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The Social Architecture of Collaborations in Four Watersheds: Convergence, Path Dependence, and the Collaborative Life-Cycle Framework

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Abstract

This study uses the Collaborative Life-Cycle Framework to examine the challenges associated with developing a collaboration's structure. A process analysis of collaborations emerging in four United States watersheds identified three interrelated sets of rules that form a collaboration's social architecture: *boundary rules* (member and strategy rules); *decision rules*; and *coordination rules*. The analysis suggests that convergence on a structure is a path-dependent process where minor changes produce potentially large structural differences. It raises important questions about the evolutionary dynamics that create a collaboration's structure. Discussion concludes by examining implications for theory development and practice.

Keywords

collaboration, collaborative governance, networks, network governance, institutional analysis, watershed governance, implementation structure, process analysis

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Introduction

Collaboration is a dynamic process. Collaborations emerge, become dormant, or go extinct, only to resurface with new members, names, forms, and geographic scopes (Genskow & Born, 2006; Imperial, Johnston, et al., 2016; Imperial et al., 2017; Ulibarri et al., 2020). Throughout this evolution, collaborations are more than just the interactions between individuals and the organizations they represent. They require an interdependent structure involving multiple organizations (or individuals), exhibiting some degree of structural stability due to formal or informal linkages and relationships (Aldrich & Whetten, 1981; O'Toole, 1997). Therefore, the central challenge confronting the creation of a new collaboration is to achieve some level of direction, control, and coordination among individuals (and organizations) through these structures in order to advance their joint objectives (Frederickson, 1996; Lynn et al., 2000; Provan & Kenis, 2008, p. 231). Although collaborations can range from discrete short-lived projects to longer-term interactions that produce formal shared policies or prolonged implementation efforts, they all require some degree of structure.

This article defines structure in terms of the configuration of social norms and rules (formal and informal) that are converged upon during the creation and evolution of a collaboration. This configuration of rules or "social architecture" gives rise to a structure that provides coordination, control, and direction in the absence of centralized, hierarchical authority. Social architecture allows for a stable set of interactions that enables a collaboration to engage in a wide range of provision (e.g., planning and policy setting) or production (e.g., implementation, service delivery) activities (Ambrose & Imperial, 2025).

Understanding how evolutionary dynamics give rise to a(n) (un)stable collaborative structure is critical to building theory, but it has received little scholarly attention. Specifically, this study explore two interrelated research questions: (1) what are the important norms and rules that interact to create a collaboration's "structure"; (2) how do these collaborative structures evolve during the early stages of a collaboration to create the stability to engage in provision or production activities? To answer these questions, it relies on a process analysis rooted in institutional analysis to examine a series of collaborations in four watersheds in the United States – Delaware Inland Bays, Narragansett Bay, Tampa Bay, and Tillamook Bay – that emerged over time to address water quality problems (Ambrose & Imperial, 2025; Imperial, 2023).

Structure of Collaborations

The discussion of "structure" in the collaborative governance literature typically focuses on the need to set ground rules in the beginning (Ansell & Gash, 2008; Bryson et al., 2006; Thomson & Perry, 2006) or identifies the institutionalization of rules as being critical during the later stages of a collaboration's evolutionary process (Emerson et al., 2012; Imperial, Johnston, et al., 2016; Imperial et al., 2017; Ulibarri et al., 2020). We take a broader perspective. The social architecture of collaboration may begin as more or less formal structures, but they also are likely to evolve because of changing contextual factors and the process of collaboration itself (Bryson et al., 2006; Huxham & Vangen, 2005).

When viewed through an institutional lens, rules and behavioral norms give rise to shared values, attitudes, behaviors, and culture that "structure" the interactions among a collaboration's members (Frederickson, 1996; Lynn et al., 2000; Mandell & Keast, 2007, p. 581; Milward & Provan, 2000). These include formal (e.g., by-laws, agreements, legislation, plans) and informal rules (e.g., social norms) and sanctions (e.g., peer pressure) that govern interactions among members (Ostrom, 1990, 2005). We argue that stable interactions emerge from an iterative process that eventually converges upon a distinctive configuration of shared rules and norms that produces a collaboration's social architecture (Mandell & Keast, 2007). Social architecture allows members to codify their shared goals and motivations, defines the collaboration's collective identity (and differentiates it from other organizations/collaborations), and specifies joint priorities, purposes, or expectations. It also helps coordinate actions taken individually or collectively within and outside the collaboration.

Using Architecture as a Metaphor

Metaphors are a useful way to understand complex organizational (Morgan, 1997) and interorganizational phenomena (e.g., Imperial, Johnston, et al., 2016; Imperial, Ospina, et al., 2016; Prentice et al., 2019). The term *social architecture* draws attention to the fact that rules and norms exist to structure behavior, but these structures are often *hidden* in the sense that a collaboration's members may not give much conscious thought to *how* rules shape or govern their behavior and interactions. Similarly, people generally give little thought to their house's physical construction or how space is utilized until it is ime for a renovation.

Furthermore, just as an architect begins with concepts and rough sketches, the initial stages of a collaboration's formation are fluid. Members try

different combinations of rules as they determine the goals, functions, or services the collaboration might provide. Eventually, agreement coalesces around the final plans for the structure. Additionally, architectural design is an iterative process, with trade-offs that balance the structure's competing uses and functions. The final architectural plan is important, profoundly linking a structure's form to its function.

If one changes functions, it might be costly to change the structure to be more suitable. Similarly, structures designed for planning and policy development (i.e., provision) often need to be changed in significant ways to guide implementation (i.e., production; Ambrose & Imperial, 2025; Imperial, 2023). In practice, it is often cheaper to buy or build a new structure to accommodate new uses. In addition, while some collaborations design their structure from the ground up, others live and work within a structure that external actors partially or wholly designed due to a mandate or funding constraints (Huxham & Vangen, 2000, p. 1166; Imperial, 2023; Imperial, Ospina, et al., 2016; Ulibarri et al., 2020).

An Institutional Perspective on Collaboration Structure

Researchers have long recognized the significant role rules play in structuring collaborations (Keast et al., 2004; Kickert et al., 1997; Mandell & Keast, 2008, p. 721; Powell, 1990). Consequently, many approaches have been used to examine and compare the structure of collaborations (Bidwell & Ryan, 2006; Chaffin et al., 2012, 2015; Clark et al., 2005; Dakins et al., 2005; Hardy, 2010; Hardy & Koontz, 2009; Koehler & Koontz, 2008; Margerum, 2008; Margerum & Robinson, 2015; Moore & Koontz, 2003). Several typologies exist that advance our understanding of collaboration dynamics (e.g., Diaz-Kope & Miller-Stevens, 2015; Margerum, 2008; Moore & Koontz, 2003). Of particular interest is research that views a collaboration's structure as the product of a configuration or rules, norms, routines, and shared culture (e.g., Huxham & Vangen, 2000; Keast et al., 2004; Kickert et al., 1997; Lynn et al., 2000; Mandell & Keast, 2008; Mandell & Steelman, 2003; Milward & Provan, 2000; Powell, 1990; Sandstrom et al., 2015; Saz-Carranza & Ospina, 2010; Vangen & Huxham, 2003). What is missing are an understanding of how the rule structures evolve and more complete understanding of how the configuration of norms and rules produces a wide range of structures to engage in provision (e.g., planning and policy development) and production (e.g., implementation and service delivery) activities.

Our approach is grounded in institutional analysis, drawing on the work of Elinor Ostrom (1990, 1999, 2005) and her colleagues (e.g., Blomquist, 1992; Imperial, 1999, 2005a; Imperial & Hennessey, 2000; Imperial & Kauneckis, 2003; Imperial & Yandle, 2005; Kauneckis & Imperial, 2007). What differentiates institutional analysis from other forms of organizational analysis is the focus on rules. Rules, norms, and shared strategies are constituted and reconstituted by repetitive human interaction (Crawford & Ostrom, 1995, p. 582). Rules are implicit or explicit attempts to achieve order and predictability among humans (Ostrom, 1986, 1999, 2005). Rules forbid, permit, or require some action or outcome and the sanctions authorized when rules are not followed (e.g., the collaboration identifies who I must engage with and when. If I do not engage, I could be kicked out of the collaboration [Crawford & Ostrom, 1995, p. 584]). Norms differ from rules: they identify what an actor ought to do (i.e., social expectation or obligation) but do not carry formal sanctions for nonconformance (e.g., the collaboration identifies who I should engage with and when. If I do not engage, I am not penalized). Strategies are understood patterns of behavior in a particular situation without explicit enforcement mechanisms or social expectation or obligation (e.g., I know I can engage with the collaboration, but I am not compelled, through penalty or expectation to do so [Crawford & Ostrom, 1995]).

Rules can be formal (e.g., laws, policies, regulations, etc.) or informal (e.g., shared understandings). Informal rules are often called "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, p. 39). In this way, despite not being formalized, informal rules might matter as much or even more when not followed. Finally, rules also operate at different levels for different actors (e.g., operational, collective choice, constitutional). Broadly, operational rules directly affect day-to-day decisions made by the actors in the collaboration; collective choice rules identify who is eligible to participate and how to change the operational rules; and constitutional rules identify how to craft collective-choice rules (Ostrom & Ostrom, 2004, p. 133). Thus, rules can be nested, with higher-order rules defining how lower level of rules can be changed (Kiser & Ostrom, 1982). Since the way one set of rules functions depends upon the way it interacts with other sets of rules, the wholistic structure is a configuration of rules. Althoug external actors can impose rules on a collaboration (e.g., members, goals/purposes), these external rules tend to be limited (Ambrose et al., 2022), and many of the rules that form the social architecture are the products of the interactions that emerge during the collaboration's developmental process.

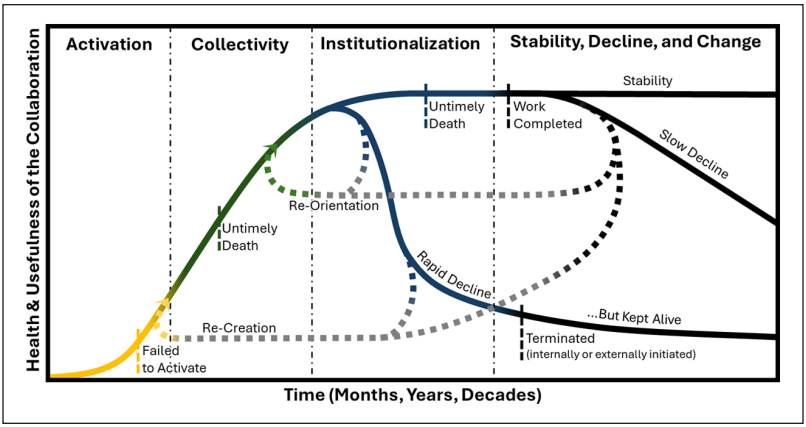

Figure 1. Collaborative life cycle framework.
Source. Modified from: Imperial (2023).

This study builds upon the Collaborative Life-Cycle Framework developed by Imperial and others (Ambrose & Imperial, 2025; Bell & Oliver, 2022; Carstensen & Sørensen, 2025; Chen & Sullivan, 2023; Imperial, 2023; Imperial, Johnston, et al., 2016; Siddiki & Ambrose, 2023; Ulibarri et al., 2020; Zambrano-Gutierez et al., 2023; Zhou & Dai, 2023). The four-stage framework is based loosely on ecological theories of organization to draw attention to each stage's evolutionary challenges (Cameron & Whetten, 1981, 1983; Miller & Friesen, 1983, 1984; Quinn & Cameron, 1983; Smith et al., 1985; Whetten, 1987). The evolutionary process is iterative, and it takes time to develop communication, trust, commitment, understanding, and outcomes (Ansell & Gash, 2008; Emerson et al., 2012; Jap & Anderson, 2007; Johnston et al., 2010; Mandell & Keast, 2008).

The *activation stage* reflects the turbulent period of a collaboration's formation (Imperial, Johnston, et al., 2016). (See Figure 1.) The social architecture is unstable (Mandell & Keast, 2008). Members come and go, and different strategies and purposes are considered. The cost of change is low due to the limited investment in rules, routines, and processes (Katz & Gartner, 1988). Even as the social architecture remains somewhat ill-defined, shared norms and values eventually emerge that distinguish the "collaboration" from its members (Imperial, 2023; Imperial, Johnston, et al., 2016). The activation period eventually gives way to an increasingly stable *collectivity stage* with a cohesive membership (Imperial, Johnston,

et al., 2016). Trust and personal relationships play a significant role early in the stage giving way to rules and norms, which emerge as a by-product of interactions and specific decisions or tasks faced by the collaboration. By the end of the stage, the social architecture is solidified, and there is growing resistance to change.

The *institutionalization stage* marks the convergence on a configuration of rules that shape and constrain collaborative processes (Imperial, 2023; Imperial, Johnston, et al., 2016). As interest eventually shifts toward achieving the purposes that motivated the collaboration's formation (Head, 2008; Imperial, Johnston, et al., 2016), the members' focus turns to producing goods and services more efficiently. This requires a stable, reliable, and reproducible structure. Collaborations codify and institutionalize some rules, routines, and procedures using formal mechanisms (e.g., by-laws, work plans, plans, membership directories, websites, and other program documents) to reinforce its identity, lessen reliance on personal relationships, and socialize new participants (Imperial, Johnston, et al., 2016, Koschmann et al., 2012). The configuration of rules (formal and informal) now "structures" interactions, making members less reliant on personal relationships (Imperial, 2023).

The final stage is *stability, decline, or change*. It draws attention to the various developmental trajectories that occur in mature collaborations (Imperial, 2023; Imperial et al., 2016). Some collaborations remain useful and productive for a considerable time. Others decline rapidly. Some collaborations end when their work is done while others end prematurely or live well past their useful lives.

Furthermore, the Collaborative Life-Cycle Framework assumes that the evolutionary process involves punctuated-equilibrium (Imperial, Johnston, et al., 2016), where prolonged periods of stability are punctuated by rapid change (Imperial, 2023; Imperial, Johnston, et al., 2016; Tushman & Romanelli, 1985; Ulibarri et al., 2020). Collaborations typically undergo structural change during these punctuations (Imperial, 2023). For example, the structures used for planning may need to shift to oversee implementation activities (see Ambrose & Imperial, 2025). *Re-orientations* are the result of minor changes to the configuration of rules that return participants to the collectivity stage to reconfigure how a collaboration "does its work." In this way, re-orientations mostly represent minor rule changes. Although there may be some minor adjustments to the "who" is involved or "what" it is trying to accomplish, these adjustments are at the margins and do not fundamentally alter the core rules in the collaboration's structure (Imperial et al., 2016).

In contrast, *re-creations* are the result of changes to the core set of rules meant to identify "who" is involved and "what the collaboration is trying to accomplish" (i.e., goals, purposes, processes; Imperial, Johnston, et al., 2016). It might be expected that, as members and strategies change, subsequent rule changes would also be required, representing a more thorough rule re-configuration of the collaboration's structure and resulting processes. These changes are more complicated and effectively return participants to the activation stage. Because the changes are more complicated, they may take longer to achieve (Imperial, 2023). What is missing from the Collaborative Life-Cycle Framework is a more complete understanding of the configuration of rules that is converged upon during the evolutionary process and then is modified during re-orientations and re-creations.

Data & Methods

To answer our research questions, we employed a multi-level process analysis that relies on a series of strategies to theorize from process data (e.g., narratives, grounded theory, visual mapping, temporal bracketing, and alternate templates; De Villa & Langley, 2024; Langley, 1999). Process analysis is useful when the researcher is interested in how things evolve over time and why events play out as they do (Langley, 1999). It is also useful for examining complex multi-level phenomena such as collaborations with federal, state, and local actors and rules functioning at different levels (Langley, 1999). Thus, it is a useful approach to explain the evolution of collaborative structures (and subsequent changes to these structures) in terms of sequences of events, activities, and rule choices that occur over time (De Villa & Langley, 2024).

This process analysis focused on 31 collaborations (i.e., instrumental cases) that emerged over time to address environmental problems in 4 watersheds in the United States: Inland Bays (DE); Narragansett Bay (RI, MA); Tampa Bay (FL); and Tillamook Bay (OR; see Table 1). The initial data collection focused on developing four detailed case reports examining watershed governance for the National Academy of Public Administration (Imperial, 2005; Imperial & Hennessey, 2000). The goal of the original study was to select a set of instrumental cases (watersheds) with long histories of watershed governance activities and to include both rural and urban locations (Table 1; Stake, 1998). Each watershed participated in the Environmental Protection Agency's (EPA's) National Estuary Program (NEP). The EPA required participants to use a collaborative,

Table 1. Comparison of the Four Case Study Watersheds.

Case characteristics	Inland Bays	Narragansett Bay	Tampa Bay	Tillamook Bay
Physical Environment				
Water body	Inland Bays (DE)	Narragansett Bay (RI, MA)	Tampa Bay (FL)	Tillamook Bay (OR)
Size of watershed	300 square miles	1,705 square miles	2,200 square miles	597 square miles
Population (2017)	225,000[a]	1,950,000	2,700,000	26,500 [a]
Focal problem(s)	Nutrient loading	None	Nutrient loading & seagrass loss	Shellfish closures, sedimentation, & endangered species
Sources/causes of problem(s)	Chicken farms, Septic systems, point sources, & stormwater	Diverse sources & causes	nutrient loading from diverse sources & habitat loss	bacterial loading & sedimentation from agricult., forestry, & urban sources
Institutional Environment				
Jurisdictional complexity	Low	High	Medium – High	Low – Medium
Level of conflict	Medium	High.	Low	Low
Current Collaborative Effort	Center for the Inland Bays (CIB)	Narragansett Bay Estuary Program (NBEP)	Tampa Bay Estuary Program (TBEP)	Tillamook Estuaries Partnership (TEP)
Organizational Arrangement	Nonprofit Organization	Independent program in govt. organization	Alliance of local governments	Nonprofit Organization
Institutionalization	Legislation forming nonprofit/ by-laws/CCMP/other documents & website	CCMP/other documents & website	Interlocal Agreement/ by-laws/CCMP/other documents & website	501 (c)3 incorporation/by-laws/ CCMP/other documents & website
Primary Funding Sources	Federal, state	Federal	Federal, state, regional, & local	Federal
Funding amount/stability	Low/Medium	Low/Low	High/High	Medium/Medium
Shared goals or targets	Limited	Limited	Many	Limited
Scope of collaborative activity	Medium	Low	High	Low-Medium
Monitoring/Reporting	Medium	Low	High	Medium

Note. Assessments of high, medium and low are based on comparisons among the four programs.
[a]Measured at the county level.

consensus-based decision-making process to develop a Comprehensive Conservation and Management Plan (CCMP) and to then develop a collaborative structure to facilitate its implementation. This allowed the process analysis to focus on the transition from provision (i.e., planning and policy development) to production (i.e., implementation and service delivery). Based on their histories, each watershed had collaborations preceding NEP participation, some of which focused solely on provision or production, while others made the transition between these two phases of activity. This comparison allowed the process analysis to use temporal bracketing to identify the wide range of evolutionary trajectories that occurred (see Imperial, 2023 and Ambrose & Imperial, 2025 for further analysis of the evolutionary dynamics).

Narrative case histories were then developed for each watershed, using data collected from field interviews with 160 individuals, archival records, and direct observation of events and meetings during site visits. Field interviews and initial data collection occurred shortly after participants made the transition from planning to CCMP implementation. Detailed case reports with narratives, timelines, and graphics were developed and reviewed for accuracy by multiple principal informants in each watershed. Examining these different data sources allows for triangulation to improve the validity of the initial case report (Imperial, 2005a; Yin, 1994). In subsequent years, periodic interviews with key informants and supplemental collection of archival materials (e.g., by-laws, annual reports, strategic plans, budgets, meeting minutes, websites) were used to monitor and expand case histories (Imperial, 2005b, 2023; Imperial et al., 2017).

The process analysis then identified the re-orientations and re-creations that led to changes in the structures that "locked in" during the institutionalization phase (Table 2; Ambrose & Imperial, 2025; Imperial, 2023). Next, the analysis identified the clusters of rule choices made by members of the collaboration (or rules specified by external actors like EPA) by focusing primarily on the changes that occurred during reorientations and recreations. Formal rules were identified by examining various data sources associated with the collaborations noted in Table 2 (e.g., management conference agreements, by-laws, plans, formal program documents, MOUs, websites, interviews). Informal rules were identified primarily from interviews. Previous work identifying rules common to collaborations guided the inquiry (Imperial & Koontz, 2007). This allowed comparison across structures to develop theory grounded in these data and produce a framework of rules that can describe collaborative structures and is consistent with prior scholarly research (Agranoff & Radin, 1991; Glaser & Strauss, 1967; Strauss & Corbin, 1990; Yin, 1994).

Table 2. Collaborations in the Four Watersheds.

Collaborative governance effort	Begin	End	Initialization	End stage
Inland Bays (DE)				
Environmental Study of Rehoboth, Indian River and Assawoman Bay (IB1)	1969	1969	External: Mandate	Work Complete
Coastal Sussex Water Quality Program (CWA Section 208) (IB2)	1972	1981	External: Mandate	Death
Inland Bays Study Group (IBSG) (IB3)	1981	1983	Self-Initiated	Untimely Death
Decisions for Delaware: Sea Grant Looks at the Inland Bays (IB4)	1982	1983	Self-Initiated	Work Complete
Governor's Task Force on the Inland Bays (GTFIB) (IB5a)	1983	1984	External: Mandate	Re-creation: IBMC
Inland Bays Monitoring Committee (IBMC) (IB5b)	1984	1988	External: Mandate	Untimely Death
Delaware Inland Bays Estuary Program (DIBEP) (IB6a)	1988	1995	External: Incentive	Re-creation
Center for the Inland Bays (CIB) (IB6b)	1994	1995	Self-initiated: Constraints	Re-orientation
Center for the Inland Bays (CIB) (IB6c)	1995	2015	Self-initiated: Constraints	Re-orientation
Center for the Inland Bays (CIB) (IB6d)	2015	Ongoing	Self-initiated: Constraints	Stable
Narragansett Bay (RI. MA)				
New England Interstate Water Pollution Control Commission (NB1)	1948	Ongoing	External: Mandate	Slow Decline
New England River Basins Commission (NB2)	1967	1981	External: Mandate	Untimely Death
RI Areawide Water Quality Management Plan Section 208 Comprehensive Plan (NB3)	1972	1981	External: Mandate	Death
Narragansett Bay Project (NBP) (NB4a)	1985	1993	External: Incentive	Re-orientation
Narragansett Bay Project (NBP) (NB4b)	1993	1995	Self-initiated: Constraints	Re-creation: NBEP
Narragansett Bay Estuary Program (NBEP) (NB4c)	1995	2012	Self-initiated: Constraints	Re-creation
Narragansett Bay Estuary Program (NBEP) (NB4d)	2013	Ongoing	External: Incentive	Stable

(continued)

Table 2. (continued)

Collaborative governance effort	Begin	End	Initialization	End stage
Tampa Bay (FL)				
Tampa Bay Regional Planning Council (TBRPC) (TB1a)	1962	Ongoing	Self-initiated	Re-orientation: ABM
Tampa Bay Study Commission (TB2)	1983	1984	External: Mandate	Work Complete
TRBPC's Agency on Bay Management (ABM) (TB1b)	1985	Ongoing	Self-initiated: Constraints	Slow Decline
Tampa Bay National Estuary Program (TBNEP) (TB3a)	1990	1998	External: Incentive	Re-creation: TBEP, NMC
Tampa Bay Nitrogen Management Consortium (NMC) (TB4)	1996	Ongoing	Self-initiated: Constraints	Stable
Tampa Bay Estuary Program (TBEP) (TB3b)	1998	2015	Self-initiated: Constraints	Re-orientation
Tampa Bay Estuary Program (TBEP) (TB3c)	2015	Ongoing	Self-initiated: Constraints	Stable
Tillamook Bay Watershed				
USDA Rural Clean Water Project (Till1)	1981	1996	External-Incentive	Work Complete
Bay Sanitation Technical Advisory Committee (BSTAC) (Till2)	1987	1993	External: Mandate	Untimely Death
Tillamook Bay National Estuary Program (TBNEP) (Till3a)	1993	1999	External: Incentive	Re-creation: TCCP
Tillamook County Performance Partnership (TCPP) (Till3b)	1999	2002	Self-initiated: Constraints	Re-creation: TEP
Tillamook Estuaries Partnership (TEP) (Till3c)	2002	2004	Self-initiated: Constraints	Re-orientation
Tillamook Estuaries Partnership (TEP) (Till3d)	2004	2008	Self-initiated: Constraints	Re-creation
Tillamook Estuaries Partnership (TEP) (Till3e)	2008	Ongoing	Self-initiated: Constraints	Slow Decline

Describing the Social Architecture of Collaborations

The comparative analysis demonstrates that minor changes in rule configurations can produce different social structures and processes. Moreover, transitions from provision (i.e., planning) to production (i.e., implementation) often involved changes to the rule configurations that gave rise to new social architecture. The process analysis identified three interrelated sets of rules that create the "structure" for the collaboration: boundary rules (member and strategy), decision rules (preference aggregation and distributions of power, roles or responsibilities, and participation), and coordination rules (exchange, monitoring, dispute resolution, and enforcement) similar to that first proposed by Imperial and Koontz (2007; Figure 2).

Boundary Rules

Boundary rules distinguish a collaboration from other organizations within the larger interorganizational system and create an identity distinct from that of its members. Thus, boundary rules reflect important choices concerning who the collaboration's members are and what it will do. Two interrelated sets of boundary rules are important – *member rules* and *strategy rules* (Imperial & Koontz, 2007). The combination of problems and purposes helps identify the membership needed to address them. At the same time, collaborations are limited in terms of the strategies they can take given their resources, authorities, and competing interests and values of their members. Accordingly, membership composition influences and constrains the selection of strategy rules given the different tangible (e.g., monetary, physical, and personnel) and intangible resources (e.g., knowledge and experience) that the members bring to the collaboration (Bonnell & Koontz, 2007; Imperial & Kauneckis, 2003; Koontz, 2003; Koontz et al., 2004). These cases suggest healthy and useful collaborations have well integrated and complementary member and strategy rules. Conversely, when rules are misaligned (e.g., the identified membership does not possess the resources to collectively bring about the desired strategies), this can produce unhealthy collaborations or generate conflict.

Member rules specify who can or cannot be a member. Attracting, embracing, and supporting the "right" kind of members and determining when they should enter (or exit) collaborative processes is a challenge that never dissipates (Agranoff & McGuire, 1999, 2001; Johnston et al., 2010, p. 703; O'Leary et al., 2012; Saz-Carranza & Ospina, 2010; Vangen & Huxham, 2003). Re-orientations and re-creations often involve membership adjustments. Similarly, some

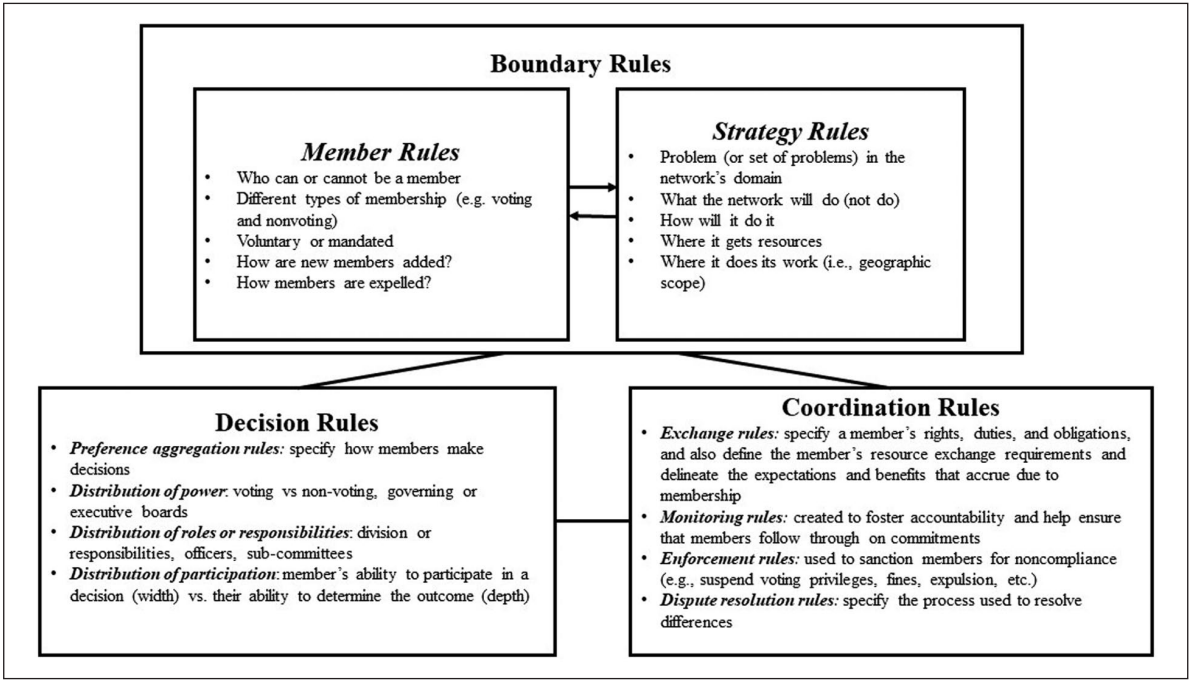

Figure 2. Social architecture of collaborations.

collaborative processes change membership as they evolve. For example, the high-level policy committee in the Inland Bays initially left out the Secretary of the Department of Agriculture. In Narragansett Bay, the directors of the Division of Planning (RIDOP) and the Coastal Resources Management Council (CRMC) at first were excluded from membership. In both instances, the agencies were added when it was clear the purposes of the collaboration necessitated their involvement in this high-level decision-making committee.

The analysis identified several types of membership rules. First were different "types" of membership (e.g., voting vs. nonvoting; Imperial & Koontz, 2007). It was also common to find ex-officio members. More interesting were the differences in membership size and inclusiveness – defined as the extent to which actors have authority or a role in shared decision-making (Ambrose & Imperial, 2025; Quick & Feldman, 2011). For example, the high-level policy committee for the Tampa Bay National Estuary Program consisted of 6 local governments and 3 regulatory agencies. The other 26 local governments in the watershed were left out of the governing arrangement and relegated to lower-level committees. Similarly, the high-level policy committee for the Inland Bays initially consisted of only 4 members (1 local government and 3 regulatory agencies). By way of contrast, the Agency on Bay Management (ABM) in Tampa Bay had over 65 members, and the governing arrangement for the Tillamook County Performance Partnership (TCPP) was open and targeted 61 members. Even the TCPP's executive board specified 10-12 members.

Although organizations typically comprise the membership, there can be provisions for citizens or interest group representatives (Moore & Koontz, 2003). All the NEPs had a committee structure that included a management committee consisting of various stakeholders like agency managers and interest group representatives. Others included stakeholders and citizens on a Citizens Advisory Committee (CAC) and technical experts on a technical advisory committee (TAC). In some cases, these subcommittees were active and played vital roles in the process. For example, the CAC helped shape the recommendations that ended up in Tillamook Bay's final plan. Conversely, in Narragansett Bay, the subcommittees lacked purpose, had poorly defined roles, and were disbanded to create a larger management committee. It was also common to find chairs of the CAC or TAC serving as members of the management committee. This observation highlights that the effectiveness of a collaborative committee – either a high-level policy, citizen, and/or technical committees – stems from the proper alignment of member and strategy rules that matches what they are trying to get done with those included at the table and is consistent with the local context.

Membership could also be voluntary or mandated by some higher-order set of rules (e.g., statute, articles of incorporation, charter). For example, the county resolution that created the collaboration in Tillamook County specified which organizations were represented on the executive board, while membership in the larger collaboration was left open. The original legislation establishing the Center for the Inland Bays not only specified the members but also left the designation of two citizen members to the Speaker of the House and President *Pro tempore* of the Senate. Initially, they were nonvoting members but, at the board's request, the legislature made them voting members the following year. I 2026, the board can elect up to five citizen members. In Tillamook Bay, the management committee selected the members of the CAC, Science and Technical Advisory Committee (STAC), and Financial Strategy Committee (FTC). Conversely, Tampa Bay left membership in the Technical Advisory Committee (TAC) open with 200+ members but appointed a CAC with around 30 members. In some cases, rules were developed to decide how to add new members. For example, in Tampa Bay the interlocal agreement established a process whereby new members could join the collaboration. Similarly, rules may be crafted to specify how a member is expelled. For example, Tillamook Bay allowed a member to be expelled for missing three successive meetings but had no rules governing who could join.

Strategy rules specify the collaboration's purpose(s): what it will do, how it will do it, and where it will get the necessary resources for those activities (e.g., clients, products, goods, services; Imperial & Koontz, 2007). Strategy rules identify the problem (or set of problems) that are the collaboration's domain as well as problems that should not be considered. Sometimes, the purposes were established early in the process. For example, the Governor's executive order establishing the Governor's Task Force on the Inland Bays (GTFIB) in 1983 and the legislation establishing the Center for the Inland Bays (CIB) externally established the collaborations' goals. In other cases, the purposes were identified during the evolutionary process. Typically, the basic purpose of each NEP was clear during the provision phase – produce a management plan. Often, however, identifying the focal issue that served as a catalyst for action in the production phase occurred later in the process, sometimes necessitating changes to membership rules. For example, once the Inland Bays started focusing more on agricultural sources of water quality problems, this entailed including those interests in the collaboration's membership. A major flooding event in Tillamook Bay led to the inclusion of a new purpose during the plan's creation. Even so, EPA's funding limitations, members could only examine the water quality impacts resulting from flooding rather than the other problems linked to severe flooding.

Finding the purpose for the production phase for the collaborations was more open-ended and frequently emerged near the end of the provision phase. In the Inland Bays, Tampa Bay, and Tillamook Bay, this required recreating the collaboration to solidify agreement on the new purpose(s). In Tampa Bay, for instance, although its plan emphasized a wide range of problems, nutrient loadings and habitat restoration emerged as the core purposes that continue to drive collaborative processes; this resulted in the emergence of new structures meant to deal with these specific problems. Conversely, other than producing a plan, members of the Narragansett Bay collaboration were unable to identify a core purpose or narrow strategies to drive its production processes. This meant that Narragansett Bay was left with a larger scaffolding for its social architecture and was unable to finish construction of its strategy rules. Subsequent re-creations and re-orientations in Narragansett Bay also struggled to find a shared purpose with strategy rules, resulting in a failure to motivate joint action.

Strategy rules also specify legitimate responses to problems that are within (or outside) of the collaboration's domain. Some of the responses scholars have identified include serving as convener, catalyst for action, information provider, advocate, organizer, funder, technical assistance provider, capacity builder, partner, dispute resolver, facilitator, or developer and implementer of projects and programs (Himmelman, 1996; Imperial, 2005a). There were clear examples of these functions. The Inland Bays Study Group (IBSG) focused primarily on research and information sharing, while the Center for the Inland Bays (CIB) and Tillamook Estuary Partnership (TEP) primarily conduct research, share information, educate the public, and implement restoration projects. Meanwhile, the Tampa Bay Nitrogen Management Consortium (TBNMC) stresses coordinating the actions needed to achieve the CCMP's nutrient reduction goals. Rules also specify what roles are illegitimate. For example, the CIB and TEP educate and provide information but lobbying and advocacy activities are restricted given their legal status as nonprofit organizations.

Strategy rules also reflect choices that govern the way members work together and share resources to address problems. Illustrations include members sharing information, facilities, staff, programming, or other resources. Interlocking with the rules that identify membership, strategy rules specify how actors use those resources and combine "tools" in different ways to produce some sort of value that they are unable to produce individually (Prentice et al., 2019). The structure can also use informal rules such as shared goals or performance targets or more formal contractual relationships and legal power sharing agreements. These shared policy level rules then structure a wide range of operational level activities (e.g., educational

activities, habitat restoration projects) that members conduct individually or as collaborations with other partners (cf. Imperial, 2005a, 2005b; Imperial & Hennessey, 2000).

Finally, strategy rules encompass the collaboration's geographic boundaries, service area, or where it does its work. For the four cases, this mostly consisted of the watershed boundaries and did not change appreciably with only a few exceptions. For example, when the TCPP disbanded and was replaced by the Tillamook Estuaries Partnership (TEP) it expanded the boundary to include all the estuary watersheds within the county's jurisdiction. Conversely, while the Narragansett Bay watershed drains a considerable area of Massachusetts, those stakeholder interests had minimal involvement. Moreover, rather than doing a Section 208 plan for the Narragansett Bay watershed, state officials decided to do a state-wide plan. Given our focus on watersheds and their close connection to geography, changes in boundary rules were less likely to be observed. In other policy settings, though, it might be more common.

Decision Rules

Decision rules shape the processes by which members make decisions (Imperial & Koontz, 2007): the combination of decision rules describes how the members collectively "govern" the collaboration. Interactive processes are not self-executing, so choices must be made about how to make decisions. Although scholarship often advocates simple rules like "consensus," the configuration of decision rules is often complex and involves a mix of formal rules (e.g., by-laws, Roberts Rules of Order) and informal rules in use and social norms.

Preference aggregation rules describe how members make decisions. While some scholars argue that collaborative processes should always be consensus-based (e.g., Ansell & Gash, 2008; Thompson & Perry, 2006), in practice a wide range of decision rules exist. During the initial stages of collaboration, decision rules are often informal with a reliance on consensus or simple majority voting. Over time, the rules may grow in complexity, specificity, and formality to reduce transaction costs by making decision-making more reliable and reproducible (Edelenbos & Klijn, 2005, p. 426). The four NEPs relied on "consensus" decision-making in the preparation of their plans because EPA required doing so. However, the operationalization of "consensus" varied considerably. The Inland Bays and Tillamook Bay defined consensus as meaning near unanimity and worked hard to ensure that those most affected agreed. Tampa Bay took votes, though not to push through anything controversial. It was more of a way of gauging progress or reaching closure

on an issue. This was a more formalized way to also reach consensus and make sure those most affected agreed. Accordingly, while there was technically a formal majority voting rule, the informal norm strived for unanimity among high-level decision makers. Consensus in Narragansett Bay was unclear and applied inconsistently during the process. The collaboration did not strive for unanimity and often reached closure on controversial issues when those most affected disagreed. This is an important observation that highlights the difference between rules-in-form and rules-in-use. More specifically, while the EPA formally required consensus-based decision-making (rule-in-form), the collaborations operationalized this differently or ignored it altogether (rule-in-use). This exemplifies that the social architecture of collaborations relies on both formal rules and informal norms to structure the patterns of interaction.

It was also common to find that some decisions required greater agreement among members than others. For example, a change to the by-laws, adoption of the budget, or expulsion of a member might require a super majority while other decisions need a simple majority. The TBEP, TEP, and CIB use majority voting, although there may be different rules in some situations such as changing the by-laws or adding new members. The TCPP's executive board used majority voting while the committee relied on consensus; however, a 2/3 majority of both was needed to amend the by-laws. This observation underscores the nested nature of rules, as decisions about day-to-day operations frequently required less formal decision arrangements, and many times decisions were delegated to the executive director and staff that worked for the governing board. Conversely, decisions requiring changes to the decision-making process itself often required more formal processes and agreement among the collaboration's membership.

Furthermore, when the collaboration's membership is large and becomes more specialized and differentiated (e.g., multiple sub-committees), increased complexity in decision rules often surfaces. There may be a *distribution of power* by establishing voting or nonvoting members or by creating a governing board or executive committee as noted in the TCPP example. There may also be a *distribution of roles or responsibilities* among members (e.g., establishing officers, sub-committee membership). As sub-units are created (e.g., a work group or sub-committees), rules are crafted to determine the sub-unit's membership and strategy and relationship to the other sub-units. Establishing officers was also common. The TCPP, which is the largest and most formalized collaboration, elected a president, vice-president, and secretary/treasurer, while the CIB, the second largest collaboration, elects a chair, vice-chair, and treasurer. The TBEP, TEP, and CIB all rely on some combination of standing and ad hoc advisory committees.

All the NEP's maintained formal subcommittees during provision as did the CIB, TBEP, and TEP during production. Even though the high-level policy or executive committee was the ultimate decision-maker and directed support staff, many relied on a management committee that met more frequently to be a working committee shaping policies and plans during the provision phase. Considerable variation appeared in the roles and responsibilities of the subcommittees. Some were quite active and had clear responsibilities. For example, Tillamook Bay's CAC played an instrumental role in identifying the recommendations that were contained in the CCMP. By comparison, the sub-committees in Narragansett Bay struggled with a lack of purpose, met infrequently, and were folded into the Management Committee. Within a committee, roles might be established. For example, the committee chair often ran the meetings, and the chair of the CAC and TAC often represented their committees' interests on the management committee.

Collaboration research frequently assumes that each member has somewhat equal input to the decision-making process. This is not always the case (Ambrose et al., 2025). Instead, our analysis suggests that in practice, a *distribution of participation* in decision-making is quite common. Any member's opportunity to participate in a decision (i.e., width) and their ability to shape the outcome (i.e., depth) can vary considerably across the structures we observed. While shared decision-making was quite common on the higher-level policy/executive committees across all four watersheds during the provision phase, the ability of members of subcommittees to participate in decision-making varied. Members of advisory committees in the NEPs or the TBEP, TEP, or CIB varied in terms of their ability to participate in and influence decision-making due to the frequency of meetings and their committee's role in the process. The results support the finding that the level of participation afforded to any member can vary considerably from informing, consulting, advising, or co-producing to co-deciding (Edelenbos & Klijn, 2005, pp. 428–429). In other words, all members are not created equal when it comes to their role in the collaboration's decision making.

Thus, the distribution of participation (i.e., the width of members) and inclusion (i.e., the depth of authority of members) is the product of the collaboration's social architecture. While the collaborative governance literature notes that social norms might drive unequal representation in decision-making and power imbalances (e.g., Ansell & Gash, 2008; Thompson & Perry, 2006), unequal representation or participation is also the product of a collaboration's membership size. Some collaborations are simply too large to include the interests of all actors in a comparable manner (Ambrose & Siddiki, 2024; Koski et al., 2018) and subcommittee structures might limit whether some issues are addressed by high level decisionmakers (Ambrose

et al., 2022). Narragansett Bay's management committee's membership provides an instructive example: decision-making was hindered by a large 45-member committee focused on a wide range of issues that created broad and irreconcilable differences when addressing some issues. As a result, staff ultimately became the *de facto* decision-maker and took sides in controversial matters rather than brokering compromises. In contrast, the citizen committee of Tillamook, as discussed earlier, was structured to include citizen and stakeholder voices, build strategic rules, and increase the collaboration's internal legitimacy.

Coordination Rules

As the collaboration evolves, preference aggregation rules may give rise to an additional set of *coordination rules* (Imperial & Koontz, 2007; Sobrero & Schrader, 1998, pp. 586–587). Membership requires rights, duties, responsibilities, or obligations beyond merely attending an occasional meeting. While membership rules identify "who" and strategy rules identify "what" and "how," coordination rules specify the ways members are interlocked to achieve the collaboration's shared purposes. It may require sharing information, contributing organizational resources (e.g., money, equipment, staff), or making changes to their organizational policies, procedures, or priorities. *Exchange rules* specify each member's rights, duties, expectations, or obligations. They also delineate the expectations and benefits that accrue due to membership. For example, must one have to contribute resources, are they a voting or non-voting member, or will the collaboration's activities advance their organization's goals? In Tampa Bay, considerable effort was spent negotiating the interlocal agreement that created the Tampa Bay Estuary Program (TBEP). In addition to specifying boundary and decision rules, the agreement contains clear duties and expectations including annual dues that are used to sustain the collaborative organization. Negotiating the agreement took time but the investment was worth it, as it ensured the benefits and costs of membership were properly aligned.

In any collaborative process, member(s) may not follow through on commitments. Some members fail to attend meetings, neglect to exchange agreed upon resources (time, money, equipment, space, information), or act counter to established rules and norms. Thus, *monitoring rules* may be crafted to foster accountability and help ensure that members follow through on commitments. Sometimes these rules are informal and rely on peer pressure (e.g., reporting meeting attendance records on the minutes). In other cases, collaborations relied on formal processes requiring annual reports and work plans to be reviewed by various committees (Imperial, 2005b). Tampa Bay's

interlocal agreement (IA) went a step further and required a report on the progress toward the plan's goals every 2 years. They also renew their commitments every 5 years by signing a new IA. In addition, as a condition of taking EPA funding, the CIB, NBEP, TBEP, and TEP are required to participate in a periodic evaluation process by the EPA.

Although accountability and compliance with exchange rules often occur due to social norms and peer pressure, *enforcement rules* may be used to sanction members for noncompliance (e.g., suspend voting privileges, fines, expulsion). By-laws can specify a process for member removal for noncompliance. For example, Tampa Bay's Interlocal Agreement includes provisions that allow a member in "willful and significant noncompliance with the CCMP goals or the terms of the Agreement" to be removed by a unanimous vote of all remaining members.

Conflicts occasionally appear among members due to events taking place inside or outside of the process. As a result, *dispute resolution rules* may specify the process used to resolve differences. This was primarily accomplished by the social norm of expecting to reach "consensus" even when formal rules allow for simple majority voting (e.g., CIB, TCCP, and TBEP). In some cases, collaborative processes used third party facilitators or neutral parties to reduce conflict or broker agreements when confronted with controversial decisions (Khator, 1999). For example, when conflict threatened to derail Narragansett Bay's CCMP approval, the policy committee appointed a new chair of the Management Committee who was well respected and had not been party to prior discussions to help facilitate and resolve the conflict. Respondents also noted that having support staff with effective facilitation skills helped minimize conflict.

Implications for Theory & Practice

This process analysis contributes to the development of the Collaborative Life-Cycle Framework in three distinct ways. First, the study adds clarity to the convergence process that is a central proposition of the Collaborative Life-Cycle Framework (Imperial, Johnston, et al., 2016). The stable configuration of boundary, decision, and coordination rules in Figure 2 is the structure converged upon. Second, the analysis raises interesting theoretical questions about the collaborative dynamics that occur during the activation and collectivity stages. Finally, an institutional approach focused on rules illustrates the danger when researchers define concepts like collaboration in terms of specific rule choices or argue that one combination of rules is superior to other options. Rather, there needs to be a good "fit" between the converged "structure" and the collaboration's situational context (Imperial, 1999).

Convergence as an Iterative Process

Whether implicit or explicit, the process of convergence and the resulting configuration of rules unfolds over time in an iterative manner. It is a trial-and-error process as participants struggle to get the rules right. While there are initial choices in a collaborative process, much of the design work unfolds during the early portion of *collectivity stage* as members discover what they can do and learn how to work together. Participants often noted that the processes took longer than they wanted or expected, particularly during provision. At the same time, most participants noted that these interactions were necessary and unavoidable (Imperial & Hennessey, 2000).

The process is iterative, since choices about one set of rules influence choices about other rules. For example, once member rules are set, that limits the set of acceptable broader purposes (i.e., strategy rules), as members bring both tangible and intangible resources as well as specific interests to the table. Conversely, the selection of a specific purpose (i.e., strategy rules) may necessitate the inclusion (or exclusion) of members needed to achieve those ends. These choices interact with decision rules to structure member interactions in ways that may give some members more influence over decisions than others.

The assumption that more structure concentrates decision-making is common in network management traditions (e.g., Provan & Kennis, 2008). Yet, decision rules can also establish fully shared decision-making, which is a common assumption in collaborative governance traditions (e.g., Emerson et al., 2012). More structure is seen as protecting broader access to decision-making (Ambrose & Imperial, 2025; Ansell & Gash, 2008). At the same time, coordination rules clarify the benefits and costs of membership. Thus, convergence continues until the rule choices narrow to a specific configuration of rules, the collaboration's social architecture is established, and member interactions are structured. By this point, considerable resources have been invested, so participants "lock in" and institutionalize the structure.

Path Dependency

This suggests that convergence is a path-dependent process (see Figure 3; Sydow et al., 2009). The activation stage is characterized by a broad scope of design choices. Much like an architect begins with a blank sheet of paper, there are many design choices but also a smaller cost to move among these options given the limited investment of time and organizational resources. But once decisions about the purpose of the structure unfold (e.g., size, number of bedrooms and bathrooms, other living requirements) and external

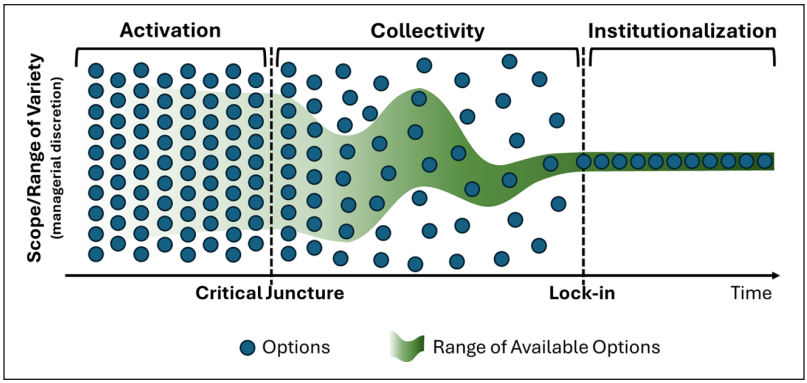

Figure 3. Convergence as a path dependent process.
Source. Modified from: Sydow et al. (2009).

constraints are considered (e.g., lot size, zoning requirements) what is possible begins to take shape. Similarly, participants make initial choices about who will be part of the collaboration (member rules) and its purposes (strategy rules) during the activation stage, and the structure begins to take shape. Even when collaboration is externally initiated (through, e.g., executive order, legislation, or program like the NEP), members largely have a blank slate in terms of selecting other critical aspects of boundary, decision, and coordination rules (Imperial, 2023). Accordingly, many possible structures (and outcomes) are possible during the activation stage (Sydow et al., 2009, p. 691).

Initial rule choices begin to narrow subsequent choices as the structure is refined during the collectivity stage. This is akin to the architect discussing the options with the clients who have practical constraints (e.g., lot size, zoning, finances). What is possible narrows and then tradeoffs are made to maximize functionality, ensure structural integrity, and remain within the project's budget. Similarly, a collaboration's members sometimes make tradeoffs between what is desired and what is possible, practical, or can be accomplished with available resources and constraints. Design choices made during the activation and collectivity stages thereby transform the collaboration into a set of self-reinforcing processes. As rules become institutionalized, they lock-in members to a prescribed set of behaviors and actions. This stable structure can endure until a re-orientation or re-creation punctuates this stability or the collaboration ends. The path-dependent nature of convergence helps explain why the 4 NEPs had quite different structures and processes despite being externally directed to use a management conference and make consensus-based decisions.

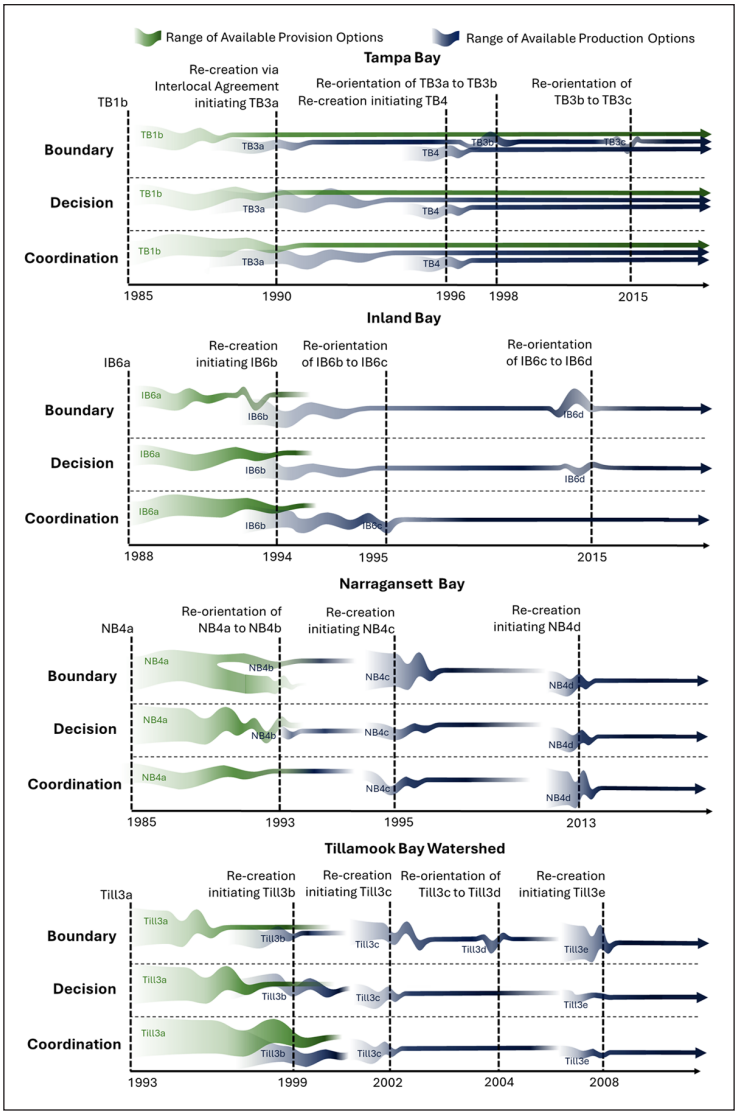

Figure 4. Path dependent process and rule change dynamics across cases.

Path Dependency and Structural Change

In practice, the amount of deliberation Figure 3 suggests varied quite a bit across the cases (Figure 4), with the range of options considered using

different widths of the green and blue lines. Eventually, the structure becomes entrapped or "locked-in" by the system's social dynamics during the institutionalization phase (Sydow et al., 2009, p. 691), represented by the thin and dark horizontal lines. As members are replaced (e.g., turnover, advancement) new entrants are expected to operate in accordance with the prevailing social architecture, which continues to reinforce the prevailing formal and informal structures (Koschmann et al., 2012; Sydow et al., 2009, p. 692). This creates what could be termed a "stability paradox." Even though collaborations are frequently formed out of a desire to be "flexible" and "adaptive," once they mature, they experience the same structural inertia that makes bureaucratic organizations resistant to change (Hannan & Freeman, 1984). A good example of this is Tampa Bay: even when re-orientations offered opportunities for reconfiguration, only minor changes were made, and these changes came from a narrow breadth of options. As a result, the social architecture often has a high degree of persistence, allowing it to endure for lengthy periods provided it obtains the necessary resources. The stability is important because it helps reduce transaction costs by reducing decision and coordination costs. It also allows the structure to reproduce itself even when as individual members change. As a result, the stable structure enhances internal and external legitimacy.

Adverse Consequences of Path Dependency

While stability allows healthy and useful processes to endure, path dependency can have adverse consequences. Two examples highlight this point. Despite a re-creation and two re-orientations, the Narragansett Bay Estuary Program (NBEP) experienced more than two decades of relatively poor health and low usefulness even though other collaborations working at smaller geographic areas within the watershed managed to flourish (Imperial, 2023; Imperial et al., 2017). In each instance, the NBEP's decline was triggered by poor design choices related to boundary rules that lacked a shared problem to motivate collective action as well as disagreements about how to share power and decision-making (Imperial et al., 2017). In particular, formal boundary rules, which emphasized the collaborative members, often were at odds with the informal boundary rules, which gave power to the staff, represented by the forked boundary rule pathway in Narragansett prior to 1993. This resulted in constantly shifting decision rules as well as a sharp shift in the decision rules as NBEP transitioned from provision to production. Even though the EPA concluded in several internal evaluations that the NBEP's performance was unsatisfactory, it was reluctant to force a re-orientation or re-creation by withholding needed funding; thus decision and coordination

rules largely stayed the same despite poor performance. This decline lasted almost two decades even though the resources could have been put to more productive purposes (Imperial, 2023).

The Inland Bays provides another instructive example. When the network transitioned from plan development (provision) to implementation (production), network members formed a nonprofit organization, the Center for the Inland Bays (CIB), which was institutionalized in state legislation. Although this created an independent collaboration that could accept EPA implementation funding, less attention was given to whether the CIB's new purposes were consistent with stakeholder expectations or prior successful collaborative structures like the Inland Bays Monitoring Committee (IBMC). As configured, the CIB was limited to noncontroversial topics like conducting research, sharing information, offering public education, installing best management practices, and undertaking habitat restoration projects. The structural change that occurred between planning and implementation resulted in a reconfiguration of rules as one might expect. Yet, the changes produced a new structure that altered prior strategy rules (i.e., goals and purpose), modified membership rules, and reconfigured other decision and coordination rules. This new structure initially alienated some long-time members of previous collaborations who preferred structural options that would allow the collaboration to address controversial issues related to land use and agricultural operations during the production stage. Even though the Center for the Inland Bays provides value, the CIB had little discernable impact on slowing coastal development or addressing nutrient loadings, both of which were the drivers for prior watershed collaborations. This generated frustration for many stakeholders and grassroots citizens involved in prior collaborations (Imperial, 2023).

Deliberation of Rules During the Activation and Collectivity Stages

The path-dependent nature of the evolutionary process and the consequences of different rules suggests that members should be deliberative when making design choices during the activation and collectivity stages. However, the range of rule options actively deliberated varied quite a bit in practice (Figure 4) from that in Figure 3. Stated differently, despite clear narrowing of structural choices during the activation and collectivity stages, there was less evidence that members deliberated over the full range of *possible* rules available. This appears in Figure 4 by altering the relative widths of the lines to illustrate conceptually the considerable variation across the cases in terms of the

extent to which the full scope of rule choices was considered or probed. Even in re-creation and re-orientation, some cases are represented by fairly narrow lines representing the narrow scope of rule choices actually considered.

Several factors narrowed the choice sets. Many of the collaborations were either mandated or incentivized by external agencies (e.g., EPA). This limited consideration of some member and strategy rules and mandated consensus as a decision rule. Even so, as evidenced by the NEP collaborations, there was still enough discretion in terms of rule choices to create vastly different structures during the provision phase.

During the provision phase, it took some time to solidify the membership rules. For example, Narragansett Bay and the Inland Bays initially left out key decision makers from their high-level committees, only adding them several years into the process when it became obvious their inclusion was necessary. Accordingly, their activation and collectivity processes were more akin to designing the house while it was under construction. With the notable exception of Tampa Bay, whose rule options were greatly narrowed by past collaborative experience, little evidence appeared of a deliberative process early in the activation phase when forming the management conference structures.

The provision phase also narrowed the options for the possible combinations of member and strategy rules during the production phase. This should be expected because the plans were often constructed around strategies that necessitate the inclusion of selected members. In addition, members established norms and rules governing their interactions in the provision phase, which then served as the starting point for the structure in the production phase. Moreover, instead of deliberating a wide range of structural options, three of the four NEPs decided on a general form for the implementation structure (e.g., performance partnership, nonprofit, interlocal agreement) and then spent time negotiating the details of the arrangements. In this way, by the time the collaboration transitioned from provision to production (green to blue in Figure 4) the breadth of rule options was already constrained. Tampa Bay represented the most constrained structural transition from provision to production because it largely retained the core members but transitioned to a new structure (e.g., Interlocal Agreement) for production. In Figure 4 this is represented by a narrow width, as well as an overlapping range between provision and production. As already discussed, the Inland Bay's transition was more drastic as more options were considered before transitioning, but once the nonprofit was selected the subsequent options were reduced. Finally, Tillamook's selection of a performance partnership constrained the breadth of rule choices but largely aligned with the boundary and decision rules of the production stage even during significant restructuring of coordination rules.

Only Narragansett Bay failed to decide on the re-structuring of rules during the provision phase, initially resulting in a holdover of provision structures that were maladapted to production activities (Ambrose & Imperial, 2025).

Further research is needed to better understand evolutionary dynamics during activation and collectivity stages. The lack of research is understandable, as researchers often focus on collaborations once they are established or have matured and much of the research tends to be cross-sectional rather than longitudinal. By its very nature it is also difficult to study "failed" activations even though these experiences might yield better insights than those that successfully navigate the activation stage.

The Influential Role of Leaders in Rule Choice

It was also clear that a dominant "leader" or small subset of influential members could "short circuit" the deliberative process, opening junctures for change and/or narrowing consideration of the full range of member and strategy rules by advocating for particular "structures." For example, in both Tampa Bay and Tillamook Bay, influential leaders successfully in advocate structural arrangements that quickly narrowed the choice set for the initial structure used for production. While Tampa Bay's structure proved to be effective and endured, Tillamook Bay's failed quickly because it was a poor fit with the local context.

The level of prior collaborative "experiences" among the members, particularly those that provide important leadership functions, also appears to matter (Imperial, Ospina, et al., 2016). Participants in Tampa Bay had considerable experience in a wide range of collaborative policy settings and a sophisticated understanding of the factors that influence collaborative dynamics and the consequences of their choices. They were also familiar with the use of interlocal agreements in other policy settings. Thus, their choice of that general structure is not surprising. Nor was their recognition that negotiation over the rules contained in the agreement was necessary. Conversely, the lack of collaborative experience likely led to the exclusion of key leaders from Inland Bays and Narragansett Bay and contributed to their problems during the provision phase as member and strategy rules were broadened late in the provision stage after institutionalization had already occurred (Ambrose & Imperial, 2025)

Although diverse types of leadership are associated with the evolutionary dynamics, improved understanding of their role in shaping structural choices is needed to make fuller sense of why "leaders" advocate for some rules (or generalized structures) and not others (Imperial, Ospina, et al., 2016). Perceived leaders aders definition are persuasive and can limit (intentionally

or unintentionally) the deliberation needed to ensure the collaboration's structure is a good "fit" with the local context. This occurred in Tillamook Bay when the members followed the suggestion of an influential local elected official and adopted the performance partnership structure (Imperial & Hennessey, 2000). The size of the collaboration (boundary rules) and the cost of the coordination rules were maladapted to the collaboration's resources, resulting in rapid failure and death. In the Inland Bays, it led to the choices to use a nonprofit structure (i.e., CIB) that constrained its ability to address some problems (e.g., residential development) while alienating prior members in the provision stage (Imperial, 2023). Conversely, in Narragansett Bay the consequences of rule choices received little attention, leading to the creation of committees soon to be disbanded because they had no purpose; this left the staff as de facto members and decision-makers of the collaboration (Imperial et al., 2017; Imperial & Hennessey, 2000). Yet the structures leaders advocated for in Tampa Bay have been comparatively successful, undergoing only small re-orientations over time.

How Do Members of a Collaboration Make Rule Choices?

Outside of the role of leaders, little scholarly attention has addressed the question of why members of a collaboration prefer some rules or structures over others. Although research often references the need for institutional fit (Ostrom, 1990, 2008), our cases yielded little evidence that the full range or rule choices or generalized structures was actively considered or whether the "fit" with the local context was actively deliberated. Leadership from "champions" is part of the puzzle (Khator, 1999), but it is also unclear where these individuals get their ideas.

One explanation is institutional theory (DiMaggio, 1983; DiMaggio & Powell, 1983; Lynn et al. 2000, p. 243; Osborn & Hagedoorn, 1997). Network interactions expose some members to new ideas, rules, practices, and ways of collaborating (Phillips et al., 2000). DiMaggio and Powell (1983) contend that interactions may produce *mimetic* isomorphism through which members of an interorganizational system adopt similar attributes, structures, and processes. They also could reflect *normative* isomorphism as where organizations adopt the conventional wisdom of knowledgeable members, which appears to be have happened in Tampa Bay and Tillamook Bay (DiMaggio & Powell, 1983). *Coercive isomorphism* is another possibility. Members can be "pressured" (e.g., politically, economically, legally) or "forced" to agree to rules and structures preferred by the more powerful member(s) or by an external authority that mandates or incentivizes the collaboration. Although

suggesting compelling theoretical explanations, institutional theory has received little attention among collaboration scholars.

Another explanation that has received receiving some scholarly attention is bricolage theory (Levi-Strauss, 1966). Much like the art form, a collaboration's members piece together a structure by using rules and resources available to them during the activation and collectivity stages (Carstensen & Sørensen, 2025). The set of potential members (bricoleurs) is fluid early in the activation stage. Membership eventually solidifies as members cobble together a structure based on the collective availability of resources (e.g., power, authority, funding, control, scientific expertise, capacity; Carstensen et al., 2023; Carstensen & Rö per, 2024; Carstensen & Sørensen, 2025; Duymedjian & Ruling, 2010; Freeman, 2007). The mix of resources and members needed for provision or production activities is not predetermined but rather is born out of the evolutionary process as the collaboration takes form (Carstensen & Sørensen, 2025). Such an explanation is consistent with the Collaborative Life-Cycle Framework.

More research is needed to understand the interactive processes during the activation and collectivity stages to ensure participants engage in the level of deliberation needed to develop structures that are a good fit with their local context. Even though collaborations might identify what they need to adapt, mal-adaption and failure may also occur, suggesting a "liability of newness" (Amburgey et al., 1993, p. 53; Hannan & Freeman, 1984, p. 160; Singh et al., 1986, p. 589; Stinchombe, 1965) that poses major risks to collaborations that do try to change (Ambrose & Imperial, 2025). Scholars need to better understand the benefits and risks of structural change.

Importance of Conceptual Clarity

The importance of rules in structuring collaborative processes may also explain why extant collaboration research lacks agreed upon definitions for the fundamental building blocks of theory development. For example, consider the widely used definition Ansell and Gash (2008, p. 544) proffer: "A governing arrangement where one or more *public agencies* directly engage non-state stakeholders in collective decision making that is formal, *consensus-oriented*, and deliberative and that aims to make or implement *public policy or manage public programs or assets* [*emphases added*]." The definition specifies member, strategy, and decision rules, that arguably exclude some of the structures noted earlier. Yet they are clearly collaborative structures designed to achieve shared purposes. Conversely, Emerson et al. (2012, p. 2) use a much broader definition: "the processes and structures of public policy decision making and management that engage people constructively

across the boundaries of public agencies, levels of government, and/or the public, private, and civic spheres in order to carry out a public purpose that could not otherwise be accomplished." This definition recognizes that the social architecture for a collaboration can take many forms (Ulibarri et al., 2023) and focuses more on the value generated by working together rather than the structural arrangements used.

An institutional perspective also demonstrates why researchers must avoid the trap of concluding that a particular configuration of rules is preferred in all situations. For example, some research concludes that broad participation and consensus decision-making are critical for effective collaboration. Yet, the Tampa Bay Estuary Program (TBEP), which has made great progress in reducing nutrient loads and restoring bay habitat, has a limited membership and relies on majority voting even as it strives for consensus. In contrast, the TCPP and NBP employed large representative membership structures that were inclusive and generally ineffective when it came to implementing their plans. This highlights the need for collaborative theory to emphasize strategic inclusion (Ansell et al., 2020; Quick & Feldman, 2014). Again, what emerges as more important is when the configuration of rules "fits" the local context and the collaboration's purposes.

The coupling of this institutional perspective with the Collaborative Life-Cycle Framework helps account for the paradoxical nature of the extant research (Ospina & Saz-Carranza, 2010; Wang & Ran, 2023). For example, while developing trust and personal relationships may be important during the early activation and collectivity stages, once the configuration of rules is "institutionalized," social architecture governs interactions, resulting in collaborations that are stable despite participant turn-over and concomitant losses of inter-personal trust (Koschmann et al., 2012). Similarly, factors important for collective planning and policy development – such as decision-making width and depth – might be less critical for implementation structures (Ambrose & Imperial, 2025). Future research needs more nuanced understanding of the linkage between factors associated with the collaborative process and the developmental dynamics (Ulibarri et al., 2020). We also need to better understand the interactions between changing the rules of the game and the changes in players during the institutionalization phase.

Summary & Conclusions

A poor understanding of evolutionary dynamics is one reason that scholars note that the practice of collaboration remains more advanced than scholarship (Bryson et al., 2016; Imperial, 2023; McGuire, 2002; Prentice et al., 2019). Our study addresses this problem by elucidating the rules converged

upon during the initial stages of a collaboration's evolutionary process (Ambrose & Imperial, 2025; Imperial, 2023). The structures that organize collaborations do not emerge spontaneously. Rather, social architecture evolves through a dynamic, interactive process that converges upon a stable structure that can endure for a considerable time if members continue to receive the resources needed for survival. These periods of stability are punctuated by changes in the configuration of rules (re-orientations and re-creations) that produce a stable structure that facilitates collaborative processes.

The evolutionary dynamics at the heart of the Collaborative Life-Cycle Framework are important because they explain the emergence of the "black box" at the center of other prominent collaborative governance frameworks. For example, the Framework traces the "the collaborative process" and provides a more sophisticated explanation for the institutional dynamics in Ansell and Gash's (2008, p. 550) *model of collaborative governance*. It also explains how collaborative governance regimes emerge or get modified (re-orientation or re-creation) in Emerson et al.'s (2012, p. 6) *integrative framework for collaborative governance*. Moreover, it explains why different rule combinations produce different collaborative dynamics within Emerson et al.'s model (2012, p. 6).

Boundary, decision-making, and coordination rules are important additions to the Collaborative Life-Cycle Framework because they leverage the underlying concepts Ostrom (2005) advances and can be used to systematically compare the "structure" of a wide range of interorganizational phenomena (e.g., networks, collaborations, collaborative governance regimes, network administrative organizations) and to understand how different rule configurations facilitate or constrain governance (Ambrose & Imperial, 2025). The Framework also advances the practice of collaboration by highlighting design choices confronting a collaboration's members during the activation and collectivity stages. Collaborations need not have all the rules noted earlier. However, it is expected that some combination of member and strategy rules is needed to establish a collaboration's identity. Some combination of decision and coordination rules is needed to make decisions and specify members' individual and collective responsibilities. Moreover, if the collaboration is to endure for a long time, there needs to be some means of institutionalizing rules (e.g., by-laws, documents, websites) and socializing new individuals when they join the collaboration (e.g., staff turnover; Imperial, Johnston, et al., 2016; Koschmann et al., 2012).

Even as this study advances understanding of the evolutionary process that gives rise to a collaboration's social architecture, more research is needed to provide sound advice to practitioners forming collaborations or confronting the need to engage in re-orientations and re-creations. Given our limited

focus on watersheds, future research is needed to determine whether additional rules exist in other policy settings and to understand how contextual factors influence rule choices. Similarly, while it is unlikely there is one "best" structure, some rule configurations might be more or less helpful in achieving different purposes or deploying different collaborative tools (Prentice et al., 2019). Understanding how the configuration of rules "structures" social interactions and decision-making is another area for research. We know rules can create a favorable environment for productive interactions or can become obstacles (Mandell & Steelman, 2003, p. 217). For example, the Tillamook County Performance Partnership had high coordination costs and was a poor fit with the local context given its members' low levels of available resources, and it failed quickly. In essence, it bought a house it could not afford and quickly sold. This suggests that getting the rules "right" involves fitting the structure to match the local context (e.g., participants, resources, priorities, needs). Thus, some contexts may be better suited than others to a collaboration's development or require different structures.

Since the path-dependent convergence process can give rise to vastly different structures that may or may not be good fits with local contexts, it is critical for researchers to provide sound advice to practitioners. To return to the architectural metaphor, anyone can start building a house; yet an experienced builder will do a better job than someone who has never worked in construction. The advantage of working with an architect and engineer is they bring expertise that even an experienced builder lacks in terms of ensuring the structure is safe, built to last, and is suited for its intended purposes. Except for Tampa Bay, most collaborations lacked experienced builders, let alone had access to architects or engineers. They ended up mimicking what they believed was effective, crafting something from what is available, or following the proverbs of collaboration. For example, the literature suggests that collaboration works best where there is a history of trust; when all stakeholder interests are involved in decision-making; and when decisions are consensus based. As Herbert Simon (1946) warned decades ago, however, there are counter examples for all the proverbs. Scholars need to be more nuanced in their findings and recommendations, consider the stages of the evolutionary process, examine whether the purposes are oriented around provision or production, and encourage deliberative approaches that account for the local contextual situation.

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