Integrating Narratives and Institutional Analysis in Environmental Governance:
Toward a Theory of Institutional Narratives

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Abstract

Environmental governance involves the design of effective institutions for managing human behavior. Underlying institutional forms of governance may vary based on how attitudes, causality, and information about dynamic systems are filtered. This paper examines the behavioral theories and assumptions of two theoretical frameworks: Institutional Analysis and Development (IAD) and the Narrative Policy Framework (NPF) and outlines how bridging what are often perceived as competing frameworks, can actually provide greater insight into environmental governance. Narratives are mental models of information that provide cognitive heuristics for processing new information, making decisions based on that information, and enabling the understanding of complex phenomena. Narratives are disseminated among policy actors through shared communications. As they are shared among cultural groups, they are critical for understanding collective action. Drawing elements from IAD and NPF helps understand highly contested issues, where there are competing narratives driving actors' fundamental understanding of both information and the need for cooperation. We aim to understand the connection between narratives and institutions to build a theory of institutional narratives. The paper provides a discussion of the importance of a coupled approach and the new research areas it opens for investigation.

Introduction

One of the primary aims of public policy theories is to explain policy outcomes. To understand the policy process and resulting outcomes, different theoretical approaches include both explicit and implicit models of human decision-making and cognitive processes. This paper focuses on two theoretical frameworks: Institutional Analysis and Development (IAD) and the Narrative Policy Framework (NPF) and examines how they operationalize human cognition, information processes, and decision making. The paper seeks to understand how the role of narratives might be better linked to that of institutions, with applications to environmental governance. At first glance these approaches appear to offer distinct and contrasting theoretical lenses through which to analyze policy processes and outcomes. However, a deeper examination of both perspectives illustrates that it is possible to leverage the commonalities and complementarities across these two approaches to better understand and explain contemporary challenges

in environmental governance. Combining multiple theoretical perspectives allows scholars to "better understand and empirically investigate emerging phenomena" and indeed many of the most popular frameworks already integrate models, constructs, or assumptions from other theoretical and disciplinary traditions (Ruseva et al. 2019, 75-76). Integrating theoretical perspectives from IAD and NPF can allow for more explanatory power, cross-fertilization of ideas toward new theory development, and stimulate synergies across theoretical schools. For example, IAD has been useful for examining outcomes across multiple scales, from the micro to macro. Whereas, very few NPF studies have been conducted at the macro-level that examine organizational and cultural narratives (Ney 2014; Peterson and Jones 2016), largely due to a lack of theoretical grounding. We propose that using IAD and NPF in combination can help build a theory of 'institutional narratives', adding a much-needed theoretical scaffolding for more empirical research into macro level policy narratives, and a richer cognitive landscape for institutional analysis in complex and contentious policy settings.

Institutional Analysis and Development (IAD) is one of the most well-established policy process theories and frequently used in environmental governance research. It is rooted in new institutional economics and focuses on how institutions, broadly defined to include formal rule structures, informal rules, and social norms, structure the decision-making process. It explicitly utilizes bounded rationality as its model of human decision-making, but also discusses culture and the mental models of social agents. NPF is a more recent theoretical approach in policy scholarship. Since its formal introduction in 2010 (Jones and McBeth 2010), NPF has been rigorously tested and widely used to understand the role of narratives and communication in the policy process, with a large portion of research focused on environmental governance. It examines how policy actors strategically use stories (by leveraging factors such as evidence and risk) to influence the policy process and achieve their desired policy outcome. NPF specifically studies stories that serve as policy narratives containing plot, setting, characters, and policy beliefs and the role of these narratives in shaping contentious policy issues (Shanahan et al. 2018).

Narratives are an essential part of the cognition and the mental models that process information. They provide cognitive heuristics for processing new information, making decisions based on that information, assigning causality, employing emotive reasoning, and enable the understanding of complex phenomena and associated outcomes. While these narratives may be held individually, they are disseminated socially by the public, policy actors and stakeholders through media, newsletters, and other avenues (Shanahan et al. 2013). They are shared among cultural groups and as such are critical for understanding collective action. Drawing elements from each approach helps understand highly politically contested issues in environmental governance such as climate change, where there are

competing narratives driving actors' fundamental understanding of new information and the need for cooperation and collaboration.

The paper examines how information and narratives are treated in each theoretical approach. It looks at the interplay of how each approach views information, cognition, causality, and meta-systems such as narratives in understanding the policy process. It first unpacks each component across the several strands of Institutional Analysis and Development (IAD) and Narrative Policy Framework (NPF). It then builds a synthesis across approaches that allows for interaction across the different theoretical approaches and highlights how each can contribute to a richer theoretical lens. Finally, we posit several potential research areas amenable to a fully developed Institutional Narratives (IN) approach. We offer a synthesis across the two theoretical perspectives around the concept of "institutional narratives" and conclude with several examples of how such a synthetic approach provides for more fruitful research in several policy fields.

We begin with a short summary of the fundamental components of IAD and two associated approaches, that of Socio-Ecological Systems (SES) analysis and the Institutional Grammar Tool (IGT). For this paper, we refer to the common intellectual tradition across all three approaches as Institutional Analysis (IA). We then describe the elements of the Narrative Policy Framework (NPF) that provides a contrasting theoretical perspective and those that allow for complementarity. We then offer a synthesis approach, that of Institutional Narratives (IN) that utilizes elements of both. The paper concludes by offering several policy issues that are amendable to Institutional Narratives applications.

Institutional Analysis and Development (IAD)

The Institutional Analysis and Development (IAD) framework was developed from new institutional economics and behavioral sciences based on bounded rationality (Ostrom 1990). The IAD framework is focused on the conditions that allow for the creation and maintenance of institutions that allow resolving collective action problems, with a focus on common pool resources, although the IAD framework has been used to analyze a wide variety of governance arrangements (Blomquist and deLeon 2011). Information is a critical element of IAD and is viewed in game-theoretic terms as asymmetric or shared among appropriators, that directly relate to the costs of monitoring and enforcement of institutional rules (Ostrom 1990). Information is processed through boundedly rational decision making involving expected benefits, expected costs, internal discount rates, and internalized norms, however these were determined largely by situational values rather than generalized assumptions (Ostrom 1990). The fundamental unit of analysis is that of the individual, rather than larger cultural or organizational groups. It is worth noting that while institutional rational choice was the model of human cognition throughout

much of the IAD scholarship, other models of decision making did include those rooted in social norms, emotive reasoning, culture, and mental models (Ostrom 2005, 104–13; Ostrom and Basurto 2011).

IAD has three fundamental levels of rule analysis: constitutional, collective choice, and operational choice. At the constitutional level, decisions are made about the larger governance system, who is eligible to participate, and the rule to be used in crafting collective choice rules. Collective choice includes policy making processes, management decisions, and adjudication of conflicts. Operation choice is where individual decisions are made about appropriation, providing, monitoring, and enforcement around a common pool resource (Ostrom 1990). All three levels determine the rules that relate to a specific decision situation. In the IAD framework, rules constrain individual behavior and allow for cooperation and effective management of common pool resources and broader cooperative agreements. The system of rules in place creates the incentives to cooperate, creates sanctions against noncooperative behavior, and determines the eventual outcome. Rules provide stability of expectations around the outcomes of behavior and the costs and benefits of an action (Ostrom 1990). Information is not so much processed through cognitive functions as it is present in varying degrees (Ostrom 2005). Information is understood as primarily impacting the relative costs and benefits of an action (for example whether benefits from cooperation are paid out), the success of a strategic choice in reaching a goal (did a sanction deter noncooperative behavior), or the strategies of other actors in the situation (tit-for-tat, cooperation/defect). It is expressed as "Many situations generate only incomplete information because of the physical relationships involved or because the rules preclude making all information available" (Ostrom, Walker, and Gardner 1994, 31).

Information is viewed as something that is accumulated, is often asymmetrical among decision making agents, can be held in common within a community of users and managers, and has lower transaction costs to obtain from those who are most closely engaged in the systems. However, the process through which it is understood as related to larger causality is underspecified, its explicit use as a political tool to share policy dialogs is not discussed, nor how it might be filtered and reframed by larger world views and narratives. The intent of IAD was in illustrating that the tragedy of the commons could be avoided even with the restrictive assumptions of rational choice models, not necessarily as the broad analytical framework it evolved into. Its formulation in *Governing the Commons* is over thirty years old and it has since been expanded into several other important approaches, most notably the socio-ecological systems (SES) framework and institutional grammar tool (IGT). Variations in how each conceptualizes the role of information and the relationship of an individual decision-making agent to institutional forms is discussed below.

Socioecological Systems (SES) Approach

The Socio-ecological systems (SES) approach is a systems level approach to analyzing natural resource systems that includes elements of institutional analysis, as well as characteristics and dynamics of natural systems. SES expands system theory to include natural, built, and other human systems more explicitly. The IAD framework presents the action situation where choices are made in response to information about the likely actions of other participants and the benefits and costs of potential outcomes. The SES framework initially incorporated the action situation where interaction and outcomes occur (Ostrom 2007, 2009). Constitutional, collective choice, and operational rules become second tier variables nested within the governance structure along with organizational entities active in resource management, property rights, and network structures (McGinnis and Ostrom 2014). SES includes information sharing as a core element of the action situation between interactions and outcomes. Like other systems theory approaches it has typically viewed information as essentially as a feedback loop between different components of a system and across subsystems. While recognized as a source of power, information is fundamentally regarded as linear and accumulative (Meadows 2008, 173).

SES focuses on the subset of social systems that have interdependent relationships with biophysical, natural and built systems. It focuses on the cooperative aspect of core social systems where individuals have invested toward intentionally physical or institutional structures that assist in managing a resource. These subsystems are directly linked to the performance of the resource system (Anderies, Janssen, and Ostrom 2004).

Institutional Grammar Tool (IGT)

The second major direction IA has evolved in is the expansion of the Institutional Grammar Tool (IGT). IGT was originally intended to focus on the micro-foundation of institutional variability toward empirically operationalizing the IAD framework by providing an "analytical approach for assessing the structure and content of institutions" (Siddiki et al, 2019 p 1; Crawford and Ostrom, 1995). It arose partially as an effort to reconcile varied definitions of institutions within a single conceptual system. Through a multi-step approach, IGT allows for the partitioning of institutions to better understand and analyze them. As per IGT, an institutional statement is a "shared linguistic constraint or opportunity that prescribes, permits, or advises actions or outcomes for actors, both individual and corporate" (Crawford and Ostrom, 1995, p. 583). IGT applications so far have mainly focused on an in-depth analysis of textual configurations of policy documents.

IGT includes a grammatical component known by the acronym ADICO—Attributes, Deontic, aIms, Conditions and Or else. It is connected to the structure of rules wherein each rule should tell us who carries an action—A; if the action is "possible, permitted, mandatory, can or should happen"—D; what is

the action available to the actors—I; the conditions under which the action takes place—C; and "what happens if what is prescribed, suggested, mandated or incentivized by the rule does not happen"—O (Dunlop, Kamkhaji, and Radaelli 2019, 166).

One of the critiques of the institutional analysis literature was the heavy reliance on rational choice models (Denzau and North 2000; Gintis 2000; Jager et al. 2000; Lieberman 2002). The 2005 book, *Understanding Institutional Diversity* provides the most complete expansion of the decision making process and the role of mental models and culture. In this more refined examination of the cognitive processes that mediate information to action, information is specific to a given action situation, is translated into a perception of the situation, processed through individual mental models which are impacted by external culture. That information signal is then transferred into a set of possible actions against which expected outcomes are evaluated and an action is chosen (Ostrom 2005). Actual outcomes revise the information in a recursive system allowing for learning thought repetition in an action situation and eventual revisions of the mental model itself. Ostrom recognized that "learning to the same strategy as is predicted under full rationality is unlikely to happen when the number of participants in a situation is large and the situation itself is complex, changes frequently, and/or the individuals do not participate in that situation with regularity…" (Ostrom 2005). Shared mental models are developed that can lead to improved choices through open, active, and face-to-face communications. Different mental models lead to misunderstandings and conflict.

How the perception of a situation leads to a choice is based on several properties of a situation. The first, *salience*, relates to the degree to an element of a situation and is directly related to the well-being of the decision maker. The second, *vividness*, is the association with sensory details of the objects experienced. Both focus the attention to a particular information signal in contrast to other signals vying for attention (Ostrom 2005). The use of culturally relevant symbols provides for increased vividness and brings new information into relevance around the perception of a situation.

Change to individual mental models occurs incrementally, with the types of organizational structures typically involved in complex policy settings even serving to further filter information signals. IA approaches draw from the punctuated equilibrium literature to suggest internal models used by individuals, as well as policy systems, remain stable until some event triggers an updating of models and processes (Denzau and North 2000; B. D. Jones and Baumgartner 2005; Ostrom 2005). Information processing limitations can be overcome by creating established rules and processes for incorporating new information to improve collective outcomes. Values such as reciprocity and altruism are part of a fuller model of human behavior that includes intrinsic motives. "individual may have different mental models of the situations they are in, they may differ in regard to their internal valuation patterns – the extent they

take others into account in the decisions they make and the intrinsic valuation they may place on taking particular types of actions" (Ostrom 2005).

Narrative Policy Framework (NPF)

NPF is a policy process framework that examines policy narratives. These policy narratives include narrative elements (narrative form) and policy beliefs and strategies (narrative content) contained therein. NPF contends that both public opinion and the policy process are influenced by policy narratives. NPF's central questions focus on the empirical role of policy narratives and their influence on policy outcomes. NPF has four narrative core elements that comprise narrative form: setting (policy problems situated in a specific policy context), characters (heroes, villains, victims, beneficiaries, among others), plot (arc of action), and the moral of the story (policy solution) (Shanahan et al. 2018). The latest NPF research posits that a policy narrative contains a minimum of one character and a policy referent but acknowledges that researchers can define policy narratives based on different parameters. Narrative content in the NPF can be studied through policy beliefs and narrative strategies. Narrative strategies are used to influence the policy process for varied purposes: to expand or contain scope of conflict (Schattschneider 1960); to assign responsibility or blame (Stone 1997); and in the devil-angel shift (Shanahan et al. 2013; Weible, Sabatier, and McQueen 2009). Policy beliefs in the NPF can be operationalized through characters (Shanahan et al. 2013) or collective understandings of the policy subsystem.

NPF has five underlying assumptions that form its foundation for the study of public policy:

1.) *Social construction of policy realities*: While accepting that there is a reality consisting of objects and processes, NPF assumes that the meaning of these objects and processes varies based on human perceptions. Thus, NPF focuses on how individuals or groups assign variable meanings based on the social constructions of realities.

2.) *Bounded relativity*: Though social constructions of objects and processes may vary, the variation is not random but bounded by factors such as belief systems, norms, ideologies, etc.

3.) *Policy narratives have generalizable narrative components*: Taking a structuralist stance on narratives, policy narratives have generalizable narrative elements such as plots and characters across varied contexts and these can be counted, quantified, and statistically analyzed.

4.) *Three levels of analysis*: Policy narratives operate on three levels: micro (how narratives influence and are influenced by individuals), meso (how narratives influence and are influenced by groups), and macro (cultural and institutional narratives).

5.) *Home narrans*: NPF assumes that narratives play a central role in the way individuals process information such that individuals are seen not just as rational beings but also as emotional beings

and those emotions play a role in human cognition and decision making (Jones 2018; Shanahan et al. 2018).

NPF uses the *homo narrans* model that "acknowledges and tests the primacy of affect and narration in human decision making and cognitive processes" (Shanahan et al. 2018, 180). Ten postulates underlie this model: *boundedly rational* (individuals make decisions under limited time and information), *heuristics* (individuals depend on information shortcuts for processing information and for decision making), *primacy of affect* (emotions are critical in focusing attention in human cognition), *two kinds of cognition* (cognition operates within two systems: System 1- refers to unconscious, automatic, involuntary thought processes; System 2 - focuses on cognitively cumbersome tasks), hot cognition (cognition is affected by emotions), confirmation and disconfirmation bias (evidence congruent to prior beliefs and knowledge is stronger than that which is incongruent, and incongruent evidence is counterargued), selective exposure (individuals choose sources and information congruent to prior beliefs), identity-protective cognition (individuals selectively choose and dismiss evidence based on beliefs predominant in their chosen groups), primacy of groups and networks ("social, professional, familial, and cultural networks and groups… help [individuals to] make sense of the world"), and narrative cognition (narrative is the primary means for individuals to "make sense of and situate themselves in the world") (see Shanahan et al. 2018 for detailed descriptions of each postulate).

Figure 1: Comparison of NPF and IA

Element	Narrative Policy Framework (NPF)	Institutional Analysis (IA)
Social interactions around policy area	Socially constructed, interactions occur around a policy issue	Community of actors, Interactions extend into other social arenas (physical communities, neighborhoods, cultural groups)
Information use	Bounded relativity	Bounded rationality
Essential components	Narrative elements	Institutions, roles, interactions
Levels of analysis	Micro, meso, macro	Constitutional, collective, and operational choice

Role of individual cognition	"Homo narrans"
	    -bounded rationality
	    -heuristics
	    -hot cognition
	    -bias
		Bounded rationality
		    - mental models
		    - vividness of signal
		    - salience of signal

Relationship between information and system level causation	All information is processed through narrative framework	Action situations: Interactions (I) → Outcomes (O information sharing

Synthesis?

At first glance NPF and IA appear to have fundamentally different assumptions about the essential causal elements, the role of information and cognition, and the role of larger ideational systems in the analysis of policy processes and outcomes. However, IA allows for mental models and culture, even though how they relate to institutional forms is underdeveloped. NPF offers insight into the how people understand complex and contentions policy issues but offers little insight into the role of structured interactions.

NPF operates at three levels of analysis: micro (individual), meso (group), and macro (institutional). NPF's assumption is that policy narratives operate at all three levels simultaneously, though most studies have focused on a single level of analysis, mainly micro or meso-level. McBeth and Shanahan (2004) contend that in intractable policy issues "there is a general lack of theory addressing macro-level driving forces in the political system that influence how [policy narratives] develop among policy actors and the public at large" i.e. macro-level narratives might help us understand meso-level politics (319-20).

For the purposes of this paper, we focus on the macro level of analysis given its focus on institutional and cultural narratives. As per NPF scholarship, macro-level narratives "create socially constructed realities that manifest as institutions, society, and cultural norms" (Shanahan et al. 2018, p 195). Though relatively stable in comparison to micro and meso-level narratives, macro-level narratives may change over the course of time and space leading to institutional and cultural shifts. They are composed of narrative elements, beliefs, and strategies; and can be found in historical events, historic debates, and cultural orientations. NPF has largely conceptualized macro-level NPF analyses using imported theories such as institutional theory (Scott 2013), and cultural theory (Thompson, Ellis, and Wildavsky 1990). Macro-level NPF analyses may help address questions related to "how such narratives are created, diffused, accepted, changed, and debunked over time and space" (Shanahan et al. 2018, 195). NPF studies at the macro-level that examine institutional and cultural narratives remain limited (Ney 2014; Peterson and Jones 2016) largely due to a lack of theoretical grounding. Combining NPF with Institutional Analysis will help build a theory of institutional narratives, thereby adding much-needed theoretical scaffolding for more empirical research into macro level policy narratives.

Figure 2: Comparing NPF, IA and IGT

Narrative Policy Framework (NPF)	Institutional Analysis (IA)	Institutional Grammar Tool (IGT)
Setting	Action situation	Under what conditions actions take place
Characters	Roles	Who carries an action, who receives an action
Plot	Mental models	Whether an action is possible, what an action relates to
Moral (solution)	Expected outcome	Action is available to actors, what happens when rule not actualized

Re-defining "Institutional Narratives"

While Institutional Analysis and Narrative Policy Framework are typically understood as competing theoretical approaches, there is potential for complementarity in bringing together empirical research that has been conducted using variations of institutional analysis and the unpacking of bounded rationality and understanding of cognitive processes more fully as represented in NPF.

While NPF uses the term "institutional narratives" to describe narratives elements that exist within and about organizations, we propose that the term should be used to directly bridge NPF with IA. Institutional narrative can serve to describe high-level cognitive processes and information processing associated with specific institutional forms. While IA has provided remarkable explanatory power over its thirty years, it is limited in cases where there are high degrees of uncertainty, interactions with outcomes involve complex political and policy processes, and symbols are dominant. This allows for a more explicit examining of the role emotive reasoning may play in decision-making, how specific actors become important in action situations, and how cultural and political narratives can impact decision making in localized settings. Substantive impact of institutional narratives occurs at multiple levels of institutional analysis and at the individual, collective, and large-scale policy system levels. The utility of synthesizing across the two theoretical approaches can best be illustrated in several applications.

Empirical Applications of the Theory of Institutional Narratives

The importance of narratives increases with the complexity of the policy setting and public problems. In the case of 'wicked problems', those characterized by value-based conflicts among coalitions, which are difficult to resolve by appealing to facts (Veselková 2017) narratives are likely a critical aspect. This claim is increasingly supported by empirical evidence from diverse fields including "psychology (Kahneman 2011), health studies (Bekker et al. 2013; Freed et al. 2011; Nyhan et al. 2014) and risk perception theories (Golding, Krimsky, and Plough 1992; Kahan et al. 2007; Kahan and Braman 2006)" (Veselková 2017, 178).

One such wicked problem is climate change, which remains one of our greatest global environmental policy challenges. Multiple narratives exist about both the cause (anthropogenic vs. natural cycles), how to best mitigate (regulatory policies vs. market signals), and how to prepare for the impacts (strong mitigation action vs. build capacity for resilience).

Specific environmental policy instruments also have narratives associated with the institutional grammar they invoke. For example, a standard emissions trading rights includes the institutional statement "A polluter may trade emission rights to another private company who is allowed to pollute at a lower level in the same airshed". {*Unpack IGT here and use table 2*}.

Conclusion

IA was developed to explain how collective action problems are resolved through the development of institutions that govern behavior around commons and other public goods. It has provided a robust analytic framework for a wide variety of applications. However, it performs less well for explaining policy issues with high level of conflict and inherent complexity. Narratives provide a strong driver of collective action, drawing in emotive reasoning, structuring information, and serving to build policy coalitions. Drawing on both intellectual traditions permits a fuller examining of how policy narrative can lead to collective action and conflict and unpack the mental models that link behavior to institutions.

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