
A Framework for Analyzing the Structure of Partnerships for Collaborative Environmental Management

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Mark T. Imperial, Ph.D.

Department of Public and International Affairs
University of North Carolina Wilmington
601 S. College Rd.
Wilmington, NC 28403-5607
imperialm@uncw.edu



Contact:

Mark Imperial, Associate Professor & Director
Master of Public Administration Program
Department of Public & International Affairs
University of North Carolina at Wilmington
601 S. College Road
Wilmington, NC 28403-5607, USA

Phone: (910) 962 – 7928
Fax: (910) 962 – 3286
imperialm@uncw.edu

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Mark T. Imperial
University of North Carolina Wilmington, imperialm@uncw.edu

Abstract

The last decade witnessed growth in research examining collaborative environmental management (CEM). Researchers refer to the organizational arrangements that comprise CEM in various ways (e.g., partnerships, coalitions, alliances/strategic alliances, etc.). Unfortunately, little research directly examines the structural properties of “partnerships” and how this structure shapes and constrains activities and influences its ability to endure over time. This is analogous to examining what organizations “do” without examining how strategies and structures influence organizational processes. The objective of this paper is to develop a framework that can be used to examine the structure of the partnerships associated with CEM.

The paper begins with a brief examination of the problems with theory building in the public administration literature that focuses on collaborative partnerships in order to illustrate the advantage of using institutional analysis to examine their structural characteristics. It then examines the strategic choices associated with determining the policy space that the collaborative partnership will work within. A framework for analyzing the structure of partnerships for CEM is then proposed. It defines the structure of the collaborative partnerships in terms of boundary (member and strategy), decision (preference aggregation, distribution of power, distribution of roles or responsibilities, and, distribution of participation), and coordination (exchange, monitoring, dispute resolution, and enforcement) rules. The paper then argues that CEM is most useful in complex environmental commons (CEC) with governance systems that reflect diversity in values and resource uses such that there are interrelated resource management problems. Five conditions that facilitate the use of CEM are then discussed. It concludes by discussing some additional challenges and potential paradoxes that complicate choices surrounding the design and administration of a CEM partnership.

A Framework for Analyzing the Structure of Partnerships for Collaborative Environmental Management

Introduction

Collaborative environmental management (CEM) is in widespread use around the world in various physical, socio-economic, cultural, and institutional settings (Koontz, et al., 2004). These efforts go by many names such as ecosystem-based management, integrated water resources management, integrated environmental management, watershed/catchment partnerships, and river basin management. While these efforts vary in scope, design, complexity, and administration, they share common characteristics including:

- Approaching problems from an integrated or systems perspective;
- Having a stronger scientific basis behind policies and programs;
- Public participation and stakeholder involvement in decision making; and,
- Coordinating policies and programs to improve performance.

While scientific research helps define problems, set priorities, and shape policy, ultimately CEM has a strong institutional orientation. As Bressers, O'Toole, and Richardson (1995, 4) observe, it is common for policies to “require the concerted efforts of multiple actors, all possessing significant capabilities but each dependent on multiple others to solidify policy intention and convert it into action.” Since problem solving capacity is widely dispersed, few actors can solve problems by acting alone. Accordingly, collaborative partnerships are often formed to address these shared problems. This is accomplished by improving the integration of the governance system by modifying policies, changing institutional arrangements, and improving coordination and decision making. Politics, asymmetries of power, conflicting values, and the lack of resources (e.g., money, staff, authority, etc.) impose practical limits on how much “collaboration” is possible as a result of collaborative partnerships.

Over the last few decades, a growing body of literature has emerged that describes CEM programs, identifies factors associated with their effectiveness (or lack thereof), and attempts to identify lessons learned (e.g., Leach & Sabatier, 2005; Sabatier et al., 2005; Koontz, et al., 2004; Koontz & Johnson, 2004; Koontz, 2003; Leach et al., 2002; Leach and Pelkey, 2001; Steelman & Carmin 2002; Imperial & Hennessey, 2000; Wondolleck & Yaffee, 2000; Thomas, 1999). Unfortunately, little research examines the structural properties of these “partnerships” (e.g., Imperial & Koontz 2007; Imperial, 2005a; Moore & Koontz, 2003). Thus, while scholars have examined what CEM partnerships “do”, they fail to directly examine how their strategies and structures influence and control their processes. As a result, participants have little guidance when it comes to designing partnerships for collaborative environmental management (CEM). There is also little understanding of the structural characteristics that allow these partnerships to endure over time.

The objective of this paper is to develop a framework that can be used to examine the structure of the partnerships associated with CEM. The paper’s central argument is that while CEM participants should think holistically when framing problems and solutions, they should act

strategically because there are practical limits to how much any collection of policies and programs can or should “collaborate”. Therefore, the formation of a partnership for CEM involves a series of strategic choices that will shape its structural characteristics. The combination of the strategy and structure will influence what the CEM partnership can or cannot do (i.e., its processes).

The paper begins with a brief examination of the problems with theory building in the literature that focuses on collaborative partnerships in order to illustrate the advantage of using institutional analysis to examine the structural characteristics. It then examines the wide range of strategic choices associated with forming and then managing a collaborative partnership. The first set of choices concerns the policy space that the collaboration partnership operates. In other words, participants have to determine how much “collaboration” is possible or desirable. A framework is then proposed that analyzes the structure of partnerships for CEM in terms boundary (member and strategy), decision (preference aggregation, distribution of power, distribution of roles or responsibilities, and, distribution of participation), and coordination (exchange, monitoring, dispute resolution, and enforcement) rules. The framework provides a mechanism for systematically comparing the structure of collaborative partnerships while it simultaneously draws attention to the strategic choices associated with their design and administration. The paper then argues that CEM is most useful in complex environmental commons (CEC) with governance systems that reflect diversity in values and resource uses such that there are interrelated resource management problems. Five conditions that facilitate the use of CEM are then discussed. It concludes by discussing some additional challenges and potential paradoxes that complicate the choices surrounding the design and administration of a CEM partnership.

Obstacles to Building Theory and Providing Advice to Public Managers

Despite several decades of research on collaborative processes, there are more questions than answers when it comes to designing and managing these partnerships and the processes that occur within them. For example, there is little agreement on the answers to the seven “big questions” in the public network management literature first proposed by Agranoff and McGuire (2001) a decade ago. While the lack of theory development does provide a wide range of research opportunities for academics, it is a constant source of frustration for the public managers tasked with forming and managing these collaborative partnerships.

The obstacles to theory building are obvious. Some view it as some new form of collaborative public management that is somehow intrinsically different even those government services have been delivered through interorganizational networks and partnerships for much of the last century. Of more interest to this study are the researchers that view “collaboration” as a process and focus on questions designed to advance our understanding of the processes associated with interorganizational relationships. Others approach collaboration from a “network” perspective. They are interested in the interorganizational networks associated with improving the governance of public problems or particular policy sub-systems. Another line of research views collaboration as a second-order organizational phenomena and are interested how to manage the relatively stable interorganizational arrangements that develop and endure to manage public problems.

While each of perspective yields important insights, there are few attempts to link together these competing perspectives even though they examine different aspects of the same interorganizational phenomena. Further complicating theory development is the fact that scholars within the fields of management, public administration, public policy, political science, and sociology tend to use different terminology and theoretical perspectives despite the fact that they are often examining identical interorganizational phenomena. Collectively, this contributes to the lack of a commonly shared definition of collaboration, a prerequisite for theory building (Imperial 2005; Wood & Gray, 1991).

In order to begin synthesizing these competing perspectives, this study builds on the advice of Phillips, Lawrence, and Hardy (2000) and defines “collaboration” broadly to capture the full range of activities and relationships. Following Bardach (1998), collaboration is defined as any joint activity by two or more organizations intended to create value by working together rather than separately. Joint activity requires an interactive process involves an autonomous group of rational actors who use shared rules, norms, or organizational structures to act or make collective decisions (Wood & Gray, 1991). Politics, bargaining, negotiation, and compromise become critical control mechanisms because organizations remain relatively autonomous and must be convinced to work together because they cannot be forced to do so (Phillips, Lawrence, & Hardy, 2000). Thus, exchange mechanisms tend to be social and depend on communication, relationships (personal and organizational), mutual interests, and reputation and are guided less by formal authority structures (Powell, 1990). However, membership in this collaborative process may require that participants and the organizations they represent agree to contribute resources (Imperial 2005).

This definition recognizes that collaboration is also a particular type of network process. Networks are structures of interdependence involving multiple organizations that exhibit some degree of structural stability that include formal or informal linkages and relationships (O’Toole, 1997). Relationships can involve communication and passing information, the exchange of goods, services, or resources, or it may involve developing shared norms and expectations (Aldrich & Whetten, 1981). If the process endures for any length of time it is structured by a set of shared rules and norms that guide and control behavior of the participants (Imperial 2005).

Accordingly, collaboration is a particular type of network relationship. However, there are many different types of network relationships. An *organization set* consists of those organizations with direct links to some focal organization (Alexander, 1995; Aldrich & Whetten, 1981). Each relationship is a dyad, the unit of analysis for many network researchers. Of more interest to this paper are *action sets* or groups of organizations that form temporary or permanent alliances for a limited purpose or common area of involvement (Alexander, 1995; Aldrich & Whetten, 1981). Whereas an organization set is concerned with a focal organization’s relationships with other organizations, the action set is oriented towards the collective activity of a group of organizations (Alexander, 1995; Mandell, 1989). An *interorganizational network* is the totality of all of the organizations connected by a certain type of relationship and is typically bounded by a common orientation such as a policy area, type of service, or a geographic area (Alexander, 1995; Mandell, 1989; Aldrich & Whetten, 1981).

It is important to recognize that the composition of the interorganizational network will vary depending on the combination of characteristics used to define these boundaries. Similarly, different sub-sets of actors within the interorganizational network may collaborate to get different tasks done and these sub-sets are action sets. Moreover, as Imperial (2005) observes, it is possible to have different levels of action within a particular action set. In other words, a collaborative partnership (i.e., action set) is formed and then different subsets of the members agree to participate in other collaborative activities. Thus, the first set of strategic choices confronting practitioners of collaborative environmental management (CEM) is defining the policy space within which it will operate. This will define the interorganizational network and the scope of potential joint activities that are possible among the members (i.e., action sets or collaboration).

Researchers and practitioners are often particularly concerned with the processes that give rise to the creation of a “second order organization” that essentially is an organization whose membership consists of other organizations (and in some cases individuals). It is not unusual to find that when a group of individuals or organizations begins to embrace collaborative processes, makes joint decisions, and acts as a single entity they are in effect acting as a new organization (Jones, Hesterly, & Borgatti, 1997; Finn, 1996). Researchers refer to this organizational form in different ways including partnerships (e.g., Teisman & Klijn, 2002), coalitions, alliances/strategic alliances (e.g., Dyer & Singh, 1998; Osborn and Hagedoorn 1997; Gulati, 1995), consortiums, network broker (Mandell, 1984), and network administrative organizations (Provan & Milward, 2001). For simplicity, these second order organizations are referred to as “collaborative partnerships” in this paper. Membership in the partnership requires duties, obligations, and often the contribution of resources. The partnerships may also perform a variety of functions such as serving as a convener, catalyst for action, conduit for information, advocacy, organizer, funder, technical assistance provider, capacity builder, partner, dispute resolver, or facilitator (Imperial, 2005a; Himmelman, 1996).

Thus, collaborative partnerships may directly and indirectly encourage, coordinate, and help govern a wide range of collaborative activities and contribute to the improved governance within the interorganizational network (Imperial 2005; Provan & Milward, 2001; Jones, Hesterly, & Borgatti, 1997). Governance here refers to the means for achieving direction, control, and coordination of individuals and organizations with varying degrees of autonomy in order to advance joint objectives (Lynn et al., 2000; Frederickson, 1996). Accordingly, governance of the interorganizational network is improved by coordinating organizational and financial resources (i.e., budgets and funding priorities), programmatic structures, and the myriad of organizational rules and routines that govern relationships between organizations (Imperial, 2006).

Towards a Framework for Analyzing Collaborative Partnerships

The objective of this paper is to develop a framework that can be used to analyze the structure of collaborative partnerships. Unfortunately, little research directly examines the structural properties of “partnerships” and how this structure shapes and constrains activities and influences its ability to endure over time. This is analogous to examining what organizations “do” without understanding how strategies and structures influence their organizational processes. Indeed, it is hard to envision the development of a robust theory of how collaboration occurs or to provide sound advice on how to manage collaborative partnerships without first understanding their underlying structure. Important unanswered questions include:

- Do different structures influence the processes that occur within the collaborative partnership?
- Do different structures produce different results (e.g., the outcome question)?
- Do different structures influence the ability of a collaborative partnership to develop and endure over time (i.e., life cycle of the collaborative partnership)?

The framework proposed in this paper provides a systematic way to begin answering these and other questions that would provide important advice to public managers. In the interim, the framework does have the advantage of drawing attention to the myriad of strategic choices confronting public managers involved in the development and management of collaborative partnerships for environmental management.

The framework relies on an approach to institutional analysis developed by Elinor Ostrom (2005, 1999, 1990) and her colleagues that has proven to provide a useful way to examine different types of collaborative environmental management (CEM) programs (Imperial, 2006, 2005a, 1999a, 1999b; Imperial & Yandle, 2005). Institutions are “enduring regularities of human action in situations structured by rules, norms, and shared strategies, as well as by the physical world. The rules, norms, and shared strategies are constituted and reconstituted by human interaction in frequently occurring or repetitive situations (Crawford & Ostrom, 1995, 582).” Thus, institutions include families, churches, government agencies and most organizations since they are defined by rules, norms, and shared strategies (Ostrom et al., 1993, 6). Institutions promote socially beneficial outcomes by helping actors resolve “social dilemmas” resulting when individually rational actions aggregate to produce socially irrational outcomes (Firmin-Sellers, 1995, 203).

What differentiates institutional analysis from other forms of organizational analysis is the focus on rules. Rules are implicit or explicit attempts to achieve order and predictability among humans (Ostrom, 2005, 1999, 1986). Rules are prescriptions that forbid, permit, or require some action or outcome and the sanctions authorized when rules are not followed (Crawford & Ostrom, 1995, 584). Rules can be formal (e.g., laws, policies, regulations, etc.) or informal (e.g., shared understandings). Informal rules are sometimes referred to as “rules-in-use” because they are the rules that individuals refer to when asked to explain and justify their interactions with fellow participants (Ostrom et al., 1994, 39). Rules operate at different levels for different actors (e.g., constitutional, collective choice, operational). Rules can also be nested

in other rules that define how the first set of rules can be changed (Kiser & Ostrom, 1982). Therefore, rules operate configurationally. This pattern or configuration of rules determines how much integration exists within the governance system. At the same time, the rule structure may impose limits on how much change (i.e., integration) is possible. Thus, participants in a CEM program may be able to change some rules but not others that are imposed by higher levels or organizations with greater power (e.g., legal authority, control over resources, etc.) that are not members of the partnership.

This focus on rules provides a useful way to examine the structure of interaction within the collaborative partnership. It can be used to examine the structure of relatively informal processes because they are still governed by social norms and informal rules as well as more formal collaborative partnerships with well-developed and institutionalized rule structures (e.g., agreements, by-laws, legislation, etc.). The focus on rules also allows it to be used to examine collaborative processes in a wide range of different political, cultural, and socio-economic contexts. It is also consistent with a wide range of organizational theories used to explain organizational and interorganizational phenomena. It can be used

Determining the Policy Space for the Collaborative Partnership

The initial set of strategic choices made explicitly or implicitly by practitioners involved in collaborative environmental management (CEM) involves determining the boundaries of the policy space (e.g., policy area, type of service, geographic area, etc.). This requires making careful choices about the problems to focus on, the organizations to involve, and the types of actions that might occur within a particular geographic or political context. This paper proposes that the policy space can be defined in terms of several dimensions that help identify the range of strategic choices that must be made concerning the boundaries of the partnership for CEM.

Consistency within the policy space is viewed in terms of its horizontal (e.g., single level of government) and vertical (e.g., different governmental levels) dimensions (Underdal, 1980, 161). It is not uncommon for there to be an underlying tension as to which set of policies, programs, and priorities should govern decision making. Thus, integration can often be improved in different ways. For example, CEM could focus on getting all local governments to have similar habitat restoration priorities (*horizontal integration*) or ensure that a national program's funding priorities are consistent with local priorities (*vertical integration*). In a federal system like the U.S., the question of consistency is particularly important because the inclusion of actors from different levels of government can create both opportunities and constraints on what the collaborative partnership may be able to accomplish. re is the natural question of which level(s) of government are under consideration

Determining the policy space also requires making a series of strategic choices about what Arild Underdal (1980, 160) refers to as the desired level of comprehensiveness. *Comprehensiveness* of the policy space involves the interrelated dimensions of space, actors, issues, and time. *Space* refers to the geographical scale of the ecosystem, watershed, river basin, or catchment area. The *actor* dimension refers to the proportion of actors (government agencies, interest groups, land owners, etc.) whose perspective is included in the framing of problems and solutions. The *issue* dimension includes the proportion of interdependent issues (or components)

that is subsumed under a common CEM program. *Time* implies a long-range view of the consequences of policies and their ability to collectively solve problems (Underdal, 1980, 160). These decisions have important consequences. As the space dimension increases, the number of potential actors and issues also increases. This may increase the transaction costs associated with making and maintaining the changes needed to integrate the governance system over longer time periods.

Collaborative environmental management (CEM) also requires making strategic choices about the level of *aggregation* within the policy space or the extent that problems and policy alternatives are framed from an ‘overall’ perspective rather than that of particular actors (Underdal, 1980, 161). Typically, this requires using a participatory or collaborative decision making process to determine “what” and “how” various policies and programs can collaborate to get things done. It may also involve tradeoffs between the width and depth of participation of policy actors. Width is the degree to which each policy actor has the opportunity to participate in each decision while depth refers to their ability to determine the final outcome (Edelenbos & Klijn, 2005, 428).

The final set of choices involves determining how much collaboration is actually desirable for different issues. Inefficiency and undesirable policy outcomes often occur when institutions work at cross-purposes. Highly fragmented systems inhibit communication, produce bad resource management decisions, create costly conflict, and leave some aspects of water resource problems unaddressed. Excessive duplication of effort has its own inefficiencies and problems. Coordination problems create inefficiencies and make it difficult to achieve policy outcomes. Indeed, there are important reasons to strive for greater cooperation, coordination, and policy integration.

However, while excessive fragmentation and duplication can be costly, they are not always “bad” in terms of the governance system’s overall structure. Fragmentation may be due to technical specialization that utilizes the unique resources possessed by different organizations. This can create economies of scale that lower costs and improve the quality of information incorporated into decision making (Imperial, 1999a, 1999b; Blomquist, 1992). Overlapping and duplicative authorities help guarantee that different interests are considered and deliberated, which may be more “democratic” and provide greater accountability for decisions (Imperial, 1999a; V. Ostrom, 1989). It may also stimulate a competition of ideas that encourages policy change, learning, and the diffusion of new approaches to problem solving (Sabatier & Jenkins-Smith, 1993; Rogers, 1995).

Accordingly, there are limits to how much “collaboration” is desirable or achievable. Even the most imaginative practitioners are constrained when the governance system allocates statutory and budgetary responsibilities in ways that require them to pursue inconsistent policies. Even when formal rules do not conflict, behavioral norms, professional values, knowledge, experience, autonomy, and abilities may limit participation in CEM (Wondolleck & Yaffee, 2000). There are also limits to how much any organization can or should be willing to sacrifice its policies and priorities (or those of their constituencies), no matter how noble the goal. Altering these policies may come at great political cost or increase demands on limited resources. Sharing information and coordinating programmatic efforts can be time-consuming

and require a significant commitment of organizational resources (Imperial, 1999a). Organizations possess different capacities for action (e.g., regulatory authority, technical expertise, policy responsibilities and priorities), and no amount of creativity will overcome these resource shortages.

A Framework for Comparative Analysis of Partnerships for CEM

Once a decision has been made to develop a CEM program, participants have to make a series of strategic choices related to the desired level of consistency, comprehensiveness, and aggregation. These choices should ultimately be reflected in the structure of the collaborative partnership. While CEM partnerships may use a wide range of organizational and decision making arrangements, in all cases these structures and processes are the product of shared norms and rules that may or may not change over time (Genskow & Born, 2006; Wood & Gray, 1991). Thus, the proposed framework argues that the structure of a partnership for CEM is the product of a set of interrelated shared norms and rules associated with their boundary (member and strategy), decision (preference aggregation, distribution of power, distribution of roles or responsibilities, and, distribution of participation), and coordination (exchange, monitoring, dispute resolution, and enforcement) (Imperial & Koontz, 2007). The rule structures can vary in terms of their formality. At the formal end, rules may be embodied in statutes, legally binding documents, or some other formally approved document to institutionalize the rules and create a sense of legitimacy. At the informal end are CEM programs where rules are embodied in norms and social agreements, which are common at the onset of a program (Imperial, 2005a; Moore & Koontz, 2003).

Boundary Rules

Boundary rules serve to distinguish a CEM partnership from other organizations and reflect important choices concerning the fundamental purposes for the partnership and the environmental problems it addresses. Two boundary defining rules are of particular importance – *member rules* and *strategy rules* (Imperial & Koontz, 2007). The combination of problems and purposes helps identify the membership. At the same time, member organizations are limited in terms of what they can do by their resources, authorities, and competing interests. Accordingly, membership composition influences and constrains the program's strategy (Bonnell & Koontz, 2007; Koontz et al., 2004; Imperial & Kauneckis, 2003; Koontz, 2003).

Member rules pertain to who can or cannot be a member and may establish different types of membership (e.g., voting vs. nonvoting) (Imperial & Koontz, 2007). Some will have restrictive membership while others are more inclusive (Imperial & Hennessey, 2000). While organizations typically comprise the membership, there can be provisions for citizens or interest group representatives (Moore & Koontz, 2003). Membership can be voluntary or mandated by some higher-order set of rules (e.g., statute, articles of incorporation, charter, etc.). As the organization evolves, it typically creates rules pertaining to the addition of new members. Similarly, rules may be crafted to specify how a member is expelled.

Strategy rules specify the underlying purposes of a partnership for CEM. In other words, what it will do and how it will acquire needed resources (e.g., clients, products, goods, services,

etc.) (Imperial & Koontz, 2007). They also identify the set of problems and legitimate responses that are within the CEM program's domain. Responses might include serving as a convener, catalyst for action, information provider, advocacy, organizer, funder, technical assistance provider, capacity builder, partner, dispute resolver, facilitator, or it may even develop and implement projects and programs (Imperial, 2005a; Himmelman, 1996). The rules may also specify what roles are illegitimate. For example, the CEM partnership may educate and provide information but lobbying on behalf of a specific policy position is viewed as inappropriate. This shared definition of problems and solutions shapes and constrains the collective action of its members.

Decision Rules

Decision rules shape the processes by which members make decisions (Imperial & Koontz, 2007). Interactive processes are not self-executing so important choices have to be made about how decisions are made. *Preference aggregation* rules specify how members make decisions. During the initial stages of a partnership, decision rules are likely to be informal with a reliance on consensus decision making or simple majority voting rules. Over time, decision rules may grow in complexity, specificity, and formality in order to reduce transaction costs by making decision making more reliable and reproducible (Edelenbos & Klijn, 2005, 426).

As the organizational structure becomes specialized and differentiated there is often increased complexity in the configuration of decision rules. There may be a *distribution of power* within the organizational arrangement by establishing voting or nonvoting members or by creating a governing board or executive committee. There may be a *distribution of roles or responsibilities* among members (e.g., establishing officers, sub-committee membership, etc.). As organizational sub-units are created (e.g., a work group or sub-committees), rules will be crafted to determine the membership and strategy of the sub-unit and specify their decision rules and relationship to the larger organization. There may also be a *distribution of participation* in organizational decision making in terms of a member's opportunity to participate in a decision (i.e., width) or their ability to determine the final outcome (i.e., depth). The level of participation afforded to any member can vary considerably from informing, consulting, advising, co-producing, to co-deciding (Edelenbos & Klijn 2005, 428 - 429). It is also common for some decisions to require greater agreement among members than others. For example, a change to the by-laws, adoption of the budget, or expelling a member might require a super majority with other decisions needing a simple majority while routine issues are handled by an executive board while other members simply monitor the board's actions (Imperial & Koontz, 2007).

Coordination Rules

As the organization evolves, preference aggregation rules give rise to a more structured set of *coordination rules* (Imperial & Koontz, 2007; Sobrero & Schrader, 1998, 586 - 587). Membership often requires some set of duties, responsibilities, or obligations such as requiring the sharing information or other organizational resources (e.g., money, equipment, staff, etc.). *Exchange rules* specify these rights, duties, and obligations as well as the expected benefits of membership. Aligning the incentives and disincentives for participation is important because membership in a CEM partnership program is often voluntary.

However, some members may fail to follow through on their commitments by not attending meetings, neglecting to commit agreed upon resources (time, money, information), or acting in a manner counter to other established rules. Thus, *monitoring rules* may be created to foster accountability and help ensure that members follow through on commitments. While accountability and compliance with exchange rules often occurs as a result of the social norms and peer pressure that develop through monitoring processes, *enforcement rules* may be formed to sanction members for noncompliance (e.g., suspend voting privileges, fines, expulsion, etc.). Conflicts may also occur among members so it is not uncommon for *dispute resolution rules* to specify the process used to resolve these differences.

Whether implicit or explicit, a CEM partnership will make important choices about the content of the boundary, decision, and coordination rules that create its structure and processes. The advantage of this framework is that it provides a way of systematically thinking through these choices in conjunction with determining the overall objectives of the partnership and how much integration is desirable. Unfortunately, much theoretical and empirical work remains to determine whether certain configurations of boundary, decision, and coordination rules increase the likelihood that a partnership will endure. However, the IRC literature does suggest that it is unlikely that any particular rule or set of rules will always be the most effective. Rather, the design of each partnership should be consistent with the strategic choices related to how much integration is desirable (e.g., horizontal vs. vertical integration, consistency, and aggregation) and be designed to fit with the demands of the contextual setting (e.g., physical, socio-economic, cultural, and institutional setting).

Identifying Institutional Settings Conducive to CEM

The institutional rational choice (IRC) literature provides some general guidance for identifying contextual settings amenable to CEM. Over the last two decades, a considerable literature has developed examining the governance of common pool resources (CPRs) and there have been several notable attempts to identify the factors contributing to successful management of CPR systems (e.g., Ostrom et al., 2002; Ostrom, 1990).

However, many ecosystems and watersheds differ in significant ways from the relatively simple systems investigated in the CPR literature. In recent years, researchers have begun using the IAD framework to investigate more complicated water resource systems (e.g., Kauneckis & Imperial, 2007; Koontz, 2005; Imperial & Kauneckis, 2003; Imperial & Hennessey, 2000; Imperial, 2006, 2005a, 2005b, 1999a, 1999b; Sabatier et al., 2005; Margerum & Born, 2000; Blomquist, 1992). Kauneckis and Imperial (2007) refer to these more complicated institutional settings as “complex environmental commons.” Complex environmental commons (CEC) are defined by three principle characteristics. First, there is a complex governance system responsible for resource management. Second, there is a high diversity in the perceived value and appropriate resource uses. Third, there are multiple, interrelated resource management problems requiring attention.

In a CEC, the organizations that design the rules governing resource use are not necessarily comprised of the individuals who directly use the resource (i.e., appropriators).

Instead, they are often crafted by formal institutions located at higher levels of government outside the physical boundaries of the ecosystem or watershed. The additional complexity compounds the number and types of social dilemmas that actors face in overcoming the basic CPR problem (Kauneckis & Imperial, 2007, 508). Consequently, the governance arrangement is comprised of many overlapping rules generated by multiple organizations at different levels that represent competing policy interests. Thus, there are often many opportunities for integrating the governance system for a CEC but enhancing the integration may require long periods of negotiation with high transaction costs (Kauneckis & Imperial, 2007, 508 - 509).

The second condition of a CEC relates to characteristics of the resource. In a simple CPR system, the fundamental dilemma typically relates to designing rules that manage the sustainable use of a single resource (e.g., fishery, forest, ground water, etc.). This requires developing a shared understanding of a single resource and finding the correct harvesting or consumption level that maintains the resource at a sustainable level. However, a CEC involves multiple resources that provide different services, which are valued in different ways by various policy actors. This creates a more complicated challenge. The greater diversity of resource values, uses, and competing interests complicates the process of framing problems and solutions. It also becomes more difficult to reconcile and address the inherent tradeoffs between competing objectives, interests and values (Kauneckis & Imperial, 2007, 509).

The final characteristic of a CEC is that it includes multiple, interrelated resource management problems that span different environmental media. Unfortunately, a rule structure designed to manage one environmental problem, may exacerbate others (Kauneckis & Imperial, 2007, 510). For example, installing sewers to prevent groundwater contamination from onsite sewage disposal systems can result in increased development that destroys habitat and increases nonpoint source pollution (Imperial & Hennessey, 2000). Accordingly, the rule structure necessary for effective management of a CEC has to be complex enough to deal with the tradeoffs among different problems and solutions but also be flexible enough to adapt to changes in the physical, socio-economic, cultural, and institutional setting. Since policy responses tend to accumulate around environmental problems over time, it is not uncommon that these complex governance systems lack the desired level of “integration”.

Design Principles for CECs

Kauneckis and Imperial (2007) propose five conditions that facilitate the emergence of integrated approaches to the management of complex environmental commons (CEC). The first is the level of *trust* across organizations involved in the governance of ecosystems and water resources (Kauneckis & Imperial, 2007, 530). Trust is a complex process because it is both a precursor to and product of interactive processes. Thus, a “virtuous circle” of mutually reinforcing trust and cooperation can develop if initial CEM efforts are effective (Sabatier et al., 2005; McCaffrey et al., 1995). While there is no magic recipe for developing trust, repeated interactions (formal or informal) are an important ingredient. However, once trust is established, it must be nurtured and maintained otherwise it will erode. While it builds slowly, trust can also be destroyed quickly by negative experiences (Imperial, 2005a; Imperial & Kauneckis, 2003; Leana & Van Buren, 1999; Axelrod, 1984). This suggests that CEM should avoid situations with a high risk of initial failure. Instead, they should be strategic, focus on problems that are

manageable, look for opportunities where there is strong support or the likelihood of success is high. Trust developed through these initial efforts can then be parlayed into more ambitious efforts to integrate the governance system (Imperial, 2005a; Imperial & Kauneckis, 2003).

A second prerequisite is the ability for its members to develop a *shared definition of the underlying problems* that motivate collective action (Kauneckis & Imperial, 2007, 532). While a set of interrelated issues often affects a water resource, one or two inter-related focal problems serve to motivate participants and drive CEM (Imperial & Hennessey, 2000). This requires generating some fundamental agreement that problems exists in the first place and a shared understanding of its causes. Policy entrepreneurs then have to frame these shared focal problems and solutions in ways that motivate and maintain participation in a CEM program.

The focal problems and corresponding solutions must also be framed in ways that *recognize mutual interests* and avoid win-lose situations (i.e., zero-sum games). In essence, CEM participants must be willing to work together on some issues, while agreeing to disagree on others while respecting these differences (Kauneckis & Imperial, 2007, 534; Imperial, 2005a; Imperial & Kauneckis, 2003). Since participation in a CEM partnership is often voluntary, when problems are framed in terms of zero-sum games, participants who fear being on the losing side may exit and exercise unilateral strategies that maximize their own individual objectives. Thus, cooperative, interactive processes at the center of CEM are more likely to succeed when they have the potential to generate win-win or at least win-no-lose solutions (Kauneckis & Imperial, 2007; Wondolleck & Yaffee, 2000).

The fourth principle is that cooperation is more likely in a CEC when there is a *balance of power* among policy actors, at least within the confines of CEM decision making (Kauneckis & Imperial, 2007, 536; Imperial & Koontz, 2007; Burkardt et al., 1997). This balance encourages competing interests to seek negotiated solutions rather than exiting the process and pursuing their best alternative to a negotiated agreement (BATNA). A balance of power exists outside the CEM partnership when policy actors have the ability to block others actions, while simultaneously lacking the power to compel others to pursue their desired course of action. When this status quo situation arises and becomes unacceptable, it creates a powerful motivator for actors to seek cooperative solutions and participate in CEM (Kauneckis & Imperial, 2007; Imperial & Kauneckis, 2003).

Kauneckis and Imperial's (2007, 537) final principle is that cooperation is more likely when a *wide range of policy instruments is used* to address water resource problems. Enlarging the range of instruments increases the opportunities for organizations to work together to enhance the integration of the governance system in ways that advance mutual interests. Diversifying policy instruments also increases the likelihood that competing interests can find courses of action that generate win-win or win-no-lose situations. For example, actors may be unable to reach agreement on a regulatory policy change, but there may be a wide range of nonregulatory policy instruments that can be agreed upon (Kauneckis & Imperial, 2007, 537).

Paradoxes Complicating CEM

The advantage of collaborative environmental management (CEM) is its ability to holistically address problems rather than functioning along traditional programmatic boundaries. Participants look beyond their particular programs, acknowledge the interrelationship among problems, and craft changes that improve the governance system for a water resource (e.g., watershed, river basin, catchment area, etc.). However, participants should approach the task strategically. Some water resources are likely to be more appropriate for CEM than others. Decisions have to be made about how much “collaboration” is possible or desirable. Choices have to be made about who will participate, the problems addressed, and the objectives and purposes of the CEM partnership (i.e., boundary rules). Participants will need to determine how decisions will be made and the relative distribution of power, participation, and responsibilities within the program (i.e., decision rules) as well the obligations of members and how conflicts will be resolved (i.e., coordination rules). When making these decisions, participants would be wise to consider some other challenges and potential paradoxes.

Stability vs. Change

Organizations with high reliability, low variance in performance, high accountability, and a high ability to account rationally for their actions are favored by selection processes in organizational populations (Hannan & Freeman, 1984). This suggests that as a CEM partnership evolves, its rule structure will become increasingly formalized and institutionalized. This will make them respond slowly to threats and opportunities that encourage adaptation and change. This inertia (i.e., resistance to change) is not a symptom of “bad management”. It is the product of a well-tuned organizational architecture. Effective organizations, particularly those with bureaucratic structures, are designed to be stable and resist change (Kim et al., 2006, 705). This has important implications because it suggests that many effective CEM partnerships may become unable to practice the type of adaptive management advocated by researchers (e.g., Gunderson et al., 1995; Lee, 1993). Moreover, the organizations participating in a CEM program may resist making the changes needed to collaborate. While the changes may ultimately prove beneficial, they can also be disruptive and potentially threaten an organization’s survival (Amburgey et al., 1993, 53; Hannan & Freeman, 1984, 159). Similarly, as the CEM partnership evolves and matures, it may increasingly resist change and focus on its own resource maintenance (e.g., adding personnel, maintaining budgets, accumulating power, etc.).

Reliability & Institutionalizing Rule Structures

The modern world also favors organizations that demonstrate a capacity for *reliable* performance or the ability to produce goods and services of a given quality repeatedly (Hannan & Freeman, 1984, 153). Thus, a CEM partnership’s boundary, decision, and coordination rules must be reproducible and this is typically accomplished through their formalization. This lowers transaction costs because participants no longer need to negotiate and invent organizational routines. However, the institutionalization of these rules also produces the inertia and stability that makes the partnership resistant to adaptation and change. Thus, institutionalization is a “two-edged sword”. On the one hand it promotes stability and enables a partnership to endure

and survive such things as changes in leadership, staff, and resources. On the other hand, revising established routines, communication patterns, existing programs, or adding new partners may be resisted because it reduces the reliability of performance, which decreases short-term effectiveness and creates new organizational challenges that can even increase the chances of death (Amburgey et al., 1993, 53; Singh et al., 1986, 589; Hannan & Freeman, 1984, 160).

Accountability

Organizations must also be *accountable* for their actions (Hannan & Freeman, 1984, 153; Amburgey et al., 1993). A partnership for CEM must document how resources are used and the series of decisions, rules, and actions associated with outputs and outcomes. Accountability is a critical issue, particularly during the early stages of a partnership. Members, resource contributors, and stakeholders are likely to test the partnership's accountability. If it fails these tests, it is unlikely to sustain the resources and commitments needed for survival. However, too much accountability and poorly designed monitoring systems will create strong disincentives for participation (Imperial, 2005a, 2005b). There is a constant tension between accountability to the CEM partnership and the autonomy of members. Monitoring and peer pressure can enforce agreements, reduce strategic behavior (e.g., rent seeking, shirking, etc.), and encourage adherence to commitments. Conversely, excessive monitoring and enforcement can create powerful disincentives, particularly when a member fears reprisals or criticism due to their participation. Thus, designing a CEM partnership with a desirable level of accountability is a challenging endeavor and participants would be wise to focus on designing a performance management system that focuses on collective goal achievement and allowing members to share credit or blame (Imperial, 2005b).

Legitimacy

Organizations must have some level of external legitimacy if they are to mobilize the resources needed for survival (Hannan & Freeman, 1984, 158; Singh et al., 1986, 590; Singh et al., 1986, 173; Meyer & Rowan, 1977; DiMaggio & Powell, 1983). A CEM partnership must be viewed as a legitimate response to water resource problems if it is to attract public and political support (e.g., politicians, stakeholders, or the general public), get its members to contribute needed resources, and make the changes needed to enhance integration. Otherwise, these resources may be allocated to competing efforts or members may exit the partnership and develop their own responses to environmental problems.

Developing and maintaining legitimacy is a challenging process. Over time, legitimacy can increase as a partnership develops stronger exchange relationships, becomes part of the established power hierarchy, and begins having its actions endorsed by powerful actors. The level of legitimacy is also influenced by the strategic choices noted throughout the paper. While increasing the scope of membership may improve legitimacy, leaving out just one critical policy actor could destroy it (Imperial, 1999b). Increasing the scope of membership can also increase transaction costs, which can impair perceptions about the partnership's legitimacy or effectiveness. A large membership may inject politics, power, and turf issues that make it difficult to reach agreement on meaningful changes. Conversely, a relatively small membership that includes a meaningful set of actors may reduce transaction costs and produce meaningful

policy changes. Thus, more participation is not inherently better and less is not necessarily worse. What is important is to strike a balance in membership size and composition that is consistent with other strategic design choices.

Which individuals represent organizations also influences legitimacy. When organizations send opinion leaders and high level officials it conveys much more legitimacy than if low level officials participate. How much influence each organization has on decisions also matters. If important actors lack an ability to influence the partnership's decisions, they (and the constituencies they represent) are likely to view them with less legitimacy than if they had influence. There must also be a good fit between the geographic scale, the problems addressed, and the partnership's membership or it may reduce its legitimacy. Similarly, the partnership's response to environmental problems may affect a wide range of actors (e.g., political jurisdictions, agency programs, nongovernmental organizations, land owners, etc.). If those affected interests were not represented when decisions were made, they may not view them as legitimate responses to water resource problems.

Summary & Conclusions

There is a strong institutional orientation associated with collaborative environmental management (CEM). Thus, it is not uncommon for CEM partnerships to emerge when:

- Environmental problems are not adequately addressed by existing programs;
- Opportunities for cooperation are not taken advantage of;
- Conflicting policies and priorities work at cross purposes;
- Fragmentation and duplication of authorities create inefficiencies;
- Information asymmetries impede decision making and resource allocations; and,
- Communication problems produce poor decisions.

At the same time, there are limits to how much "collaboration" is possible or desirable. Participants should avoid wasting valuable resources trying to integrate policies and programs that may prove difficult or impossible due to constraints imposed at the vertical or horizontal level. The interactive processes involved in CEM can impose high transaction costs (information, coordination, strategic) in order to craft, implement, monitor, and enforce agreements and to adapt and coordinate new policies and procedures (Imperial, 1999a; Ostrom, 2005, 1999). There are also risks associated with renegotiating existing agreements because there is always the possibility that the process will cause a participant to pursue their BATNA, which might further reduce integration. Therefore, participants in a CEM effort would be wise to consider whether the perceived sub-optimal level of integration may actually reflect a desirable situation because the transaction costs associated with moving to an alternative rule configuration are too high.

Collaborative environmental management is inherently a strategic endeavor. Participants in CEM face a wide range of interrelated strategic choices that influence their ability to achieve objectives. Choices involving the space, actor, issue, and time dimensions shape the overall comprehensiveness of a partnership for CEM (Underdal, 1980). The participants will also have to determine the extent to which environmental problems and solutions are framed from the

overall perspective rather than that of some smaller subset of actors (aggregation). This leads to explicit (or implicit) choices concerning the CEM partnership's institutional design and corresponding boundary (member and strategy), decision (preference aggregation, distribution of power, distribution of roles or responsibilities, and, distribution of participation), and coordination (exchange, monitoring, dispute resolution, and enforcement) rules (Imperial & Koontz, 2007). No one combination of rules is likely to be the most effective. Rather, it is the degree of fit between the CEM partnership's rule structure, its goals and purposes, and its contextual setting that is likely to have the strongest influence on its effectiveness.

These design choices are important because there is no substitute for a well-managed program. Getting the rules right is not easy and can take much longer than participants realize (Imperial & Hennessey, 2000). It is also fraught with challenges and potential paradoxes. One of the principle characteristics of a well-managed organization is a stable structure that is the product of formalizing and institutionalizing a set of rules. These very same forces make the CEM partnership resistant to the very same changes advocated by those stressing the need for adaptive management (e.g., Lee, 1993). The development of a stable, reliable, fully institutionalized CEM partnership will also add complexity to the governance system for environmental resources, which may create both opportunities and obstacles to future integration. Striking the right balance between accountability and autonomy is another challenge. Too much accountability may drive away potential participants while too little will make it difficult to attract and maintain the resources needed for survival. These design choices will also impact the perceived legitimacy of a CEM partnership, which is important because it needs some minimum level of legitimacy in order to marshal the resources needed to enhance the integration of the governance system.

The gradual and continued accumulation of policies and programs around environmental and natural resource problems suggest that integrating complex governance systems will remain a central concern for the decades to come. In many respects, the tendency to respond to the integration challenge by creating a new CEM partnership is a striking example of the basic governance challenge. While a CEM partnership may improve the integration of policies and programs over the short-term, if it endures it adds complexity to the governance system.

It is clear that institutions matter. The strategic choices made explicitly or implicitly as part of the CEM partnership's design and administration will influence its processes. While there is a tendency for CEM partnerships to want to want to holistically address environmental problems, it is also wise to temper these ambitions and remember that the struggle for greater integration can be costly, time-consuming, divisive, and sometimes the benefits are limited. Instead, a strategic approach that emphasizes changes that are relatively easy to achieve, followed by subsequent efforts designed to parlay the trust developed from these initial accomplishments into more ambitious efforts may prove to be more beneficial.

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