Life-Cycles and Developmental Processes in Watershed Partnerships:

Sustaining the Useful Life of Governance Networks

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Abstract

Governance networks ebb and flow, become dormant or extinct, only to resurface with new members, and names, forms, or boundaries. The paper uses a systematic qualitative analysis (e.g., coding, cross-case analysis) of data from 6 watershed governance efforts in the United States – Delaware Inland Bays, Lake Tahoe, Narragansett Bay, Salt Ponds, Tampa Bay, and Tillamook Bay – to examine these developmental processes. The study's objective was to develop theory grounded in these data to explain the linkages between network structures and processes.

The paper describes a four stage life-cycle model. Each stage represents a cluster of developmental challenges related to sustaining the health and useful life of a governance network. The *activation stage* is the turbulent period of network formation. The *collectivity stage* is exemplified by high member cohesion and reliable network processes. The *institutionalization stage* marks the solidification of network processes. The final stage is *stability, decline, reorientation, or recreation*, which recognizes the various paths mature networks follow. The model's central feature is the convergence on a configuration of rules (formal and informal) that create the social architecture that structures network processes. These relatively long periods of convergence are punctuated by reorientations involving relatively rapid periods of discontinuous change that alter character of the network's structure and processes. Recreations are also possible that involve the additional shift in core values.

The analysis identifies three interrelated sets of rules that interact to form this social architecture by building on the work of Elinor Ostrom and her colleagues. Some rules are crafted deliberately. Others emerge as members confront developmental challenges or get imposed upon the network by funders, government agencies, or legislators. Two sets of *boundary rules* are particularly important – member rules and strategy rules. *Decision rules* create the processes members use to make decisions and include rules related to preference aggregation, distribution of power, distribution of roles or responsibilities, and the distribution of participation in decision making. As networks evolve, *coordination rules* emerge to specify resource exchanges, monitor behavior, enforce agreements, and resolve disputes. The analysis also found evidence of at least two reorientation (recreation) in each watershed, with examples of changes occurring both endogenously in response to self-organizing processes and exogenously as network actors responded to incentives provided by federal funding agencies.

The social architecture is important because governance networks, like other organizational forms, are a functional enterprise with a *useful* life. The social architecture provides coordination, direction and shared purpose to network processes. However, once established, it can be costly and difficult to change. Similarly, once the network's useful life has passed, it is time to disband, re-orient, or re-create the network to allow their resources to be redeployed in more productive public purposes. Accordingly, framework presented in the paper identifies important design choices that members should carefully consider during the development of governance networks.

Life-Cycles and Developmental Processes in Watershed Partnerships: Sustaining the Useful Life of Governance Networks

Introduction

Governance networks that reflect principles of self-organization are used to address societal problems around the world. This is particularly true in many watersheds, river basins, and coastal areas where problem solving capacity is widely dispersed among actors at different levels of government, none of which can solve problems by acting alone (Bressers et al. 1995, 4; Imperial et al. 2017). Governance refers to the institutions and resources used to achieve direction, control, and coordination between individuals (and organizations) who possess varying degrees of autonomy in order to advance joint objectives across the network as a whole (Provan & Kenis 2008, 231; Lynn et al. 2000; Frederickson 1996). Networks involve more than the interactions among individuals or organizations. Networks are structures of interdependence involving multiple organizations (and individuals) that exhibit some degree of structural stability due to formal or informal linkages and relationships (O'Toole 1997; Aldrich & Whetten 1981). Therefore, collaborative governance results in self-governing enterprises because no single organization typically has the authority to direct all the actions of member organizations (Mandell & Keast 2007; Klijn & Koppenjam 2000).

Unfortunately, there is little research that informs our understanding of the structure of collaborative governance processes as they develop and change over time (e.g., Heikkila and Gerlak 2016, 2005; Gerlak & Heikkila 2006, 2007; Imperial, et al. 2016a, 2017; Schoon, et al. 2016; Provan, et al. 2009). The dearth of research is easy to explain. Collaborative governance efforts often span several decades or more, which complicates data collection and requires a sustained research commitment. Researchers also tend to gravitate towards "successful" programs so there is little understanding of situations where collaborations cease to exist. Moreover, much of the research is cross-sectional in nature, which limits our understanding of developmental processes.

This paper is designed to address these short-comings and contributes to the literature by improving our understanding of the developmental processes that give rise to a configuration of shared rules and norms that create the social architecture that provides "structure" to network processes. This shared social architecture is what allows for coordination and direction in the absence of a centralized authority. The term *social architecture* draws attention to the fact that rules and norms exist but may be *hidden* in the sense that network members do not give much conscious thought to the rules that influence and guide their collective behavior. Similarly, people give little thought to the physical construction of a house until it is time to renovate the structure. Architecture is a useful metaphor in other ways. Just as an architect begins with concepts and rough sketches, the early stages of network governance are fluid as different designs are considered. During early the early developmental stages, members try different combinations of rules as they determine the goals, functions, or services the network might provide. Eventually, agreement coalesces around the final plans used to build and create the structure.

The architectural design process is rarely top-down and tends to be iterative, with trade-offs that balance the competing uses and functions of a structure. The details of the final architectural plan are important because the structure's function is profoundly influenced by its form. Similarly, once you decide to change its function, it might become costly to change its structure. In practice, it is often cheaper to buy or build a new structure to better accommodate the new uses. Moreover, while some network members can design governance structures from the ground up, others live and work within structures that are at least in part designed by external actors because of some mandate or conditions of funding support (Imperial et al. 2016b; Huxham and Vangen 2000, 1166).

The social architecture associated with collaborative governance must be understood in the context of the developmental process that gives rise to the rule structure. Collaborative governance is inherently dynamic. Structures "ebb and flow, become dormant or extinct, and resurface with old and new participants under new names and organizational forms" (Genskow & Born 2006). Thus, governance networks undergo profound change when viewed over time (Imperial, et. al. 2017; Genskow & Born 2006). Accordingly, the challenge for these partnerships is to develop a social architecture that allows them to sustain a healthy and useful life to generate value.

The concept of a healthy and useful life is used in place of more traditional notions of performance to draw attention to the functional and purposeful nature of collaborative governance. While the collaborative process may be self-organizing, it is not self- executing. It requires constant nurturing to maintain a healthy and useful life (Imperial, et al. 2016a). *Nurturing* implies the gentle continuous care of things like fragile plants or small children. However, nurturing an overgrown garden back to health require drastic tactics like chopping down excess growth, pulling out dead plants, bringing in new topsoil, and adding fertilizer to make the soil healthy (Imperial, et al. 2016a). The same is true in networks (Huxham 2003, 417). Nurturing is often gentle and continuous, however, there are times where fundamental transformations of the social architecture are needed to sustain the network's useful life (Imperial, et al. 2016a).

Objectives of the Study

Understanding the developmental processes that give rise the institutional architecture is important to provide sound advice to managers seeking to develop and nurture healthy and useful collaborative governance arrangements such as those found in many watersheds. To that end, the paper examines the following research questions:

- To what extent are collaborative governance processes self-initiated?
- What rules comprise the social architecture of the watershed partnerships?
- What are the developmental processes and trajectories that that occur due to change processes?
- Is there a linkage between the useful life and change processes?

To answer these questions, the paper relies on the qualitative analysis of four longitudinal watershed governance case studies dating back many decades. Each case consists of a series of

watershed partnerships that ebb and flow, change, and at times disappear revealing the myriad of developmental trajectories and change processes that occur. The collaborative governance efforts also vary considerably in terms of whether they had healthy and useful lives.

Several models of the developmental processes in collaborative governance networks have been proposed (e.g., Sydow 2004; Sydow et al. 2009; Sandstrom et al. 2015; Harbron 2003; Dwyer, et al. 1987; Ring and Van de Ven 1994; Popp, et al. 2014; Waddock 1989). Researchers seem to agree that network processes go through several developmental stages with initial stages focusing on building relationships and later stages focus on stability and getting things done (Popp, et al. 2014; Mandell & Keast 2008; Forsyth 1999). This study extends the model proposed by Imperial and others (Imperial, et al. 2016a). Their four-stage model is based loosely on ecological theories of organization and draws attention to the challenges during each stage of network development (Cameron & Whetten, 1981, 1983; Quinn & Cameron, 1983; Whetten 1987; Miller & Friesen 1983, 1984; Smith et al., 1985; Hanks et al., 1993) [Table 1 & Figure 1].

The *activation stage* reflects the turbulent period during the formation of a collaborative process as different combinations of rules are considered (Imperial et al. 2016a). When first activated, the network is a fragmented and unstable social system (Mandell and Keast 2008). Network processes are fluid. Members come and go, and different strategies and purposes are considered. The cost and risk of change is low because members have not invested significant time developing rules, routines, and processes (Katz and Gartner 1988). While the social architecture remains somewhat ill-defined, shared norms and values start to emerge that distinguish the "network" from its members (Imperial et al. 2016a).

The somewhat turbulent activation period eventually gives way to an increasingly stable *collectivity stage* exemplified by stable membership and high member cohesion (Imperial et al. 2016a). Network processes are shaped largely by personal relationships at the beginning of the stage as decisions about the rules and social norms are negotiated and emerge as a by-product of network processes. However, by the end of the stage, there is growing resistance to change as the social architecture is solidified and interest shifts towards achieving the purposes that motivate participation in the partnership ((Imperial et al. 2016a; Head 2008).

The *institutionalization stage* marks the solidification or convergence on a configuration or rules or social architecture that shape and constrain network processes (Imperial et al. 2016a). Network processes and the resources needed to sustain them are stable. The focus now shifts to producing goods and services efficiently. Participants may not need to meet as frequently as they have worked together for some time and the social architecture now coordinates joint action. Partnerships begin to codify and institutionalize key aspects of the institutional architecture (e.g., rules, routines, and procedures) using formal mechanisms (e.g., by-laws, work plans, plans, membership directories, websites, and other program documents) to reinforce the network's identity, lessen reliance on personal relationships, and socialize new participants to the collaborative processes (Imperial et al. 2016a). Accordingly, the emphasis is on creating a social architecture that is efficient and 'built to last' (Head 2008).

The final stage, *stability, decline, or change*, recognizes the various paths that occur in a mature collaborative governance processes (Imperial et al. 2016a). Some collaborative process

Table 1: Key Differences in the Stages of Network Development

	Stages of Network Development			
	Activation	*Collectivity*	*Institutionalization*	*Stability, Decline, or Change*
Useful Life	▪ Does the network exist? ▪ Is there some public value to creating the network?	▪ Does the network produce a good or service using a reliable process?	▪ Does the perceived value of the goods and services exceed the costs?	▪ Could the resources contributed to network processes be deployed better?
Emphasis	▪ Determine if the network should exist ▪ Build relationships ▪ Establish core values and mission	▪ Forge a cohesive whole from diverse members ▪ Create a stable network process	▪ Institutionalize the social architecture ▪ Improve efficiency of network processes	▪ Incremental change to improve performance ▪ External threats and performance issues lead to Reorientation
Membership and Social System	▪ Unstable at first ▪ Stable processes and stable membership soon emerge	▪ Membership stabilizes ▪ Cohesive processes create stable system ▪ Heavily dependent on personal relationships	▪ Very stable ▪ While relationships remain important, the process is no longer dependent on individuals ▪ New members quickly socialized	▪ May be stable ▪ Excessive member turnover, declining commitments, performance issues create instability. ▪ Reorientations create instability
Commitment	▪ Membership is viewed to advance individual or organizational goals	▪ High personal commitment to the network and its shared goals	▪ Individually based commitments become organizational	▪ Commitments correlate with collective performance ▪ Members look to redeploy resources to new problems
Resistance to change	▪ Very low ▪ Frequent changes as members search for appropriate processes	▪ Growing resistance to change as the need to produce goods and services takes hold	▪ High resistance to change ▪ Mostly incremental change to reduce costs and improve performance	▪ High resistance to change ▪ Resistance remains high in the face of threats and poor performance
Network Leadership	▪ Heavily reliant on collaborative leaders to initiate network processes	▪ Collaborative leaders coordinate and facilitate network processes ▪ Leadership is increasingly shared by network processes	▪ Leadership is distributed and shared because of network processes and structure ▪ As founders retire or leave, new leaders cultivated and activated	▪ Leadership is distributed and shared because of structure and processes ▪ Collaborative leaders are needed to guide Reorientations

Source: Imperial, et al. 2016a

Figure 1: Life Cycle Model of Network Governance Processes
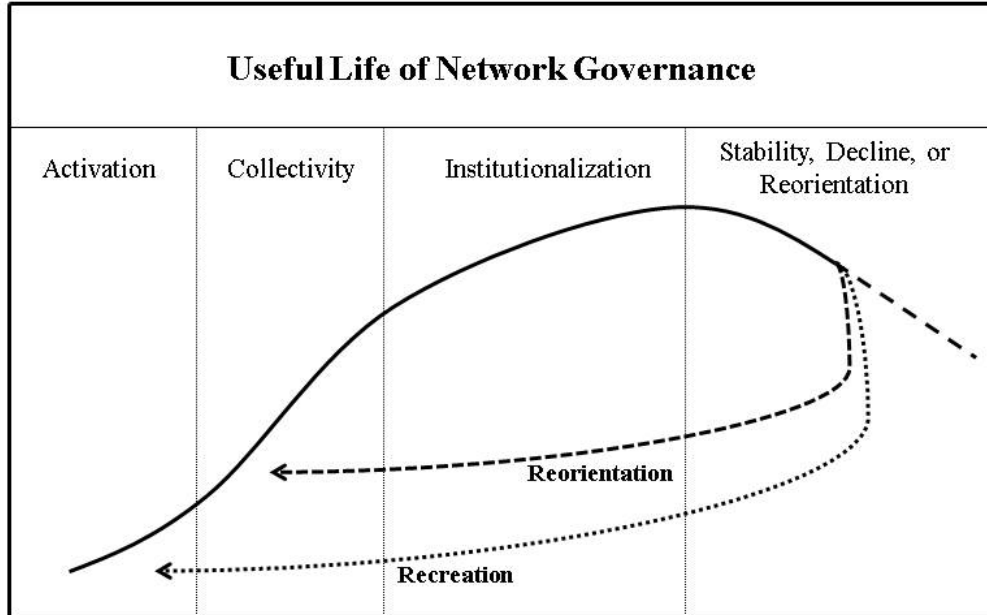
Source: Imperial, et al. 2016a

remain relatively useful and productive for some time with only slight declines in health if it can sustain the resources needed for survival. Others decline rapidly because participants design poor structures or cannot sustain the resources or commitments to achieve its purposes. Members also make changes to the social architecture. *Reorientations* involve rapid and discontinuous change, which fundamentally alter the character and fabric of the network's structure and processes by changing rules, which returns participants to confront the challenges in the collectivity and institutionalization stages. *Recreations* involve additional and much larger shifts in core members, purposes, and values, which returns members to the activation stage. These changes are more complicated and take longer to achieve.

While reorientations and recreations occur at any time for many reasons, they are depicted in the final stage of Figure 1 to emphasize the convergence process and emphasize the notion of punctuated equilibrium (Imperial et al. 2016a; Tushman and Romanelli 1985). What is converged upon is the configuration of shared rules and norms that create the social architecture or "structure" of the collaborative processes. Long periods of convergence are punctuated by relatively rapid reorientations or recreations (Imperial et al. 2016a; Tushman and Romanelli 1985). While the last stage of life is decline and death, there is no reason to presuppose that all networks die. Similarly, others die untimely deaths or survive well past their useful lives. Much like life, death can occur at any time for a myriad of reasons (Imperial et al 2016a, 136).

The important features of each stage are summarized in Table 1 and are described in more detail elsewhere (Imperial et al. 2016a). While the stages suggest a sequential or linear

developmental process, that need not be the case. The developmental processes associated with collaborative governance are iterative in nature because takes time to develop communication, trust, commitment, understanding, and outcomes (Johnston et al. 2010; Ansell & Gash, 2007; Jap and Anderson 2007; Mandell and Keast 2008). Moreover, network members can confront challenges from different stages simultaneously (Imperial et al. 2016a, 136; Whetten 1987; Tushman & Romanelli 1985).

Data & Methods

Given the complexity of collaborative processes and the lack of precisely defined theories about their life-cycles, the study is largely developmental and focuses on developing theory grounded in the data and the literature (Yin 1994; Agranoff & Radin 1991; Strauss & Corbin 1990; Glaser & Strauss 1967). This study relies on the analysis of four longitudinal case studies examining watershed governance networks in: Inland Bays (DE); Narragansett Bay (RI, MA); Tampa Bay (FL); and, Tillamook Bay (OR). Table 2 summarizes some of the key characteristics of each watershed. Each watershed is an estuary of national significance and voluntarily participates in the Environmental Protection Agency's (EPA's) National Estuary Program (NEP). They vary in geographic size, population, and institutional complexity. They include urban and rural settings and participants address a wide range of environmental problems.

The development of these longitudinal cases originated with a study conducted for the National Academy of Public Administration (NAPA) that collected data from field interviews with more than 160 individuals, archival records, and the direct observation of events and meetings during site visits (Imperial & Hennessey 2000). In subsequent years, periodic interviews with key informants and supplemental collection of archival materials allowed the researchers to continue monitoring the life-cycle of these governance efforts as they have ebbed and flowed over time with varying degrees of success and continued to experience additional reorientations and recreations.

Systematic qualitative techniques such as coding were used to examine these data. Codes were derived inductively and deductively from these data and generated based on a start list derived from previous research. Cross-case analysis was used to deepen the understanding of collaborative processes and determine the extent to which findings extended beyond individual cases. The basic approach was one of synthesizing interpretations and looking for themes that cut across cases (Miles & Huberman, 1994). Examining different data sources also allowed triangulation to be used to improve the validity of the study's findings (Yin, 1994). These methods and case histories are documented in more detail elsewhere (Imperial, et al. 2017; Imperial 2005a, 2005b; Imperial & Hennessey 2000; Imperial 2000a, 2000b; Imperial, et al. 2000; Imperial & Summers 2000; Robadue, et al. 2016).

The cross-case analysis reported here focused primarily on two areas. The first identifies the unique collaborative governance efforts occurring in each watershed. Excluded from consideration were the large number of operational level collaborations (e.g., collaborative projects) that occurred in all the watersheds such as those examined by Imperial (2005a). Similarly, the analysis did not focus on the sub-basin level collaborations (e.g., smaller scale watershed efforts) that are nested within the larger geographic area and occur with some

Table 2: Comparison of the Four Case Study Watersheds

	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

Table 3: Collaborative Governance Efforts in the Four Watersheds

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

Table 3: Collaborative Governance Efforts in the Four Watersheds (Cont.)

Collaborative Governance Effort	Begin	End	Initialization	End Stage	Health & Usefulness
Tampa Bay (FL)					
Tampa Bay Regional Planning Council (TBRPC) **(TB1a)**	1962	Ongoing	Self-initiated	Reorientation: ABM	Med.
Tampa Bay Study Commission **(TB2)**	1983	1984	External: Mandate	Work Complete	Med. – High
TRBPC's Agency on Bay Management (ABM) **(TB1b)**	1985	Ongoing	Self-initiated: Constraints	Slow Decline	Med. – High
Tampa Bay National Estuary Program (TBNEP) **(TB3a)**	1990	1998	External: Incentive	Re-Creation: TBEP, NMC	High
Tampa Bay Nitrogen Management Consortium (NMC) **(TB4)**	1996	Ongoing	Self-initiated: Constraints	Stable	High
Tampa Bay Estuary Program (TBEP) **(TB3b)**	1998	2015	Self-initiated: Constraints	Reorientation	High
Tampa Bay Estuary Program (TBEP) **(TB3c))**	2015	Ongoing	Self-initiated: Constraints	Stable	High
Tillamook Bay Watershed					
USDA Rural Clear Water Project **(Till1)**	1981	1996	External-Incentive	Work Complete	Healthy & Useful
Bay Sanitation Technical Advisory Committee (BSTAC) **(Till2)**	1987	1993	External: Mandate	Untimely Death	Healthy & Useful
Tillamook Bay National Estuary Program (TBNEP) **(Till3a)**	1993	1999	External: Incentive	Recreation: TCCP	Low – Med. (Perspective)
Tillamook County Performance Partnership (TCPP) **(Till3b)**	1999	2002	Self-initiated: Constraints	Recreation: TEP	Low
Tillamook Estuaries Partnership (TEP) **(Till3c)**	2002	2004	Self-initiated: Constraints	Reorientation	Low – Med. (Perspective)
Tillamook Estuaries Partnership (TEP) **(Till3d)**	2004	Ongoing	Self-initiated: Constraints	Slow Decline	Low – Med. (Perspective)

frequency in the Narragansett Bay watershed (Imperial, et al. 2017). However, the analysis does include regional collaborations when the watershed was itself nested within that larger geographic area. Table 3 lists each of the partnerships, its developmental trajectory, and judgements about its overall health and usefulness based on available data. The analysis then examined the rule structures governing collaborative processes as well as the factors contributing to reorientations and recreations to better understand the convergence process. Given that some of the collaborative governance efforts date back many decades, the analysis focuses primarily on those changes that

Table 4: Typology of Change Initiation Process

Self-Initiated	Externally Initiated
No Constraints on Rule Development ▪ *Environmental Study of Rehoboth, Indian River and Assawoman Bay* **(IB1)** ▪ Inland Bays Study Group (IBSG) **(IB3)** ▪ *Decisions for Delaware: Sea Grant Looks at the Inland Bays* **(IB4)** ▪ Tampa Bay Regional Planning Council (TBRPC) **(TB1a)**	**Mandate**: Legislation, Executive Order, or other directive compels specifies one or more rules ▪ *Coastal Sussex Water Quality Program* (CWA Section 208) **(IB2)** ▪ Governor's Task Force on the Inland Bays (GTFIB) **(IB5a)** ▪ Inland Bays Monitoring Committee (IBMC) **(IB5b)** ▪ New England Interstate Water Pollution Control Commission **(NB1)** ▪ New England River Basins Commission **(NB2)** ▪ RI Areawide Water Quality Management Plan Section 208 Comprehensive Plan **(NB3)** ▪ Tampa Bay Study Commission **(TB2)** ▪ Bay Sanitation Technical Advisory Committee (BSTAC) **(Till2)**
Constraints: Grant conditions or due to institutionalization process creates higher order rules ▪ Center for the Inland Bays (CIB) **(IB6b, c, d)** ▪ Narragansett Bay Project (NBP) **(NB4b)** ▪ Narragansett Bay Estuary Program (NBEP) **(NB4c)** ▪ TRBPC's Agency on Bay Management (ABM) **(TB1b)** ▪ Tampa Bay Nitrogen Management Consortium (NMC) **(TB4)** ▪ Tampa Bay Estuary Program (TBEP) **(TB3b, c)** ▪ Tillamook County Performance Partnership (TCPP) **(Till3b)** ▪ Tillamook Estuaries Partnership (TEP) **(Till3c, d)**	**Incentives**: voluntary participation but grant conditions may specify rules ▪ Delaware Inland Bays Estuary Program (DIBEP) **(IB6a)** ▪ Narragansett Bay Project (NBP) **(NB4a)** ▪ Narragansett Bay Estuary Program (NBEP) **(NB4d)** ▪ Tampa Bay National Estuary Program (TBNEP) **(TB3a)** ▪ USDA Rural Clear Water Project **(Till1)** ▪ Tillamook Bay National Estuary Program (TBNEP) **(Till3a)**

occurring from the late 1990s onward because there is better archival data and interview data available to help analyze these rule configurations. These data were then used to explore the study's four research question.

Internal vs. External Activation & Change

A core question related to the activation of collaborative governance processes is the extent to which they are self-initiated. The literature provides a variety of reasons that collaborative governance networks are established (Imperial, et al. 2018). Government agencies, funders, or other 'top-down' forces encourage or require network participation or specify other aspects of governance processes. Networks can also self-organize to address a common problem, provide a service, or accomplish a task (Huxham and Vangen 2000; Huxham 2003). Some are designed deliberately reflecting the *intentionality* resulting from the shared goals of founding members (Katz and Gartner 1988). Others are emergent and take shape as network participants grapple with different challenges (Head 2008). While similar forces presumably

drive change processes associated with reorientations and recreations, it is unclear to what extent these processes are self-initiated.

Each episode of collaborative governance and its corresponding set of reorientations and recreations was examined, and four different types of initiations emerged as summarized in Table 4. Roughly an even number of self-initiated (16) and externally initiated changes were observed. While 4 self-initiated changes were observed that had no constraints on rule development, it was much more common to observe self-initiated changes that were subject to constraints (12). These constraints emerged from two sources. Many of these consisted or reorientations or recreations that were subject to rules that were institutionalized in some higher order set of rules (e.g., binding agreement, legislation, etc.). The collaborations also may also receive grant funds that impose some obligations in terms of duties or tasks but in no way stimulated the changes in rules. Other initiations and changes were driven externally by some sort of mandate (e.g., legislation, executive order) (8) or resulted from incentives designed to induce voluntary participation in a program (e.g., federal grant) (6). Examples of each set of changes are described below.

Self-Initiated Change Processes

Four collaborative governance efforts were self-initiated, and participants had no constraints beyond those that were self-imposed. These include the development of the *Environmental Study of Rehoboth, Indian River and Assawoman Bay* (1969) (Inland Bays); Inland Bays Study Group (IBSG), *Decisions for Delaware: Sea Grant Looks at the Inland Bays* (i.e., DE Sea Grant Report), and the Tampa Bay Regional Planning Commission (TBRPC). It was more common to observe self-initiated efforts that were subject to some minor constraints that were established by some higher-order set of rules. It was more common to find reorientations and recreations that were self-initiated but subject to some minor reporting and oversight constraints because of taking EPA funds. There were also many examples where the collaborative process institutionalized parts of its social architecture in a way that constrained how future self-initiated changes could occur. In essence, the members established a set of constitutional level rules to ensure stability.

For example, while each watershed had the flexibility to form a collaborative governance structure to implement the plan produced pursuant to the NEP, the acceptance of federal funds does subject the partnership to some minor. When the TBRPC formed the Agency for Bay Management (ABM), it provided it with a great deal of autonomy, but it remains subject to its oversight. Thus, while these partnerships were self-initiated, they are subject to higher-order rules that impose a limited set of constraints, duties, or obligations. The way a collaborative process is institutionalized can impose some constraints. For example, the Center for the Inland Bays (CIB) is a nonprofit organization chartered with state legislation, which limits the speed at which some changes can occur. The interlocal agreement that forms the Tampa Bay Estuary Program (TBEP) effectively operates as contract binding the parties. While it can be changed, this is subject to negotiation. The Tillamook Estuaries Partnership (TEP) is chartered as a Section 501 (c)3 tax exempt organization, which imposes some legal constraints in terms of what it can and cannot do. The Tampa Bay Nitrogen Management Consortium was also self-initiated, but it is nested within and operates subject to the TBEP's nitrogen reduction goals.

Externally Driven Change Processes

The second set of change processes were externally driven due to mandates or incentives. The use of the external mandate strategy was relatively common during the 1960s, 1970s, and 1980s but largely gave way to an external incentive driven strategy in the 1990s and beyond. This pattern is consistent with the shift in the phases of intergovernmental relations (IGR) first observed by Wright (1988). The case data identified mandates from legislative and regulatory requirements (e.g., Section 208), a directive in the form of an executive order by a Governor or the President, or a resolution by county commissioners. For example, collaborations in the Inland Bays and Narragansett Bay prepared a Section 208 plan to comply with requirements in the 1972 Clean Water Act. Delaware's Governor used an executive order to establish the Governor's Task Force on the Inland Bays (GTFIB). Similarly, once it produced its report, the governor used another mandate to replace the GTFIB with the Inland Bays Monitoring Committee (IBMC). A Presidential Executive Order initiated the New England River Basin Commission, Mandates can also occur at the local level as evidenced by the Tillamook County resolution that formed the Bay Sanitation Technical Advisory Committee (BSTAC). Another interesting example is the use of a federal-state compact to structure the New England Interstate Water Pollution Control Commission (NEIWPCC). Joining the compact required voluntary participation by the states, however, the commission itself is subject to the Compact's requirements. In each case, the mandates specify some core rules that provide structure to the collaborative process.

The most prominent example of the external incentive strategy across the four cases was the participation in the NEP. The decision to participate was voluntary. However, a condition of participation was accepting several fundamental rules that influenced the development of the social architecture. Each watershed was required to use a committee structure called a management conference. Members were required to make decisions based on consensus, and its purpose was defined in that it had to ultimately produce a comprehensive conservation and management plan (CCMP). In return, state and local officials received money to support the collaborative processes with some hope that implementation funds would continue supporting their efforts. However, the configuration or other rules such as the selection of the problems, specification of members and their roles on committees, and level of access that stakeholders had to decision making resulted in quite different structures for the four collaborative processes.

The external-incentive strategy was also used to initiate change in at least one instance. While the EPA maintained a relatively "hands off" approach during the implementation process, there was one instance where the external-incentive approach was used to encourage the initiation of reorientation of the Narragansett Bay Estuary Program (NBEP) because its members feared that EPA would terminate its funding.

Death of Collaborative Processes

The cases shed some light on the different ways that collaborative processes can die. Some simply complete their work (e.g., Tampa Bay Study Commission, Sea Grant's report on the Inland Bays) before ever getting to the institutionalization stage. Some take much longer to

complete their work like the Rural Clean Water Program (RCWP) in Tillamook Bay. Some die a relatively rapid death like the Section 208 planning processes in the Inland Bays and Narragansett Bay. While the processes themselves had value, particularly in Rhode Island, implementation funding was lacking and effectively terminated by EPA in 1981. While both processes could have continued, the withdrawal of federal support led to a quick decision to end the efforts in both watersheds. There were also several examples of untimely death. The Inland Bays Study Group (IBSG) was effectively replaced by the GTFIB. The Inland Bays Monitoring Committee (IBMC) was effectively replaced by the Delaware Inland Bays Estuary Program (DIBEP). President Reagan's executive order abolishing the river basin commissions across the country effectively ended the New England River Basin Commission (NERBC), even though it was largely regarded as the most effective in the country (Imperial, et al. 2017). The creation of the Tillamook Bay National Estuary Program (TBNEP) led to the disbandment of the Bay Sanitation Technical Advisory Committee (BSTAC). Clearly, the death of collaborative processes can also be self-initiated or occur as the result of externally driving forces.

Social Architecture - the Invisible Hand of Network Governance

The analysis next focused on identifying the social architecture of the watershed partnerships. Researchers have utilized a variety of approaches to examine and compare the structure of partnerships formed to enhance network governance (Chaffin, et al. 2015, 2012; Margerum & Johnston 2015; Hardy 2010; Hardy & Koontz 2009; Koehler & Koontz 2008; Margerum 2008; Bidwell & Ryan 2006; Clark, et al. 2005; Dakins, et al. 2005; Moore & Koontz 2003). Several interesting typologies have advanced our understanding of the dynamics of these partnerships (e.g., Diaz-Kope & Miller-Stevens 2015; Margerum 2008; Moore & Koontz 2003). There is also a growing body of collaboration and network governance literature that views network structure as the product of a configuration or rules, norms, routines, and shared culture (e.g., Sandstrom et al. 2015; Powell 1990; Kickert et al. 1997; Keast et al. 2004; Mandell & Keast 2008; Huxham & Vangen 2000; Vangen & Huxam 2003; Mandell & Steelman 2003; Saz-Carranza & Ospina 2010; Lynn et al. 2000; Milward & Provan 2000).

Researchers have used rules to describe how members make decisions and how collaborative processes occur (Mandell & Keast 2007, 583). Rules specify who gets to shape the network agenda, who has power to act on the network members' behalf, and what resources should be deployed to advance the network's agenda (Huxham & Vangen 2000, 1166; Vangen & Huxam 2003, S67). Rules also specify membership patterns (e.g., Margerum & Johnston 2015; Hardy 2010; Hardy & Koontz 2009; Margerum 2008; Bidwell & Ryan 2006; Moore & Koontz 2003). Rules can even describe how collaborative activities operate at different levels within a collaborative process (Imperial 2005a). Mandell and Steelman (2003) go further to identify three broad categories or rules. Orientation of members refers to the problem orientation of members and their commitment to shared goals. Intensity of linkages and breadth of effort refer to how members are organized. Complexity of purpose and scope of the effort specify what is hoped to be accomplished (Mandell & Steelman 2003, 205; Mandell & Keast 2008, 721). Researchers also argue that the configuration of rules can either create a favorable environment for productive interaction or becomes a barrier to the process (Mandell & Steelman 2003, 217).

The cross-case analysis supports that argument that the configuration of rules and norms gives rise to the "hidden structure" that produces spontaneous order within the network's social system (Hayek 1945). It is analogous to the flocking behavior of birds. Only a few simple rules of self-organization (e.g., separation rules to avoid crowding neighbors, alignment rules that steer towards average heading of neighbors, and, cohesion rules that steer towards average position of neighbors) in combination produce coordinated action that allows the birds move in seeming unison to undertake strategic behavior without any discernable leader (Imperial, et al. 2016b). Similarly, collaborative governance processes craft rules that provide for coordinated action that advances a strategic purpose without the necessity of a hierarchical organization or "leader" with the authority to compel others to act in a specified way. Indeed, relatively small modifications to rule configuration can give rise to very different structures and processes.

### *Describing the Social Architecture of Collaborative Governance*

This study relies on an approach to institutional analysis developed by Elinor Ostrom (2005, 1999, 1990) and her colleagues (e.g., Imperial 2005a, 1999a, 1999b; Imperial & Yandle 2005; Kauneckis & Imperial 2007; Imperial & Kauneckis 2003; Imperial & Hennessey 2000; Blomquist 1992) to identify a set of rules that give rise to the social architecture. Rules are implicit or explicit attempts to achieve order and predictability among humans (Ostrom, 2005, 1999, 1986). Rules 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 and social norms) (Ostrom 2005, 1990). 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 be nested in another set of rules that define how the first set of rules can be changed (Kiser & Ostrom, 1982). Therefore, rules operate configurationally. The way one set of rules functions depends upon the way it interacts with other rules. Thus, minor differences in the configuration of rules can produce very different governance structures.

It was clear from this analysis that some rules were crafted deliberately after debate among network members. For example, In Tampa Bay there was considerable discussion and consequently a decision to exclude the regional planning agency as a member of the policy committee and later as a member of the collaborative organization formed by the interlocal agreement. In other instances, important rule choices resulted from an emergent process due to group interactions with little consideration of the possible consequences of rule choices. For example, respondents could often tell you how they made decisions but did not recall ever formally deciding upon the rule. Similarly, in some instances very little deliberation went into deciding which organizations or members of the public would participate or what the role or purpose of a committee was going to be. In other cases, these decisions were subject to clear deliberation and discussion.

The cross-case analysis identified examples of three interrelated sets of rules: boundary rules (member and strategy), decision rules (preference aggregation, distribution of power, distribution of roles or responsibilities, and, distribution of participation), and coordination rules

Figure 2: Social Architecture of Network Governance
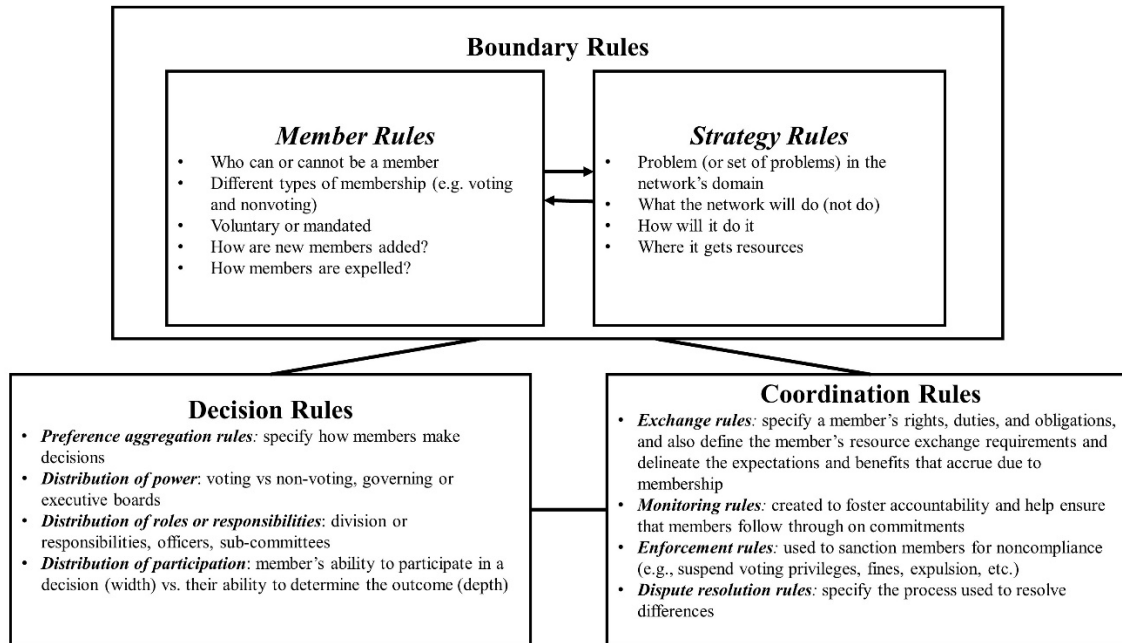
(exchange, monitoring, dispute resolution, and enforcement) first proposed by Imperial & Koontz (2007) [Figure 2]. Given the limits of earlier archival records, most of the analysis focused on the collaborative governance efforts from the 1990s forward. The rules varied in their formality and in most instances, the social architecture consisted of both formal and informal rules. As noted earlier, some rules were imposed on the collaborative process because of a mandate or as a condition of receiving funding. But even in these situations, other rules were the result of self-organizing processes.

Boundary Rules

Boundary rules distinguish a network from other organizations within the interorganizational system. They reflect important choices concerning the partnership's fundamental purposes and the problems it addresses. Two interrelated sets of boundary defining rules are of importance – *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 what they can do by their resources, authorities, and competing interests and values. Accordingly, membership composition influences and constrains the selection of strategy rules (Bonnell & Koontz, 2007; Koontz et al., 2004; Imperial & Kauneckis, 2003; Koontz, 2003). These cases suggest that healthy and useful collaborative processes tend to have well integrated member and strategy rules. Conversely, when these rules are not properly aligned it can limit their health and usefulness and even 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) network processes is a challenge that never dissipates (Agranoff and McGuire 2001, 1999; Johnston et al. 2010, 703; Vangen and Huxam 2003; Saz- Carranza and Ospina 2010; O'Leary et al. 2012). The reorientations and recreations noted in subsequent sections often involve changes in membership. Similarly, some collaborative processes changed their 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) were similarly excluded from membership. In both instances, these members were subsequently added to the policy committee during in the collectivity stage when it was clear the purposes of the collaboration necessitated their involvement in this high-level decision-making committee because their exclusion was hindering the health of the collaborative processes.

The analysis identified several different types of membership rules. There were clearly different "types" of membership (e.g., voting vs. nonvoting) (Imperial & Koontz, 2007). In fact, it was quite common to find the inclusion of ex-officio members in many of the collaboration. More interesting was the wide range of differences in terms of the membership size and the level of inclusiveness. For example, the high-level policy committee for the Tampa Bay National Estuary Program (TBNEP) consisted of 6 local governments and 3 regulatory agencies. The other 26 local governments in the watershed were left out of the governing arrangement. 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, Tampa the Agency on Bay Management (ABM) for Tampa Bay had over 65 members and the governing arrangement for the Tillamook County Performance Partnership (TCPP) was open and targeted at around 61 members. Even the TCPP's executive board specified 10-12 possible members.

While organizations typically comprise the membership, there can be provisions for citizens or interest group representatives (Moore & Koontz, 2003). All the NEPs had some sort of advisory committee structure that included a management committee consisting of various stakeholders like agency managers and interest group representatives. Others included stakeholders and citizens in some variation of Citizens Advisory Committee (CAC) and technical experts in some sort of technical advisory committee (TAC). In some cases, the committees were quite active and played a vital role in the process. For example, the CAC helped shape the recommendations that ended up in the CCMP in Tillamook Bay. In Narragansett Bay, the committees lacked purpose and had poorly defined roles and purposes and were ultimately disbanded. It was also common to find that the chair of the CAC or TAC served as a member of the management committee to ensure that those interests were represented.

Membership in collaborative process can be voluntary or mandated by some higher-order set of rules (e.g., statute, articles of incorporation, charter, etc.). For example, the county resolution that adopted the TCPP specified which organizations would be represented on the executive board while membership on the larger TCPP was left relatively open. The original legislation that established the CIB specifies not only the members but 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 request of the board the legislature made them voting

members the following year. Today, the board elects up to 4 citizen members. In the Tillamook Bay, the management committee selected the members of the CAC, Science and Technical Advisory Committee (STAC), and Financial Strategy Committee (FTC). Conversely, in Tampa Bay they left membership in their Technical Advisory Committee (TAC) open with 200+ members but appointed a CAC with around 30 members. As the organization evolves, it typically creates rules pertaining to the addition of new members. For example, the interlocal agreement establishes a process whereby new parties can join the partnerships. Similarly, rules may be crafted to specify how a member is expelled. For example, while the TCPP allowed a member to be expelled for missing three successive meetings but had no rules governing who could join.

Strategy rules specify the underlying purposes of the collaborative governance network. In other words, what it will do, how will it do it, and where will it get the necessary resources for organizational activities (e.g., clients, products, goods, services, etc.) (Imperial & Koontz, 2007). They identify the problem (or set of problems) that are the partnership's domain. Sometimes, the purposes are clearly established early in the process. For example, the Governor's executive order establishing the GTFIB and the legislation establishing the CIB set forth the goals of both collaborations. In other cases, the purposes reveal themselves as the collaborative process unfolds. For example, the basic purpose of each NEP was clear – produce a CCMP. However, identifying the focal problems that would become the catalyst for action often occurred later in the process during the collectivity stage, which sometimes required changes to membership rules. For example, EPA pushed the Inland Bays to focus mostly on water quality and many of the land use and agricultural issues were ignored but were added later in the process, which necessitated brining in new stakeholders to the process. A major flooding event during the planning process in Tillamook Bay led to the inclusion of a new purpose during the plan's creation. However, since EPA was funding the planning effort members were limited to only addressing the water quality impacts of flooding. In Tampa Bay, while the CCMP focuses on a wide range of problems, nutrient loadings and habitat restoration emerged as the core purposes that continue to drive collaborative processes to this day. Conversely, other than producing a CCMP, members of the collaborative process in Narragansett Bay have been unable to identify that core purpose or strategy to drive its collaborative processes.

The strategy also includes rules specifying legitimate responses to problems that are within (or outside) of the collaborative governance network's domain. Responses noted in the literature 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). There were clear examples of many of these roles. The IBSG focused primarily on research and information sharing while the Tampa Bay Study Commission (TBSC) focused on producing a report designed to provide information and advocate for actions needed to address its water quality problems. The NEIWPCC shares information, provides technical assistances, tries to build capacity, and serves as a convener. The CIB and Tillamook Estuary Partnership (TEP) primarily conduct research, share information, educate the public, and implement restoration projects. Conversely, the TBEP and the Tampa Bay Nitrogen Management Consortium focus on coordinating and facilitating individual and joint actions needed to achieve the nutrient reduction and habitat restoration goals contained in the CCMP.

The ABM though comments on projects and provides an advocacy function but does not implement projects. Rules may also specify what roles are illegitimate. For example, the CIB and TEP educate and provide information but lobbying and advocacy activities are somewhat restricted given their legal status as nonprofit organizations. The TBEP interlocal agreement and the by-laws for the CIB and TEP also specify and limit their purposes.

Strategy rules also reflect choices that govern the way members work together to address watershed problems. Examples include members deciding how to work together to share information, facilities, staff, programming, or other resources. It can also involve developing shared goals or performance targets, making shared decisions, entering contractual relationships, and sharing power. These "tools" can be combined in different ways to allow network members to work together to produce some sort of value that they are unable to produce individually (Prentice, et al. 2019). There were many examples of these operational and policy-level activities in the four watersheds that are documented elsewhere (Imperial 2005a; Imperial 2005b; Imperial & Hennessey 2000).

Finally, the strategy by default includes the geographic boundaries spanned by the collaborative governance process. For the four cases, it mostly consisted of the watershed boundaries and they did not change appreciably across the collaborative governance efforts that occurred in each watershed with a few exceptions. However, when the TCPP was disbanded and 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 state interests had only minimal involvement. Conversely, rather than doing a Section 208 plan for the Narragansett Bay watershed, state officials decided to do a state-wide plan that would cover all watershed areas. Accordingly, the geographic scope of the collaborative process is an important strategy rule.

Decision Rules

Decision rules shape the processes by which members make decisions (Imperial & Koontz, 2007). Interactive processes are not self-executing so important choices are made about how to make decisions. *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 to reduce transaction costs by making decision making more reliable and reproducible (Edelenbos & Klijn, 2005, 426). The collaborations relied on "consensus" decision making in the preparation of their CCMPs because it was a requirement associated with participation in the NEP. However, its use varied considerably across the cases. The Inland Bays and Tillamook Bay defined consensus as meaning near unanimity and worked hard to ensure that those who would be 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. Instead, the tried to reach consensus and make sure those most affected agreed. Accordingly, they also strived for unanimity. The consensus rule in Narragansett Bay was unclear and applied inconsistently during the process. They clearly did not strive for unanimity and often reached closure on controversial issues even though those most affected disagreed with the outcome.

It was 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 while other decisions needing a simple majority. For example, collaborative arrangements like the TBEP, TEP, and CIB use majority voting although there may be different rules in some situations such as modifying the by-laws or adding new members. The TCPP's executive board utilized majority voting while the committee relied on consensus, however, a 2/3 majority of both was needed to amend the by-laws.

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 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, etc.). As 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.

All the NEP's maintained formal subcommittees as do the CIB, TBEP, and TEP. While the high-level policy or executive committee was the ultimate decisionmaker and hiring entity for support staff, many relied on a management committee that met much more frequently to do most of the work. There was also a lot of variation in terms of the roles and responsibilities of the subcommittees. Some were quite active and had a clear role or responsibility in the process. For example, Tillamook Bay's CAC played an instrumental role in identifying the recommendations that were ultimately contained in the CCMP. Conversely, the sub-committees in Narragansett Bay struggled with a lack of purpose, met infrequently, and were ultimately folded into its Management Committee. Within a committee, roles might be established as well. For example, the committee chair often ran the meetings and the chair of the CAC and TAC often had the right to represent their committees' interests on the management committee. Establishing officers was also common for the collaborative organizations. The TEP elects a president, vice-president, and secretary/treasurer while the CIB elects a chair, vice-chair, and treasurer. The TBEP, TEP, and CIB all rely on some combination of standing and ad hoc advisory committees as well.

There may also be a *distribution of participation* in organizational decision making in terms of any member's opportunity to participate in a decision (i.e., width) or their ability to determine the outcome (i.e., depth). The results support the finding that 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). In other words, all members are not created equal. For example, members of advisory committees in the NEPs or the TBEP, TEP, or CIB varied considerably in terms of the ability to participate and influence decision making due to the frequency of meetings and their role in the process. For example, the CAC in Tillamook Bay played a vital role and really shaped the contents of the CCMP's recommendations. In Narragansett Bay, while the public had little direct access to the process, its 45-member management committee included a wide range of stakeholders and agency representatives and it was not uncommon for staff to work with the stakeholders to try and

overrule agencies in their attempt to influence change. Similarly, when first created, members of the CIB's CAC complained that they had no role or ability to influence decision making.

Coordination Rules

As the organization evolves, preference aggregation rules may give rise to an additional set of *coordination rules* (Imperial & Koontz, 2007; Sobrero & Schrader, 1998, 586 - 587). Membership often requires some rights, duties, responsibilities, or obligations beyond merely attending an occasional meeting such as sharing information, contributing organizational resources (e.g., money, equipment, staff, etc.), 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, are you a voting or non-voting member or will the activities of the collaboration advance your organization's goals. In Tampa Bay, considerable effort went into negotiating the interlocal agreement that formed the Tampa Bay Estuary Program (TBEP). In addition to specifying membership and decision rules, the agreement also contains clear duties and expectations including annual dues that are used to sustain the collaborative organization. Negotiating the agreement took time and required the use of a facilitator. In the end, the investment was worth it because it ensured the benefits and costs of membership were properly aligned. Conversely, when Narragansett Bay decided to adopt its CCMP as an element of the *State Guide Plan*, that decision carried with it a set of duties and obligations for all state agencies. However, the Division of Planning lacked membership on the high-level policy committee and had little control over the contents of the final plan it was expected to adopt. Similarly, the NBP's management committee used a somewhat dysfunctional "consensus" process that included items in the plan over the objections of affected agencies who disagreed with the proposed obligations the plan would impose.

In any collaborative process, member(s) may fail to follow through on their commitments by not attending meetings, neglecting to exchange agreed upon resources (time, money, information), or acting in a manner counter to established rules. Thus, *monitoring rules* may be created 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 minutes). In other cases, it was accomplished through formal processes by requiring annual reports and work plans to be reviewed by various committees (Imperial 2005b). Tampa Bay's interlocal agreement goes a step further and requires a progress report on the progress towards the CCMP's goals every two years. In addition, as a condition of taking EPA funding, the CIB, NBEP, TBEP, and TEP are required to participate in a periodic evaluation process.

While accountability and compliance with exchange rules often occurs due to social norms and peer pressure that develops through monitoring processes, e*nforcement rules* may be used to sanction members for noncompliance (e.g., suspend voting privileges, fines, expulsion, etc.). It is not uncommon for by-laws to specify some process for removal of members for noncompliance with rules. For example, the Interlocal Agreement for Tampa Bay 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 occur among members due to events that occur inside or outside of the collaborative process. As a result, it was not uncommon for *dispute resolution rules* to specify the process used to resolve differences. This was primarily accomplished by using the social norm of trying to reach "consensus" even if the formal rules allow for or require 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. For example, when the conflict threatened to derail Narragansett Bay's CCMP 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 manage conflict. Tampa Bay also relied on facilitation services to help negotiate the interlocal agreement. Both efforts were effective. Respondents also noted that having support staff with effective facilitation skills helped minimize conflict.

Convergence & Path Dependence

The cross-case analysis also reveals the importance of the convergence process. Whether it was the development of the four estuary programs or the formation of the NBEP, CIB, TBEP, or the TCCP/TEP, it took time to craft the configuration of rules. However, as noted in Table 3, these periods of convergence were punctuated by periodic change processes (i.e., reorientations and recreations) (Imperial et al. 2016a). What is converged upon is the unique configuration of boundary, decision, and coordination rules. As the four watersheds illustrate, while all were subject to the same set of externally imposed constraints by EPA, small changes in the rule configurations produced profoundly different structures that led to processes that varied widely in terms of their health and usefulness.

Whether implicit or explicit, members of the collaborative governance effort made choices about the content of the boundary, decision, and coordination rules that interact to create its structure and control its processes. It was clear that these choices unfolded over time in somewhat of a trial and error process as participants struggled to get the rules right. While initial choices were required to activate collaborative processes, much of the design work unfolded during the collectivity stage as members interacted and discovered what they could do and how they could work together in the future to produce value. Interestingly, respondents in many of watersheds noted that the processes took longer than they wanted. At the same time, most respondents noted that these interactions were necessary and unavoidable.

What gives rise to the unique structure though, is the configuration of the rules and how they interact with one another. For example, once the member rules are determined, that limits the set of broader purposes (i.e., strategy rules) that are acceptable. 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 the interactions among member giving some more influence over decisions than others while at the same time coordination rules help clarify the benefits and costs associated with the collaboration.

One of the more interesting observations that emerged from the cross-case analysis is that it provides further empirical support for the argument that convergence has a path dependent quality (Sydow et al. 2009) that is depicted graphically in Figure 3. The activation stage is

Figure 3: Convergence as a Path Dependent Process
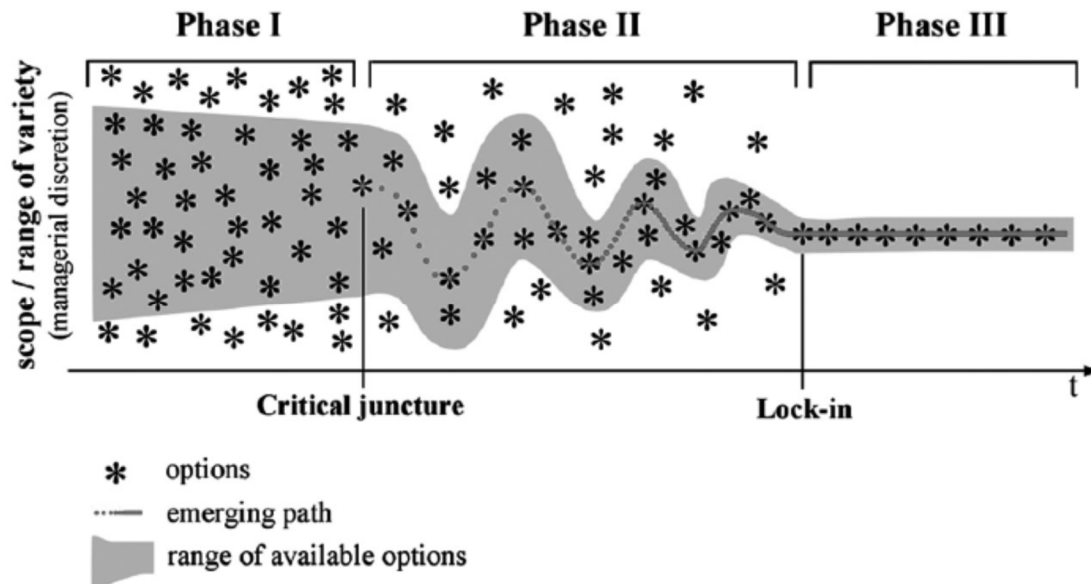
Source: Sydow, et al. (2009)

characterized by a broad scope of design choices. Much like an architect begins with a blank sheet of paper. But once decisions about the purpose of a structure unfold (e.g., size, number of bedrooms and bathrooms, other living requirements) and external constraints are considered (e.g., lot size, zoning requirements, etc.) what is possible begins to take shape. Similarly, the participants in a collaborative process must make some initial choices about who will be part of the network (member rules) and what their fundamental purposes will be (strategy rules). Even in situations where rules are imposed externally (e.g., executive order, legislation, or through a program like the NEP), members largely have a blank slate in terms of selecting other critical aspects of boundary, decision, and coordination rules. Accordingly, many possible structures (and outcomes) are possible during the early activation stage (Sydow et al. 2009, 691). Each choice necessarily narrows other choices that can be considered during the collectivity stage as members interact and make explicit choices about additional rules while others emerge as the by-product of social interactions and group decisions. Similarly, as the architect discusses the needs with the client and their finances, what is possible begins to narrow and tradeoffs are made to maximize functionality, ensure structural integrity, and remain within the project budget. Members of collaborative processes sometimes make tradeoffs as well between what is desired and that which is possible, practical, or can be accomplished within the resources that are available.

The design choices made during the activation and collectivity stages (Phase I and II in Figure 3) transform the network into a set of self-reinforcing processes. As rules become institutionalized, they lock-in members to a prescribed set of behaviors and actions (Phase III in Figure 3). While many possible structures and outcomes were possible during the early

developmental stage, that is no longer the case and participants are reluctant to change these rules. As a result, members of the collaborative governance process become entrapped by the system's social dynamics (Sydow et al. 2009, 691). New entrants are forced to work within the prevailing social architecture and continue reinforcing these rules (Sydow et al. 2009, 692). Ironically, even though the watershed governance efforts were formed out of a desire to be "flexible" and "adaptive", once they mature they experience the same structural inertia that makes traditional bureaucratic organizations resist change. As a result, the social architecture can have high degree of persistence and stability that allows it to endure for a long time if they continue obtaining the resources necessary for survival.

While stability and persistence allow healthy and useful processes to endure for a considerable time, path dependency can have adverse consequences. Two examples illustrate this point. Despite a recreation and two reorientations the Narragansett Bay Estuary Program (NBEP) experienced more than two decades of rapid decline in health and usefulness even though other network governance arrangements working at smaller geographic areas within the watershed and elsewhere in the state managed to flourish (Imperial, et al. 2017). In each instance, the NBEP's decline was triggered by poor design choices related to boundary rules such as the lack of a shared problem that motivated collective action and continued disagreements concerning how power or decision making is shared (Imperial, et al. 2017). Even though the EPA concluded in several internal evaluations that the NBEP's performance was unsatisfactory, the EPA and some network members were reluctant to reorient or recreate the network. This decline lasted almost two decades with resources allocated to unhealthy network processes when they could have been utilized in a more productive manner. Had EPA ceased funding the NBEP, it is highly likely it would cease to exist.

Delaware Inland Bays provides another example of the potential downside of path-dependency. When the network transitioned from plan development to implementation, network members formed a nonprofit organization, the Center for the Inland Bays (CIB), which was institutionalized using state legislation. While this served the purpose of creating an independent organization that could accept EPA implementation funding, less attention was given to whether the organization's new purposes would be consistent with the expectations of stakeholders or prior efforts like the IBMC that had a successful track record. However, as configured, the CIB is largely limited to noncontroversial topics like conducting research, information sharing, public education, installing best management practices, and habitat restoration projects. While these efforts are useful and provide value, the CIB had little discernable impact on slowing coastal development or addressing nutrient loadings from poultry production, both of which were the drivers for the other collaborative governance efforts in the watershed. During the early years of the CIB, this change in purpose was a source of much frustration to the grassroots citizens involved with the IBMC. Moreover, since the CIB's rules were established by the legislature, they are difficult to change, and no new network has formed to address watershed issues because the CIB occupies that institutional space.

Developmental Trajectories – Stability, Decline, & Change

With an improved understanding of the convergence process, the analysis turned to examining the different developmental trajectories that occurred over the life-cycle of the collaborative process identified in Table 3. Convergence can clearly produce a stable structure that is resistant to change that can endure for a considerable time if it continues getting the resources needed for survival. It can also lead to a period of decline in usefulness or health over time. In some cases, when the social architecture is poorly designed, this decline can be quite rapid. There were also numerous examples of change – reorientations and recreations – that occurred in both healthy and unhealthy processes. Finally, as noted earlier, collaborative processes end for various reasons such as completing their work, lose access to necessary resources, or they get replaced by some other collaborative process. Accordingly, when viewed over time (e.g., decades rather than years) the governance system appears much more dynamic and ebbs and flows as collaborative governance efforts emerge and disappear, only to be replaced by other efforts. However, the sequence of reorientations and recreations occurring in rather healthy network processes is often far messier than what is suggested in the idealized Figure 1. Figure 4 provides a visual representation of the trajectories summarized in Table 3. The only trajectory without a clear example is a failed activation.

Figure 4 identifies several examples where the convergence process produced a healthy and useful collaborative governance structure that remained quite stable for some time like the Tillamook Estuaries Partnership (TEP). The Tampa Bay Estuary Program (TBEP) and Center for the Inland Bays (CIB) also underwent a relatively long period of stability, which was punctuated by a *reorientation*. Similarly, all the NEPs had institutionalized a collaborative process that led to the development of their CCMPs only to have that stability punctuated by a *recreation* that led to the development of a different social architecture that largely involved the same core members and purposes with varying degrees of health and usefulness.

The discussion of the boundary, decision, and coordination rules also helps to clarify the distinction between a reorientation and a recreation. *Reorientations* involve relatively rapid and discontinuous changes in rules that alter the character of the network's structure and processes in some tangible way. In Figure 1 and 4, they are represented by a dashed line returning to the collectivity stage. Observed changes were relatively minor such as introducing new members (e.g., CIB and TBEP) or refining goals this still change the way members work together and change group dynamics. Reorientations can also occur response to dissatisfaction with the perceived return on investment in network processes, the emergence of new priorities, a shift in purposes, the loss of valued network members (or their resources), or excessive turnover that causes network members to question prevailing norms, values, or the network's way of doing things. It can also occur in response to mergers (or de-mergers), new start-ups, the disbanding of organizations in the network, or changes in capacity that allow organizations to join the collaboration (Huxham 2003, 412). External mandates or incentives can also trigger a reorientation. A reorientation may also transform network processes by altering communication patterns, decision processes, or established routines such that new processes emerge.

Figure 4: Developmental Trajectories for Each Collaborative Processes
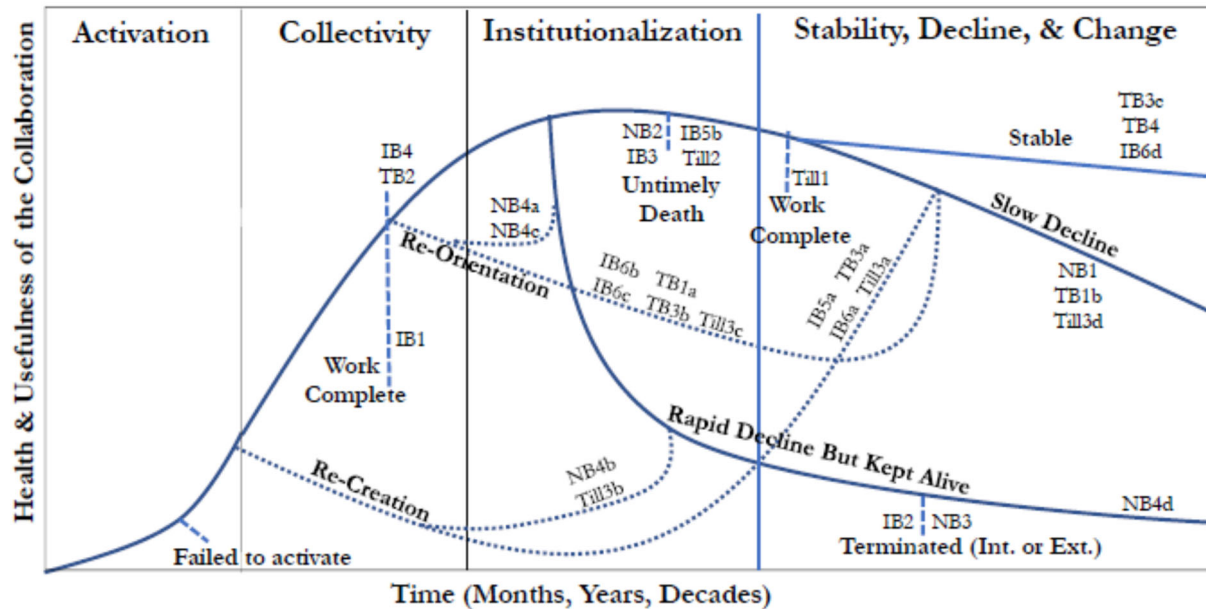
There were many examples of reorientations, most of which involved fine-tuning the social architecture designed to improve the health or usefulness of the collaborative processes. For example, the year after the CIB was created, it asked the legislature to make the chair of the CAC a voting member. More recently, it changed its membership again to include up to 4 citizen members appointed by the Board, which changed its dynamics again. After years of decline, the NBEP's management committee adopted a corrective action plan that included hiring a new director and staff and moving its home to the NEIWPCC attempting to improve the health and usefulness of its collaborative processes and better implement its newly adopted CCMP. In Tampa Bay, the reorientation of the TBRPC led to the establishment of the Agency on Bay Management (ABM) that altered how it addressed and commented on issues impacting Tampa Bay. Similarly, the TBEP went through two recent reorientations when it adopted an updated interlocal agreement and modified their shared goals and commitments based on its updated CCMP. It underwent a further reorientation the following year when Pasco County and the Manatee County Port Authority joined the partnership. The Tillamook Estuaries Partnership (TEP) underwent a reorientation in 2004 when the county passed a resolution changing its status from a voting to an ex-officio member. Accordingly, based on these data reorientations most frequently involved updating key goals and purposes or introduced new members to change network dynamics rather than altering decision or coordination rules. To return to the architectural metaphor, these changes are more like renovating a room to improve functionality or add value to a house.

Recreations are akin to building a major addition that changes the fundamental character of the house by changing the purposes of rooms and creating new uses for existing space. These

data support the argument that they involve a much larger shift in the core values or purposes of the collaborative governance effort (Imperial, et. al. 2016a). They also tend to use the strategy of *deactivation* to expel members or introduce new participants to change network dynamics (Mandell and Steelman 2003, 215). The dashed line in Figure 1 and 4 indicates a return to the activation stage because the changes are larger in scope and take longer to achieve because members must negotiate and reach agreement on many rule changes that modify their social architecture. Moreover, while some changes were also intended to rebrand (e.g., new name) or had major changes in boundary, decision, and coordination rules, significant core members, values, and purposes remain that motivated participation in the prior structure.

Recreations occurred for two reasons in these data. There was some shift in purpose, best exemplified by the fact that the social architecture needed to develop a plan needed to be reconfigured to better accommodate the purposes associated with implementing a plan. For example, when the GTFIB completed its report on the Inland Bays, the governor signed a new executive order creating the IBMC. While it had many of the same members, it was charged with a new purpose and given a new name that emphasized the change in mission. The Center for the Inland Bays (CIB) and Tampa Bay Estuary Program also adopted new names that signified fundamental shifts in mission. The CIB shifted more to research, information sharing, and demonstration projects exemplified by the use of the term "Center" in their new name. Interestingly, Tampa Bay dropped "National" from the name to emphasize that it was first and foremost a local government partnership.

The other primary reason for a recreation was when the collaboration experienced a rapid decline in health and usefulness as indicated in Figure 4. In other words, design choices failed, often quickly. This was the case with the Tillamook County Performance Partnership (TCPP), which only lasted about 3 years. It was recreated as the Tillamook Estuaries Partnership (TEP) and chartered as a nonprofit organization. It expanded its geographic footprint to include all the estuary watershed areas within the jurisdiction of Tillamook County. Accordingly, while the core purposes remained largely unchanged, the membership underwent a major transition and the county government was no longer providing a leadership role as it had in many of the prior collaborative governance efforts. The same was true for the Narragansett Bay Project (NBP). Its reorganization as a program within the state's department of environmental management and creation of a much smaller implementation committee. This arrangement suffered a rapid decline in usefulness and 2 years later was rebranded as the Narragansett Bay Estuary Program (NBEP) with a management and advisory committee. However, the committees lacked clear purposes and consequently met infrequently, and the new collaborative effort declined rapidly in health and usefulness.

These data illustrate that death indeed does occur for a myriad of reasons [Figure 4]. The NERBC suffered an untimely death when President Reagan's executive order eliminated the program. It was widely regarded as the most successful of the river basin commissions developed through this program (Imperial, et al. 2017). The collaborative processes associated with the Section 208 plans for Narragansett Bay and the Inland Bays were completed but the lack of federal and state implementation hindered their success and eventually these efforts died once funding was eliminated by EPA in 1981. Other collaborative efforts completed their work and subsequently were eliminated. For example, the Tampa Bay Study Commission (TBSC) ended

when its final report was completed. While many of its recommendations were not implemented, it did elevate attention to the problems in the bay and is largely attributed as leading to the TBRPC's creation of the ABM. Conversely, the impact of the *Environmental Study* completed for the Inland Bays in 1969 was limited primarily to drawing attention to some of the water quality problems in the watershed. In Tillamook Bay, the Rural Clean Water Project lasted from 1981 until 1996 when the project ran its course and funding was eliminated. However, it was extremely effective in terms of installing BMPs on dairy farms throughout the watershed. Tillamook County's Bay Sanitation Technical Advisory Committee was eliminated with the establishment of the Tillamook Bay National Estuary Program (TBNEP). It provided a useful coordination mechanism and many of its members provided the core of the TBNEP's management committee.

Sustaining a Healthy and Useful Life

Less clear is the linkage between change processes and sustaining the health and useful life of collaborative processes. Table 4 provides a relative judgement of the health and usefulness of each collaborative process. Judgements about the health and useful life were guided by the questions noted in Table 1 and informed by the analysis of archival records and interviews with program participants. The concept of a healthy and useful life is used in place of more traditional terms like "success" or "performance" for several reasons (Imperial, et al. 2016a). There is no generally accepted way to evaluate the performance of collaborative process. This is likely due to the many ways they generate value. Moreover, they create *value* in different ways during different developmental stages (Voets *et al* 2008; Mandell and Keast 2008). Therefore, the type of nurturing needed to sustain healthy network processes during early developmental processes can be quite different from what is needed when mature networks experience declines as indicated in Table 5 (Genskow and Born 2006, 56).

What is interesting is that there were some efforts that clearly were healthy and useful over their durations (e.g., the GTFIB, IBMC, NERBC, TBNEP, TBEP, RCWP). There were others that never managed to get the rule configuration right and never managed to develop useful collaborative processes (e.g., NBP, NBEP, TCPP, and the Section 208 planning processes). It also appears that relatively frequent changes (reorientations and recreations) was a warning sign. Conversely, long periods of stability in social architecture appears to be a sign of healthy and useful collaborative process. This directly contradicts the notion that collaborative approaches to addressing environmental problems like ecosystem management, watershed management, or river basin management are more "adaptive".

The analysis also highlights the difficulty of evaluating collaborative processes using traditional notions of success like effectiveness, outputs, or outcomes. Examples from the Inland Bays and Tillamook Bay illustrate some of the challenges. The DIBEP's CCMP was nearly rejected by the EPA but also helped unify state officials to provide additional support for their plan. Moreover, state officials fundamentally disagreed with EPA in terms of what their plan should consist of. Management Committee members wanted something like prior documents such as those produced by the GTFIB and were quite happy and supportive of the final CCMP. Conversely, EPA wanted a big thick comprehensive plan that would represent the culmination of the planning process, but state officials prevailed, and EPA begrudgingly approved the Inland

Bays CCMP. The development of the CIB and its efforts over the last 25 years illustrate another way perspective matters. Arguably it served some useful purposes, however, these purposes fail to match the initial expectations of many stakeholders because the CIB does not address issues related to growth management and agricultural operations. Accordingly, the determination of the usefulness of the DIBEP and CIB clearly depends on your perspective or normative values. Many stakeholders were disappointed with what they perceived to be a "watered down" CCMP and a CIB that avoided controversial issues. At the same time, the strength of the competing interests related to land development and agricultural issues (e.g., poultry farms) suggest it was highly unlikely that any type of binding agreement like the one crafted for Tampa Bay could have been achieved. What emerged instead was a pragmatic approach that allowed members to work together to produce something of value that addresses shared problems in the watershed.

Tillamook Bay illustrates another way perspective and normative judgements matter. Its CCMP emphasized a series of measurable targets to guide implementation efforts to ensure that they moved beyond "random acts of environmental kindness" and focused on making a measurable difference in watershed problems (Imperial 2005b). With the failure of the TCPP and shift to the TEP, this focus and the corresponding targets were no longer the focal point of implementation efforts. In a twist of irony, implementation currently consist of those same "random acts of environmental kindness" that members tried to avoid when developing the CCMP. That said, the projects still provide important environmental benefits, even if they are unable to make a fundamental difference in the watershed's problems. While some may be disappointed and the original CCMP's priority targets were not achieved, that perspective would ignore the reality that the TCPP failed in part because there was no dedicated source of funding that allowed local officials to make a sustain effort in solving problems using the targets it developed. Instead, participants essentially crafted a plan "B" and took a more pragmatic route by developing an institution that could function given the resources and local context. Thus, the CIB and TEP arguably have had relatively healthy and useful lives even if they fell short of the original expectations.

While these data do not allow for precise estimates of the shape of the curves depicted in Figures 1 and 4, the results are relatively consistent with the life-cycle hypothesis that at some point, even stable and healthy collaborations will incur some modest decline in their usefulness while others may fall into a slow steady period of decline. Decline was often reflected in reduced frequency of meetings, scope of activity, or their ambitions and purposes narrowing over time. However, the trajectories may be better depicted as wavy rather than smooth because the scope of activity increased or decreased during these periods of relative stability or decline. This wavy pattern of variation in health and usefulness was evident to some degree in all four watersheds but these variations were not associated with change processes. Rather, they seem to correspond to changes in staff, differences in leadership, better or more secure funding, or improved ways of delivering services. In other words, the waviness was likely the product of increase or decreases of other types of nurturing strategies noted in Table 5. In other words, management matters in terms of the health and usefulness of collaborative processes.

While additional research needs to be done to better test the hypothesis that collaborative governance is likely to experience some period of decline (Imperial, et al. 2016; Mandell and Keast 2008; Sydow 2004), these findings and prior research provide some explanation to support

Table 5: Ways to Sustain Healthy Network Governance Processes

| | **Stages of Network Development** | | | |
	Activation	*Collectivity*	*Institutionalization*	*Stability, Decline, or Re-orientation*
Key Features of Each Stage	▪ Membership is a bit unstable ▪ Focus is on figuring out what the network can do ▪ Differentiate roles of the network from that of its members	▪ High member cohesion develops ▪ Network has a distinct identity ▪ Focus of discussions shifts from what to do to how to do it	▪ Stable membership, processes, and resources ▪ Process is not dependent on individuals ▪ Focus is on fine-tuning network processes	▪ Stability and members resist proposals for change ▪ Resource streams are relatively secure ▪ Few founding members are still involved
Stage-Specific Symptoms of Unhealthy Network Processes	▪ Poor attendance at meetings ▪ Members do not seem to do more than attend the meetings ▪ Difficulty finding a focal problem to motivate participation ▪ A lot of overlap with existing networks	▪ Unstable membership and decision processes ▪ Meetings are filled with conflict ▪ Asymmetries of power within network processes ▪ Members unwilling to invest much more than their time at meetings ▪ Focus shifts to what to do before relationship building occurs	▪ Departures of key individuals is viewed as a crisis ▪ Unstable membership, processes, or resource streams ▪ Network maintenance becomes a goal rather than getting things done ▪ Entrenchment stifles network capacity to innovate or adapt	▪ Departures of key individuals is viewed as a crisis ▪ Resistance to change when change is needed ▪ Members exit or stop committing resources ▪ Mission drift ▪ Excessive member turnover ▪ A lot of social loafing and free-riding ▪ New problems command members attention
Stage-Specific Tactics Used to Nurture Network Processes	▪ Focus on attracting the right members and their leaders ▪ Give thought to what members to include and when to incorporate them into network processes ▪ Be deliberative and plan the network's development ▪ Small group of collaborative leaders are needed to "champion" the network's development ▪ Allow network's collaborative culture to develop organically; expect and protect the time it takes for this to occur	▪ Facilitate and nurture member interactions ▪ Create space for dialog ▪ Take time needed to build relationships and a stable process ▪ Ensure members participate as equals within network processes ▪ Clear rules regarding membership and network processes ▪ Leadership is distributed among many network members ▪ Members share credit and avoid placing blame	▪ Rules structuring network processes are clearly described (e.g., websites, documents, by-laws) ▪ New members are quickly socialized to new rules ▪ Develop new processes to streamline decision making ▪ Leadership is distributed among many network members ▪ Members share credit and avoid placing blame	▪ Do not ignore signs of prolonged decline ▪ Periodic efforts to focus or refocus on mission ▪ Disband, re-orient, or re-create if a better use of network resources ▪ Small group of collaborative leaders are needed to "champion" re-orientations ▪ Leaders able to seek external input to evaluate network effectiveness ▪ Members share credit and avoid placing blame

Source: Imperial, et al. 2016a

this hypothesis. These results support the notion that network members experience "burnout" because of the energy and commitment they put into network roles (Huxham and Vangen 2000, 1161). Members and support staff also move jobs, get promotions, and retire that can disrupt processes. Once stability is achieved, members often feel it is safe to "pass the baton" and let others represent their organization. This pattern was observed across many of the collaborative governance efforts. New members may soon begin to dominate network membership and their level of personal commitment and priorities may be quite different than the founding members. Mission drift may occur due to incremental shifts in the network's programmatic focus as members chase scarce resources or funders change priorities (Auer *et al.* 2011). While the CIB and TEP have arguably experienced this mission drift, drifting also provided resources needed for survival. Other declines are due to group dynamics. The challenge Narragansett Bay has had during the NBP and NBEP is that the group dynamics have always been dysfunctional, and this contributed to their rapid decline in health and usefulness regardless of the changes in social architecture. After the excitement and challenge of initial formation wears off, the likelihood of "social loafing" increases (Wageman 1999; Williams *et al.* 1981). Others may "free ride" by reaping the benefits of membership while decreasing their participation and commitments. While it is unclear from these data the extent to which this may have occurred, one of the main reasons the TBEP invested considerable time in negotiating the interlocal agreement and its binding commitments was to explicitly prevent this type of "free-riding" and "social loafing" behavior.

One of the advantages of using a historical perspective to view collaborative processes is that it enables you to better view and understand the changes occurring in the institutional environment surrounding these collaborative governance efforts. Some of the waviness noted earlier is likely due to factors such as changes in funding availability and other macro-economic forces (e.g., the great recession). The capacity for solving problems changes and interest shifts to new approaches to problem solving. Problems that once motivated network participation get displaced as new issues command the attention of network members. In short, network members increasingly view the network's useful life in terms of the opportunity costs of their continued participation (Mandell and Keast 2008, 726). As a result, network members may seek opportunities to achieve a greater return on their investments by deploying network resources elsewhere, perhaps in another governance network to address other landscape conservation problems. Accordingly, some of bursts of activity and periods of quick decline also seem to be due to natural fluctuations in the external environment that create strategic opportunities and challenges in terms of finding funding to support the activities of the collaborative processes.

It is also obvious that external actors can keep collaborative processes alive if they keep providing necessary resources, regardless of their actual health and usefulness. In other words, you can clearly "buy" collaboration, but it also does not mean that the money is always well spent. When comparing the CIB, NBEP, TBEP, and TEP it is important to recognize that all still receive considerable financial resources from the EPA and their state counterparts due to their participation in the National Estuary Program (NEP). What would happen if this funding was terminated? It is highly likely that the NBEP would cease to exist. Despite repeated attempts to reorient and recreate itself, it remains relatively unhealthy and fails to provide much in the way of public value. At the other end of the spectrum is the TBEP. It would clearly exist without EPA funding and was built to have a sustaining source of local funding built into interlocal

agreement. In fact, only about 25% of its funding comes from federal sources and it maintains a very healthy fund balance. It is less clear what would happen with the CIB and TEP. The CIB recently developed a finance plan that is oriented towards trying to ensure its sustainability and its funding sources are better diversified than the TEP. The TEP situation is much more tenuous and heavily reliant on federal funding. Accordingly, the CIB would be in a much better position to survive this funding loss. Thus, EPA maintains a critical role in sustaining the survival of two of the four collaborative processes.

Summary and Conclusions

It is easy to see why researchers conclude that collaborative governance is dynamic, challenging, time consuming, and fraught with difficulty (Bardach 1998; Johnston et al. 2010; Ospina & Saz-Carranza 2010; O'Leary & Bingham 2009). When viewed over decades, it becomes easy to appreciate the dynamic nature of collaborative processes and how they evolve and change, only to occasionally die and be replaced by new efforts to address watershed problems. Nurturing these collaborative processes through the different stages of development is not easy, nor is sustaining their usefulness over an extended period.

There are also many paradoxical aspects of collaborative processes (e.g., (Ospina and Saz-Carranza 2010; Imperial 2005b). The path-dependent nature of the convergence process reveals another paradoxical aspect of collaborative governance. Networks are often formed based on a belief that they will be more "flexible" and "adaptive" to changing environmental conditions than more traditional forms of hierarchical organization (Imperial 1999a). But, healthy and useful networks develop a relatively stable social architecture that is resistant to change in much that same way as other traditional hierarchical organizations. However, they may provide a more "efficient" organizational response to problems by allocating available resources to address the shared problems that drive the formation of collaborative processes. This is due to the spontaneous order achieved when a structure emerges that allows its members to deploy resources in a coordinated fashion to achieve results that could not be achieved by working alone or at the direction of central hierarchical planning authority (Hayek 1945).

The stability of the social architecture and the corresponding resistance to change or *structural inertia*, is not necessarily a symptom of "bad management". Quite the contrary, it may be a sign of a healthy and useful collaborative process that it is working well from the standpoint of those involved. The stable structures noted in Figure 4 resulted from a well-tuned social architecture that utilizes the synergies among participating organizations for strategic purposes that advance the collective interests of its members (Kim et al., 2006, 705; Hannan & Freeman 1984, 149).

The findings also demonstrate that reorientations and recreations are risky. There is no guarantee that an alternative network structure will produce better results as evidenced by the experiences in Narragansett Bay and Tillamook Bay. More importantly, recreations can rob the network of its history and reset the "liability of newness" clock back to zero (Amburgey et al., 1999, 53; Singh et al., 1986, 589; Hannan & Freeman 1984, 160; Stinchombe 1965). When extended to networks, this suggests that new collaborative governance efforts have a higher propensity to die than older ones. Empirical studies provide relatively consistent support for this

basic proposition in different organizational (e.g., Amburgey et al. 1993; Bruderl & Schussler 1990; Gray & Ariss 1985; Singh et al., 1986; Freeman et al., 1983) and network settings (Koka et al., 2006; Burt 2002). Indeed, this study provides further support for the notion that change is risky, particularly when it involves recreations as evidenced by the experiences in Narragansett and Tillamook Bay. However, if the new collaborative process can converge on a new structure that gets the rules right, it can often endure for a long time as evidenced by the experiences in the Inland Bays and Tampa Bay. The lesson is clear. Change is risky but sometimes necessary. However, there is no guarantee that the new structure will prove more useful than the current one. The development of the current structure required a significant investment of time and resources and participants and often recognize that building a new structure will incur high transaction costs. Moreover, while the reorientations were typically viewed in positive terms, participants tend to view recreations (e.g., shift from the NBP to NBEP, shift from TCPP to TEP) in more negative terms. Arguably, that explains why the EPA continued funding the NBEP for so long even though it was clearly trapped in a dysfunctional structure and could not be used for more productive purposes.

While the study did not set out to examine the "death" of collaborative processes, a by-product of the longitudinal perspective was the ability to identify some collaborations that ceased to exist for a variety of reasons. In some instances, death was constructive. Perhaps the best example are the various task forces or study commissions that focused on using a collaborative process to produce a report that elevated attention to watershed problems and provided recommendations to address them. While they varied in terms of their usefulness (e.g., impact), there was often little reason for them to continue once their mission was complete. Other deaths were less constructive. While the Delaware Inland Bays Estuary Program (DIBEP) provided a great opportunity to address watershed problem, it led to the demise of the IBMC, which was quite useful. It is interesting to ponder what would have happened instead if the resources provided by EPA in the Inland Bays had been allocated to the IBMC to continue its work. Similarly, while the collaborative processes associated with the development of the Section 208 plans in the Inland Bays and Rhode Island were useful in identifying some innovative solutions to problems in the respective watersheds, the withdrawal of federal funds in 1981 led to a rather hasty demise. Similarly, the IBSG and NERBC both suffered untimely deaths that cut short their useful lives.

When viewed over time, there were also very few purely self-initiated collaborative processes that were not subject to some sort of internally or externally imposed constraints. However, in retrospect maybe this should have been expected given the nature of the problem and the federal system in which these collaborative processes operated. Most government actors at the state and local level are subject to some higher order rules that place limits on what they can and cannot do, which in turn influences what any given combination of members of a collaborative partnership can accomplish. To ensure stability, participants in collaborative processes frequently institutionalized rules at a constitutional-level (e.g., by-laws, interlocal agreement, legislation, articles of incorporation) to ensure that they are difficult to change and enhance legitimacy and stability (Imperial 2005a). Collaborations also emerge because individually the members lack critical resources needed to address some watershed problem. As a result, they are dependent on funding from other sources such as government, the private sector, or even a foundation. However, funders impose constraints on what can or cannot be

done with these resources. The consequence is that external actors establish critical rules via mandates (e.g., legislation, executive order) or through conditions of receiving funds (e.g., NEP planning grants), which shape the structure of a collaborative process. As a result, collaborative governance clearly has a strong institutional orientation. This requires not only understanding the choices that give configuration of rules inside the collaboration interact to shape its social architecture but also appreciating how the configuration or rules operating at higher levels outside the collaboration influences these choices and what it can or cannot accomplish.

The large number of externally initiated collaborative processes also demonstrates that collaborative governance can be used as a policy tool as Scott and Thomas (2017) argue. The experiences across the four watersheds also offer some guidance in terms of the use of this meta-governance strategy. Externally initiated efforts appear to work best when they are strategic, focused, and have a clear task or mission that is in alignment with the local context. One of the problems with the National Estuary Program (NEP) is that it required a final plan that was truly "comprehensive" instead of letting participants develop a more "strategic" plan built around a set of shared goals or objectives to stimulate action. The results suggest that external processes work best when there is a lot of flexibility in terms of crafting rules. The EPA required consensus and a collaborative process with lots of involvement with decision making typically being driven by larger management committees comprised of agency and stakeholder representatives. This combination of rules worked well in Tillamook Bay but fostered a highly dysfunctional process in Narragansett Bay. In the Inland Bays, reaching "consensus" involved negotiating to the lowest common denominator as it was much harder to reach agreement on some issues, which disappointed some participants. Tampa Bay, which was arguably the most healthy and productive of the four processes, instead opted for a much more highly engaged policy committee that placed primary decision-making authority in the hands of 6 local governments and 3 agencies so that they could negotiate clear goals and targets. However, this process was arguably less inclusive that the others.

The lesson in terms of using mandates or incentives to initiate collaborative process is that imposing any set of standardized rules is problematic because the configuration of rules has to "fit" the local context. Each watershed had a history that generated some norms and expectations among members in terms of how they go about solving collaborative problems. Tampa Bay approached the NEP as it had other regional issues. However, the NEP was a very different approach to problem solving in the Inland Bays and Tillamook Bay. Interestingly, when their plans were completed they both returned to structures that resembled prior structures. Conversely, there appears to be a mismatch of scale in Narragansett Bay. There is a much richer history of collaborative governance efforts than is depicted in Table 3. However, most of these are targeted at different regions (i.e., sub-basins) within the watershed have clearly defined problems that motivate state and local participation in collaborative problem-solving processes (Imperial, et al. 2017). The larger watershed simply lacks that central organizing issue or problem. Flexibility in terms of selecting key rules appears to be critical.

Another problem with using external mandates or incentives to initiate collaboration is the problem of a time commitment. One of the interesting things the Governor of Delaware did was to use an executive order to establish the GTFIB with a clear mission – produce a report with recommendations, and rather quickly. The Governor then established the IBMC to oversee

implementation for a designated period (i.e., 5 years) with the promise of some financial support. The predictability of funding and a designated timeframe for action was a useful strategy because participants had clear expectations in terms of the time and resource commitments as well as some urgency to address the 41 recommendations in the GTFIB report. Contrast that strategy with the NEP where it continued to provide implementation funding to all four programs even though some of their "CCMPs" were more than a decade old and way out of date. As previously noted, the steady supply of funding arguably kept the NBEP alive for over two decades with an unhealthy collaborative process. However, during the same period, several very healthy and useful collaborative processes emerged on a much smaller scale within the watershed to address pressing problems (Imperial, et al. 2017). Keeping an effort like the NBEP alive past its healthy and useful life is unproductive. While it allows the EPA to keep a watershed on a map, provides green pork, and allows the agency to claim it is working to address the watershed's problems, it simultaneously traps state and local resources in an unproductive process that could be allocated to address the problems in other collaborations within the watershed. Similarly, while the NBEP continues to occupy this institutional space, no other collaborative effort is likely to emerge for the watershed. The same is true for the other three watersheds because it is unlikely that a competing watershed level initiative would emerge.

The Section 208 program provides another cautionary tale. This mandate stimulated countless collaborative planning processes around the country. Some of these plans had truly innovative ideas and recommendations including the one developed for Narragansett Bay (Imperial, et al. 2017). However, implementation efforts withered because the planning and implementation efforts were poorly funded and eventually funding was terminated in 1981. The lesson is that you can clearly use a mandate to cause 100s of gardens to be planted but why do that in the first place if you turn off the water and let everything that started growing die before anyone eats the vegetables. Accordingly, while collaborative governance can function as a policy tool and obviously can be used to initiate collaborative processes via a mandate or incentive structure, the implications of its use and the consequences of making structural design choices should be considered carefully.

The path-dependent nature of the convergence process also suggests that all participants in a collaborative process, whether it is self-initiated or stimulated externally, should carefully consider design choices. Similarly, when undertaking reorientations and recreations it is important to be deliberative about rules choices and how they will interact to create a reifying structure. Tampa Bay provides the best example of an effort to "get the rules right". Its members had a lot of experience (good and bad) working in other collaborative processes and were determined to ensure that the plan, and more importantly its goals, did not end up on some shelf gathering dust. They engaged the services of facilitators and began negotiating what would eventually become a binding interlocal agreement. This investment paid dividends as the structure still operates largely as it did when the agreement was adopted a little more than 20 years ago. This was not always the case. It was common to find that some rules and aspects of the structure emerged, often with little thought. For example, Narragansett Bay created three subcommittees that were subsequently abolished and folded into their management committee because they lacked a clear purpose and met infrequently. The example begs the question about why they were created in the first place, but no one seems to know.

These data support the argument that it is important to be deliberative when it comes to selecting rules and to think about how they interact to shape collaborative processes. It takes time to get the rules right and these processes often take longer than its participants or external funders like EPA like, but the collaborative processes seem to be most healthy and useful when they develop at their own pace. It also requires participants and support staff who understand the dynamics of collaborative processes. That was not always the case (e.g., Narragansett Bay and Tillamook Bay). To return to the architectural metaphor, anyone can start building a house. An experienced builder will probably do a better job than someone who has never worked in construction. However, the advantage to working with an architect and engineer to design the structure is that they have expertise that even an experienced builder lacks in terms of ensuring the structure is safe, built to last, and that the space is functional and designed to serve its intended purposes. Many of the watershed partnerships noted in Table 3 that experienced problems lacked experienced builders let alone an architects or engineers.

Unfortunately, there is much left to be learned about how the configuration of rules interacts to provide structure to collaborative processes. Given the institutional rational choice literature, it is unlikely that a configuration of rules would prove to always be more "effective". Nevertheless, we remain a long way from understanding whether certain "structures" are better for deploying certain collaborative "tools" or achieving certain purposes (Prentice, et al. 2019). We do know is that it is highly unlikely that one "rule" (e.g., consensus decision making, level of inclusiveness) is always better. We know that rules can create a favorable environment for productive interactions or become obstacles (Mandell & Steelman 2003, 217). The cases also suggest that getting the rules "right" also involves the challenge of fitting the local context. It also seems to require having some understanding what the shared goal, problem, or purpose is that will motivate and sustain a commitment to the effort during the activation stage. The advantage of the framework of boundary, decision, and coordination rules presented in this paper is that it provides a way for participants to carefully consider and deliberate the design choices that go into crafting the social architecture.

The findings also demonstrate that changing structures to get the rules "right" is just one aspect of the nurturing needed to ensure the health and useful life of a collaborative process [Table 5]. Fortunately, we are beginning to understand quite a bit about strategies that can be used to nurture healthy and usable network processes (e.g., Johnston et al. 2010; Ospina & Foldy 2015, 2010; Ospina & Saz-Carranza 2010; Saz-Carranza & Ospina 2010). Different nurturing strategies also appear to be appropriate during different stages of the developmental process (Imperial et al. 2016a). Failure to engage in proper nurturing allows the social architecture to break down in ways that reduce the usefulness of network processes. Some of the waviness in otherwise stable processes noted earlier is likely due to participants taking collaborative processes for granted and forgetting that they need constant attention. Moreover, changes in support staff, leadership, and resource allocations also appear to contribute to variations in how much time is allocated to nurturing to support the health and usefulness of the collaborative process.

Healthy and useful network structures are also formed to "fit" the needs of network members at any given point in time. However, needs change as does the broader interorganizational and social, political, and economic system within which a collaborative

process develops. To return to the architectural metaphor you may own a home that is perfectly suited to family needs. However, the addition of two new children, a live-in parent, or a home-based business may reduce the usefulness of the current structure. In some cases, this problem is solved through an addition or a reallocation of living space (i.e., reorientation). It may also require building a major addition or finding a new home that is better suited to current needs (i.e., recreation). Similarly, reorientations and recreations are necessary from time to time to address changing needs or expectations. However, participants may resist changing a structure that is working, even when its usefulness is declining because change is risky and time consuming. Ironically, in unhealthy processes, the breakdown in the social architecture can facilitate reorientations and recreations because members become less commited to a structure that no longer appears to be working. However, this is analogous to waiting to let a garden die and then replanting another in its place. While it is withering, resources are trapped that could be put to a more productive purpose. Thus, network members should embrace reorientations and recreations as being a critical part of sustaining healthy and useful collaborative processes.

Finally, the concept of a healthy and useful life draws attention to the functional and strategic nature of collaborative governance. It emerges to presumably fulfill some purpose that cannot be achieved by actors working alone (Imperial, et al. 2018). The change in dialog also emphasizes that even when networks are disbanded, they may still have had useful lives. The paper provides several notable examples. The study also demonstrates that while many collaborative processes are designed to endure for a long time, that need not be the case. When the useful life of the collaborative process declines, it is time to disband, reorient, or recreate the network to allow network resources to be redeployed in new ways. Unfortunately, many participants appear reluctant to think in those terms. Instead, they escalate their commitment to prolong a collaborative process whose useful lives are marked by prolonged decline. Our hope is that reorientations and recreations are viewed in more beneficial terms. While collaborative processes are best left to develop at their own pace, they should also die when their useful life has passed to free up scarce resources and put them to more productive purposes (Imperial et al. 2016a).

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