shaping individual behavior. For example, Siddiki et al. (2012) use the IGT to explore individuals' parallel motivations for complying with regulatory directives, such as perceived regulatory appropriateness, personal guilt, and fear of social disapproval.
5. In some policy designs, the institutional statements (rules) may not refer to any specific action situation or may apply to many action situations. Nonetheless, to identify rules, and particularly rule types, as defined by the IAD framework, is to make reference either explicitly or implicitly to an action situation of some sort. For written public policies, we use a target action situation as a conceptual device for configuring together rule types as written in public policy. To describe target action situations as socially constructed is to recognize that public policies are a reflection or translation of the thoughts, ideas, beliefs, and interests of the designers (Mazmanian and Sabatier, 1981).



Compared to action situations as used and defined in typical research grounded by the IAD, target action situations are not grounded in actual interactions among two or more actors but are formulated to attempt to create new action situations or change part of an existing action situation.

6. We reason that in regards to target action situations, outputs relate to compliance or noncompliance because the rules that comprise a target action situation are directives over what actions individuals are required, permitted, or forbidden from taking, the objective of which is behavioral conformance (compliance). While there might be a wide range of actions qualifying compliance and non-compliance, for the purposes of demonstration we simplify the analysis dichotomizing action situations outputs according to these two dimensions only.
7. Pressman and Wildavsky (1973: xv) described such a sequence as a written 'chain of causation' that connects 'initial conditions and future consequences'. A benefit of meso-scale analyses is the specification of the assumed chain of causation or association, which can help identify veto points or a faulty causal theory in relation to solving a societal problem (Mazmanian and Sabatier, 1981).
8. We use levels of decision making rather than the 'levels of analysis' often used in IAD framework research, as the latter refers to the level at which analysis is conducted. Levels of decision making are more accurate for the method offered in this paper, because the focus is on identifying institutional statements within the policy that allow for the ability to change the formal operational rules as spelled out in a policy design. Furthermore, we recognize that in practice, policy actors may engage in collective-choice decisions that alter how written rules are interpreted and enforced. The focus here is identifying the formal rules written into policy designs that allow for the formal adaptation of design.
9. An analyst could conceive of an infinite layering of levels of analysis within complex situations (Ostrom, 2005). The focus on these three levels in this paper is for simplicity and analytic clarity.
10. Operations that gross less than US\$5000 per year from organic product sales are exempt from the NOP certification requirement.

## References

- Basurto X, Kingsley G, McQueen K, et al. (2010) A systematic approach to institutional analysis: applying Crawford and Ostrom's grammatical syntax. *Political Science Quarterly* 63(3): 523–537.
- Crawford S and Ostrom E (1995) A grammar of institutions. *The American Political Science Review* 89(3): 582–600.
- Crawford S and Ostrom E (2005) A grammar of institutions. In: Ostrom E (ed.) *Understanding Institutional Diversity*. Princeton, NJ: Princeton University Press.
- Darnhofer I, Lindenthal T, Bartel-Kratochvil R, et al. (2010) Conventionalisation of organic farming practices: from structural criteria towards an assessment based on organic principles. *Agronomy for Sustainable Development* 30(1): 67–81.
- Dimitri C and Oberholtzer L (2009) Marketing U.S. organic foods: recent trends from farms to consumers. United States Department of Agriculture Economic Research Service. Economic Information Bulletin Number 58. Available at: <http://www.ers.usda.gov/Publications/EIB58/EIB58.pdf> (accessed on 3 December 2010).
- Elmore RF (1980) Backward mapping. Implementation research and policy decisions. *Political Science Quarterly* 94(4): 601–616.

- Hjern B (1982) Implementation research. The link gone missing. *Journal of Public Policy* 2(3): 301–308.
- Hood C (1983) *The Tools of Government*. London: Macmillan.
- Kiser LL and Ostrom E (1982) The three worlds of action: a metatheoretical synthesis of institutional approaches. In Ostrom E (ed.). *Strategies of Political Inquiry*. Beverly Hills, CA: Sage Publications, pp. 179–222.
- Koontz TM and Thomas CW (2012) Measuring the performance of public-private partnerships: a systematic method for distinguishing outputs from outcomes. *Public Performance & Management Review* 35(4): 769–786.
- Koski C (2007) Examining state environmental regulatory policy design. *Journal of Environmental Planning and Management* 50(4): 483–502.
- Lester JP, Franke JL, Bowman AO, et al. (1983). Hazardous wastes, politics, and public policy: a comparative state analysis. *Western Political Quarterly* 36(2): 257–285.
- Levi-Faur D (2011) *Handbook on the Politics of Regulation*. Northampton, MA: Edward Elgar.
- Linder SH and Peters BG (1989) Instruments of government: perceptions and contexts. *Journal of Public Policy* 9(1): 35–58.
- Lipsky M (1980) *Street-Level Bureaucracy. The Dilemmas of Individuals in the Public Service*. New York: Russell Sage Foundation.
- Lowi TJ (1964) American business, public policy, case-studies, and political theory [Review of the book *American Business and Public Policy: The Politics of Foreign Trade* by R. A. Bauer, I. S. Pool, and L. A. Dexter]. *World Politics* 16(4): 677–715.
- Lowi TJ (1972) Four systems of policy, politics, and choice. *Public Administration Review* 32(4): 298–310.
- May PJ (2002) Social regulation. In: Salamon LE (ed.). *The Tools of Government: A Guide to the New Governance*. New York: Oxford, pp. 156–185.
- Mazmanian DA and Sabatier PA (1981) *Implementation and Public Policy*. Lanham, MD: University Press of America.
- McGinnis MD (2011) Networks of adjacent action situations in polycentric governance. *Policy Studies Journal* 39(1): 51–78.
- Meier KJ (1987). The political economy of consumer protection: an examination of state legislation. *Western Political Quarterly* 40(2): 343–359.
- Nowacek D and Nowacek RS (2008) The organic foods system: its discursive achievements and prospects. *College English* 70(4): 399–416.
- Ostrom E (1986) An agenda for the study of institutions. *Public Choice* 48(1): 3–25.
- Ostrom E (2005) *Understanding Institutional Diversity*. Princeton, NJ: Princeton University Press.
- Ostrom E, Gardner R and Walker J (1994) *Rules, Games, and Common-pool Resources*. Ann Arbor, MI: University of Michigan Press.
- Ostrom V (1988) The foundations of institutional analysis and development. In: *workshop in political theory and policy analysis*, Bloomington, IN. Available at: <http://hdl.handle.net/10535/7455> (accessed 8 October 2012).
- Pierson P (2000) Path dependence, increasing returns, and the study of politics. *American Political Science Review* 94(2): 251–267.
- Potoski M and Prakash A (2004) The regulation dilemma: cooperation and conflict in environmental governance. *Public Administration Review* 64(2): 152–163.
- Pressman JL and Wildavsky AB (1973) *Implementation*. Berkeley, CA: University of California Press.

- Ranney A (1968) The study of policy content: a framework for choice. In: Ranney A (ed.) *Political Science and Public Policy*. Chicago, IL: Markham Publishing Company, pp. 3–22.
- Rinquist EJ (1994) Policy influence and policy responsiveness in state pollution control. *Policy Studies Journal* 22(1): 25–43.
- Salamon LM (2002) The new governance and the tools of public action: an introduction. In: *The Tools of Government: The Guide to New Governance* (ed Salamon LM). New York: Oxford University Press, pp. 1–47.
- Schneider AL and Ingram H (1988) Systematically pinching ideas: a comparative approach to policy design. *Journal of Public Policy* 8(1): 61–80.
- Schneider AL and Ingram H (1997) *Policy Design for Democracy*. Lawrence, KA: University Press of Kansas.
- Selznick P (1985) Focusing organizational research on regulation. In: Noll RG (ed.) *Regulatory Policy and the Social Sciences*. Berkeley, CA: University of California Press, pp. 363–367.
- Siddiki S, Basurto X and Weible C (2012) Using the institutional grammar tool to understand regulatory compliance: the case of Colorado aquaculture. *Regulation & Governance* 6(2): 167–188.
- Siddiki S, Weible CM, Basurto X, et al. (2011) Dissecting policy designs: an application of the institutional grammar tool. *Policy Studies Journal* 39(1): 79–103.
- United States Department of Agriculture Office of the Inspector General (USDA) (2010) Oversight of the National Organic Program. Audit Report 01601–03-HY. March 2010. Available at: [http://www.usda.gov/oig/webdocs/01601–03-HY.pdf](http://www.usda.gov/oig/webdocs/01601-03-HY.pdf) (accessed 14 January 2010).
- Weimer DL (1993) The current state of design craft: borrowing, tinkering, and problem solving. *Public Administration Review* 53(2): 110–120.