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A Flower Blooms in the Desert: Managing for Collaboration

Josphine Gatti Schafer
University of Nevada, Las Vegas, Josie.Gatti@gmail.com

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A FLOWER BLOOMS IN THE DESERT: MANAGING FOR COLLABORATION

Josephine Schafer Gatti

Bachelor of Arts, Communication
Appalachian State University
Boone, North Carolina
2005

Master of Public Administration
Appalachian State University
Boone, North Carolina
2007

A dissertation submitted in partial fulfillment of the requirements for the

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School of Environmental and Public Affairs
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The Graduate College

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Josephine Schafer Gatti

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Doctor of Philosophy in Public Affairs
School of Environmental and Public Affairs

Christopher Stream, Committee Chair
Edward Weber, Committee Member
Scott Abella, Committee Member
Daniel Stout, Graduate College Representative
Ronald Smith, Ph. D., Vice President for Research and Graduate Studies
and Dean of the Graduate College

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Abstract

This is a dissertation about local, regional and federal agencies charged with the development of parks, trails and natural areas in Southern Nevada. The context for the delivery of this service is a network. Networks are an increasingly common context for service delivery in the United States; however, their value for constituents has been questioned. Some suggest that the advantages of capacity building and social capital that are expected when organizations work across their typical boundaries are not as significant as expected. This dissertation provides knowledge to add to this debate.

The dissertation is an in-depth case study that evaluates the effectiveness of a network using the factor of structure, the process by which organizations come together in a network. The key factor in the effectiveness of the process of working across organizational boundaries is collaboration. Two stages of analysis, network analysis and logistic regression analysis are used to test the development of collaboration and then of effect of collaboration on the work of the network. The network analysis demonstrates that this is not a collaborative network. Two of Three factors of collaboration, shared motivation and capacity for joint action are lacking in the network. The logistic regression analysis tests the effect of the structure of the network on the outputs of the network, 264 projects that are reviewed for approval by the network. The analysis demonstrates that the outputs of the network reflect the structure.
Dedication and Acknowledgements

To Maria Barone Pirozzolo and my family who have always believed in the value of connections and quality of over quantity.

I would like to thank my Committee for their time, effort and willingness to serve on my committee: Thank you, Dr. Christopher Stream, my chair and friend, Dr. Scott Abella for a great idea, Dr. Edward Weber, for your feedback, and Dr. Daniel Stout, for your support.

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1. Networks, Collaboration and Public Management

*Much of this success has been based on the collaborative nature of the work and a vision of success shared across all agencies involved in SNPLMA’s [Southern Nevada Public Lands Management Act] implementation. As a result of this collective effort, the quality of life in Nevada has been improved.*
– SNPMA 10 year Report to Congress (2010, p.5)

**Overview of the Research**

This research examines a public management network’s structure and process.

The purpose for my analysis is to add information to a current academic debate that queries the value of networks to organizations and society. Some suggest that networks, defined as,

...a more or less stable pattern of social relations between mutually dependent actors, which form around a policy, program, and/ or cluster of means and which are formed, maintained and changed through series of games. (Kickert et. al., 1997, p. 6),

are a more suited organizational form for many public management activities including the activity of conserving natural resources and/or providing recreation areas as is examined in the dissertation. However, more recently, some have begun to question the value of networks as an organizational form. Specifically, does the network organizational form improve the work that is done, as compared to what an individual organization could do alone? The answer to this question lies in the extent to which a network is effective. Effectiveness is a function of the extent to which inter-organizational relationships in the network can be described as collaborative.
Collaboration is a measure of the relationships that are forged between organizations in a network and hinges on the existence of: (1) principled engagement, (2) shared understanding of the goals of the network and (3) collective interactions. Through collaboration it is expected that a network provides more than any one individual organization can alone (Goldsmith and Eggers, 2004; O’Toole, 1997). Collaboration provides the vehicle for actors to do what they could not alone. Therefore this research will evaluate to what extent one network is actually collaborative.

The network studied is a network of local governments and regional and federal agencies charged by the United States Congress in the Southern Nevada Public Lands Management Act (1998) (SNPLMA) with developing parks and recreation areas between 1998 and 2010. The stated context for this action was a network and the intention was for network actors to collaborate. The Implementation Agreement which defines how the network partners work together states:

The role of this Division regarding implementation of the SNPLMA and expenditures from the SNPLMA Special Account is to: Promote collaboration among the eligible Federal agencies and local and regional governmental entities in identifying properties and projects with the greatest public benefit, regardless of agency jurisdiction. (Implementation Agreement, 2002 p. 15).

My approach to the case study is a process evaluation. A process evaluation examines the structural and procedural arrangements that exist in the implementation of a public program. A process evaluation is focused on the steps that lead to outcomes.

---

1 This is a composite definition discussed in more detail later in the dissertation Including Emerson et. al., 2011; Imperial, 2005 & Mandell and Keast, 2008.
Mandell and Keast, (2009) explain most public management networks are evaluated on outcomes. However, the authors believe, that networks, because they are (1) different than traditional organizations and (2) because network performance hinges on successful network relationships, should be evaluated on process and not outcomes. The authors explain: “…to effectively tap into and understand the complexity and variegation of network arrangements requires different evaluation processes….” (p. 716). Similarly, other authors have called for the evaluation of networks that focus on the relationships that exist in networks, often called network level analysis (Provan et. al, 2007; Isset, 2011; Bardach, 1998). In this research a process evaluation provides insight into the relationships that are forged within the network and the extent to which those relationships affect the work of the network.

The case study examines network structures effect on the outputs of a network. Network structure is the study of “patterns of particular ties between actors, where variation in the …strength of ties is meaningful and consequential” (Cook and Whitmeyer, 1992, p. 118). Cook and Whitmeyer (1992) relate network theory to the “Structuralist” position in Sociology, stating: “that all important social phenomena can be explained primarily, if not completely by social structure” (Cook and Whitmeyer, 1992, 110).
In the dissertation several metrics of network structure are used, including:

1. Roles – attributes of individual organizations based on the purpose they serve in the network,
2. Dependencies – attributes of the relationship that exist among organizations in a network
3. Positions – attributes of individual organizations based on the relationships they forge with other network members, and (Borgatti & Foster, 2003; Galaskiwicz & Krohn, 1984).

**Figure 1: Definition of Network Structure**

<table>
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<td>The relationships among organizations in a network, including the existence and strength of roles, positions and dependencies that exist.</td>
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This framework highlights relational aspects of a network, as compared to individual attributes of organizations. Furthermore, this framework distinguishes between the existence of relationships and the strength or quality of relationships that exist.

This dissertation is a process evaluation focused on the structure of a single network. The intent of this research is to inform a current academic debate regarding the value of networks as an organizational form for public management. The research will uncover the effect of relationship quality on the outputs of a single network.

**Introduction to Public Management Networks**

A central matter in the field of public administration today is how programs are implemented across jurisdictions and among the tiers of a federal system. Networks as a context for the delivery of public services has become widely acknowledged (Goldsmith

…public management is now about arms-length, indirect relationships, with dispersed and diverse entities rather than about the supervision of civil servants who are organized by agency and government by employment contracts.” (p. 3).

Similarly, Agranoff and McGuire (2003), say: “…the era of the manager’s cross boundary interdependency challenge has arrived, as has the world of working in the network of organizations” (vii). Many practitioners also note and accept that working with other organizations is increasingly common (McGuire, 2006).

Networks as an approach to delivering public services, beyond the use of traditional bureaucracies, appears to emerge as a consequence of managerial, fiscal and social realities facing the public sector over the past 20 years. The National Performance Review (NPR) (Gore, 1993) called for restructuring the bureaucracies of federal agencies and increasing collaboration and partnerships with other agencies as methods to create a more responsible government (Kettl, 1994). Bureaucracy is defined here as Max Weber did so long ago. Bureaucracy has four features: (1) division of labor, (2) well defined hierarchy (3) systems and rules governing the rights of those employed, (4) procedures for how to do work, (5) impersonality, and (6) promotion based on merit (Starling, 2008, p. 308).

“Banishing bureaucracy,” (Osborne and Plastrick, 1997), New Public Management (NPM) and Reinventing Government, in addition to NPR, is siren songs for
the identification of organizational forms, other than bureaucracy, that will improve the quality of public programs. Central to all of these movements is a belief that bureaucracy limits the responsiveness, efficiency and effectiveness of the public sector (Fesler and Kettl, 1996). For instance, NPM’s suggests government should “steer not row,” by increasing the role of third parties in government (Milward and Provan 2003). All of these movement share a common goal of identifying means by which bureaucracies could become decentralized (less hierarchical), and increase flexibility (speed of response and autonomy). One outcome of these movements is increased attention to networks.

In addition, concurrent with the NPR movements was another movement to coordinate the affairs of local governments. New Regionalism is focused on coordinated central-city and suburban development and planning (Wheller, 2002). New Regionalism proposes a means for organizing that incorporates fragmented local governments into a cohesive metropolitan unit (Wheller, 2002). Frug (1999) suggests that cities, as a function of their historical struggle to gain sovereignty had ignored the ecological principals that govern how people, live, work and play. Frug (1999) describes a “situated” city as one that governs from the perspective that multiple nodes (units of government within a region) must coordinate their activities in order to meet the demands of constituents.

A network approach to public sector service delivery is an intersection of the trends of Reinventing Government and New Regionalism. Isset et. al. (2011) claims, “network studies…are a response to a new administrative reality driven by social, political and economic forces” (p. 160). Hale (2011) states: “modern public
administrators now operate…in an environment filed with networks” (p. 10). Implied in all of these calls for government networks is the belief that networks, as compared to traditional bureaucracies, can do something that individual organizations could not do alone.

The next section of this chapter elaborates on what networks are. Following the next section is further discussion of the potential of networks to do more than individual organizations’ can alone.

**Networks**

Networks, as defined earlier, can simply be described as:

…a more or less stable pattern of social relations between mutually dependent actors, which form around a policy, program, and/or cluster of means and which are formed, maintained and changed through series of games (Kickert et al., 1997, p. 6).

This broad definition highlights three important aspects of networks:

1. Networks are composed of multiple nodes
2. The multiple nodes are dependent upon one another.
3. Networks are formed without the hierarchy typically associated with bureaucracy.

Within this broad definition lie many types of networks or governing arrangements.

What makes the conceptual study of networks difficult is that often the genus, networks, is confused with the many species, types of networks. For instance, many scholars note the term network is often used interchangeably with other terms including: collaboration,
partnerships, and coordination, among others (Isset et. al., 2011; Mandell 2001). Huxham (2000) states:

...even the most basic terminology is subject to varied interpretation and there seems to be little agreement over usage of terms such as ‘partnership,’ ‘alliance,’ ‘collaboration,’ ‘network’ or ‘inter-organizational relations’. (p. 402).

Similarly, Mandell and Keast (2009) explain:

...the term network is used to broadly denote the various ways in which organizations might work together, from arrangements that are merely loose, temporary arrangements to those that are much more complex and enduring. (p.4).

However, the authors go on to suggest that the broad ways in which networks are referred obscures important aspects of networks that make them different than individual organizations. The factors that make networks different than individual organizations are a function of the type of network that is created, specifically the strength of the relationships that exist within the network. The authors go on to review several articles that claim to study collaborative networks but suggest that most often these networks are not actually collaborative.

For this reason, in the dissertation the term network is used to refer to the genus, a major subdivision of organizational arrangements that may exist. Species is term that distinguishes the types of networks that may exist. A goal of this dissertation is to provide conceptual clarity about species of networks. Species of networks include cooperation, collaboration and coordination (Keast et.al, 2007). These are types of networks, distinguished based on the quality of relationships that exist among network
members. Extant research on public management networks does not differentiate networks on relationships; most differentiate network based on purpose.

Networks, the genus, can vary in structure, size, complexity and purpose (O’Toole and Meier, 2004). Networks may be formal, created through a grant, charter or contract (Hale, 2011), or informal. Informal networks may exist around a specific policy or program, commonly called a “policy network” (Kickert. et. al, 1997) or more simply be the result of relationship patterns overtime. Agranoff (2003) examines 12 networks, and provides a typology of them based on the purpose each network serves: creating information, sharing information and pursuing action on an issue area. Milward and Provan (2006) also offer a typology of networks based on purpose. The authors offer four different types of networks: implementation networks, information diffusion networks, problem solving networks, and community capacity networks.

The network of interest in this dissertation is what Agranoff (2007) defines as a public management network. A public management network is: “intergovernmental entities that emerge from interactions among formal organizations” (p. 3). Public management networks are characterized by the relationships of official actors (formal organizations). Official actors are those “... involved in public policy because they are given responsibilities in laws or in the Constitution, and they therefore have the power to make and enforce policies” (Birkland, 2001, p. 52). The bureaucracy is an official actor, because the legislative, executive and/or judicial branches provide them a role. Bureaucrats may have clearly defined roles and objectives as part of a network or their
roles and objectives may be more ambiguous (Chubb and Moe, 1988). Also, the formal actors of the network are autonomous agents acting on behalf of their individual organizations. The network studied may also be characterized as what Provan et. a. (2007) calls a whole network. A whole network is a bounded network, in which the purpose of the network is clear. Provan et. al. (2007) defines a whole network thus:

A group of three or more organizations connected in ways that facilitate achievement of a common goal…formally established and governed and goal directed rather than occurring serendipitously (p. 482).

The authors go on to describe the relationships that exist among organizations in a whole network as:

…primarily nonhierarchical, and participants often have substantial operating autonomy. Network members can be linked by many types of connections and flows such as information, materials financial resources, service and social support. Connections may be informal and totally trust based or more formalized, as through contract (p. 483).

**The Debate: Why Networks?**

Since public management networks have gained in popularity several rationales for their purpose have been purported, including: (1) acquiring resources, (2) solving the complex problems of modern society, and (3) building capacity through social capital. The resources needed to fulfill government’s contract with society are limited. Agranoff and McGuire (1998) argue, devolution and fiscal austerity demand that governments work together. They state:

Since the 1980’s, there has been a shift in intergovernmental action toward the states….Meanwhile, local jurisdictions find themselves facing less intergovernmental financial assistance and more regulation…” (p. 2).
Organizations’ in conjunction with each other have been assumed, and often demonstrated, to be able to either pool or generate more resources than a singular entity. For instance, May and Winter (2007) find the need for resources to be related to the adoption of networks. Other academics have postulated and identified a similar relationship between the need to acquire resources and the adoption of networks (Feiock, 2005; Lubell et. al., 2002).

In addition to the need for resources, many suggest that networks are a necessary governance structure for solving the “wicked problems” of modern society. Weber and Khademian (2008) explain, wicked problems are: (1) “unstructured” (p. 336), meaning difficult to identify and model, (2) cross typical organizational boundaries and/or policy domains, and are (3) relentless. Others have described wicked problems as the unmet challenges of public administrators (Bommert, 2010). Wicked problems, many argue, are best addressed through a network. A network provides diffuse decision making, broad authority, flexibility and timely responses (Agranoff and McGuire, 2003). Quite explicitly, Clarke and Stewart (1992) assert, “wicked problems cannot be dealt with as management has traditionally dealt with public policy” (p. 2). Ostrom and Ostrom (1971) argue that “the best structures for satisfying individual preferences are not centralized bureaucratic agencies, but rather more fragmented, multi-organizational arrangements” (in Denhardt and Denhardt, 2009 p. 175).

Another rationale given for the need for networks is that of capacity building. Capacity is the ability to raise capital and then turn capital into action. Cigler (2011)
defines capacity even more simply as: “...the ability to do what is needed and wanted” (in Menzel & White, p.321). Kettl (2002) suggests the greatest limitation to government is capacity. One source of capacity building is social capital (Foley and Edwards, 1999). Social capital is concerned with the “value of connections” (Borgatti and Foster, 2003, p. 993). Connection, social capital scholars explain, weaves together the disparate resources of society creating greater capacity (Putnam, 2000). Simply, a network may create more than the sum of its parts. For instance, Tsai (2002) finds divisions of an organization are more successful in their individual goals when they have more connections to other divisions.

Goldsmith and Eggers (2004) note all three of the rationales for networks just summarized in their seminal text on networks. The authors’ explain: “the traditional, hierarchical model of government simply does not meet the demands of this complex, rapidly changing age” (p. 7). They suggest networks have the potential advantages of: specialization, innovation, speed and flexibility and increased research” (p. 28-38). In turn these advantages have been thought to, as described, increase resources, overcome complex problems and build capacity for public sector organizations.

While such rationales have been accompanied by academic research demonstrating these valuable attributes of networks to oft exist, some have begun to question the positive impact of networks. Are networks’ popular attributes over studied and their negative attributes disregarded? Is there a possible bias in research on networks because they have so many positive attributes?
Do Networks Work?

Many suggest networks are an improved organizational form, as compared, to traditional bureaucracies. However, some claim the advantages of networks may be too highly regarded and their negative aspects understudied. May and Winter (2007) state:

Two key presumptions underlie collaborative arrangements. One is that they enhance service provision by some combination of reducing costs, increase efficiency, fostering innovation, and enhancing flexibility. A second is that on balance collaboration leads to better service outcomes. (p.1).

May and Winter (2007) assert that these assumptions have often been taken as “truisms.” However, they question the validity of these assumptions. Do networks really have a positive impact? Similarly, O’Toole and Meir (2004) state: “Networks, in short are viewed as ways to improve programs” (p. 682). However, the authors suggest factors that affect network performance such as the politics of networks have been overlooked. They explain:

…the production-focused and partnership-framed perspective obscures political themes with their distributional aspects instead emphasizing managerial requisites generated in and for such arrays. (p. 682).

The implication of their analysis is this: Networks may not have the positive impact that has been previously described. Grubbs (2000) articulates the issue this way:

While relationships between diverse groups certainly are not new phenomena we have come to recognize that an agencies capacity to achieve public outcomes depends upon its ability to establish meaningful effective relationship with other institutions for governance. Practical experience, however, makes it clear that although collaboration within and among organizations continues to be a stepping stone for success, it should never be taken an as a small step. Agencies involved
in, or searching for partnerships in the governmental and nongovernmental sectors face a myriad of challenges along their respective paths to collaboration. (p. 275).

Similarly, network scholar Mark Lubell (2004) states:

Collaborative institutions of some type are now operating in almost every federal and many state agencies …Yet, there is still a hot debate about the ability of collaborative institution to actually build consensus, encourage cooperative behavior and improve …outcomes. (p. 549).

In all of these discussions, the lack of conceptual clarity about networks and species of networks, such as collaboration is present. Implicit to this lack of conceptual clarity is the issue of what makes a network effective? Are all networks effective, or do certain attributes of the network make it effective? These are essential questions to answer in order to close the debate surrounding the value of networks to society.
This research seeks to address a tension in the current literature on networks in public management: do public management networks create value for the constituents they serve? The answer to this debate lies in research that evaluates the effectiveness of networks. If networks are effective, they will create value for society, there is no reason to question their role in modern governance. However, the discovery of ineffective networks will fuel careful review and revision of the network form for use in the public sector. The main issue in regard to measuring the effectiveness of networks is measuring the extent to which they are actually collaborative. The next section of this chapter will document this trial.
Network Effectiveness and Whole Networks: The Answer to the Debate

One approach to the disconnect between assumptions made about networks and empirical evidence demonstrating the positive impacts of networks is to focus on network effectiveness (Provan et. al., 2007; Mandell and Keast 2009, Bardach, 1998;). Bardach (1998) says the question that should be asked about networks is not whether networks exist; but rather do networks increase the public value beyond the value of a single agency? Should networks be effective than they are truly a fresh way to approach governing. If they are not effective or create more new problems then they solve then their value to society is limited and their perpetuation should be brought to its tenure.

Despite the call for research that evaluates network effectiveness, much of the literature is fragmented by discipline. Furthermore, the lack of conceptual clarity that surrounds the term networks trickles down to the literature that evaluates effectiveness. Moreover, effectiveness of government agencies is often difficult to conceptualize and measure (Hill and Lynn, 2009). For all of these reasons further analysis of network effectiveness is warranted.

Provan and Milward (2001) argue that network effectiveness is a difficult to measure and comprehensive concept (Provan and Milward, 2001). Effectiveness generally refers to the fulfillment of goals (Hill and Lynn, 2009). However public sector goals are not always easy to measure, and the ability to achieve those goals are not always entirely within the domain of the work of public managers (Hill and Lynn, 2009). Furthermore, measuring effectiveness is difficult as the work of the network is often
diffused among the organizations that comprise the network (Hale, 2011). Also, some networks may create outputs that are not directly related to meeting the goals of the network. Keast et al. (2004) explains:

The difficulty is that the types of results that occur through network structures do not have to do with generating programs or numbers (although that is part of the secondary results), but have to do more with changing relationships and perceptions, which are much more intangible. (p. 367).

Most scholars that have conceptualized network effectiveness, similarly, conceive effectiveness to be a function of multiple factors, including relationships. Provan and Milward (2001) provide an exploratory model for examining effectiveness from three distinct levels of analysis: the community, the network, and the organizational levels. The three levels of analysis approach is a conduit between the autonomous agents of the network and the broad community that a public management network serves. The purpose is to capture effectiveness from multiple perspectives in order to mirror the multiple agents and constituencies of a public management network as well as capture the intangible factors that may be created from working in a network context.
### Figure 3: Multitple Measures of Network Effectiveness

Adapted from Provan and Milward (2001, p. 416)

<table>
<thead>
<tr>
<th>Levels of network analysis</th>
<th>Key stakeholder groups</th>
<th>Effectiveness criteria</th>
</tr>
</thead>
</table>
| Community                  | • Principals and Clients  
• Client advocacy groups  
• Funders  
• Politicians  
• Regulators  
• General Public | • Cost to community  
• Building social capital  
• Public perceptions that a problem is solved  
• Changes in the incidence of the problem  
• Aggregate indicators |
| Network                    | • Principals and Agents  
• Primary funders and regulators  
• Network administrators  
• Member organizations | • Perception of member commitment to the network goals  
• Range of services provided  
• Creation and maintenance of core administrative agency  
• Network membership growth  
• Relationship strength  
• Absence of service duplication  
• Integration/coordination of services |
| Organization/Participant   | • Agents and Clients  
• Member agency board and management  
• Agency staff  
• Individual clients | • Agency survival  
• Enhanced legitimacy  
• Resource acquisition  
• Cost of services  
• Service access  
• Client outcomes  
• Minimum Conflict |

In the above figure, the community level examines the effects of the network on the constituents it serves. The network level is focused on relationship strength and maintenance of those relationships. The organizational level explores the impact of the network on the organizations’ within the network. This model is similar to a statement by
Agranoff (2005) who suggests that network effectiveness should be measured multiple ways, including, individual gains, organizational gains and collaborative gains. Individual and organization gains, Agranoff (2005), conceptualizes similarly to the Provan and Milward (2001) model. Collaborative gains are those related to the process of relationship building and are similar to the network level criteria in the Provan and Milward (2001) model. The multidimensional approach to the evaluation question focuses on the many different constituencies a network serves, ranging from the broader public to the more narrow interests of the individual organization that serve in the network. However, the dissertation will focus on the effect of the network as a whole.

While a multi-dimensional analysis of effectiveness may be interesting, some argue, that it is not completely necessary. Instead, networks should be evaluated only at the network level of analysis. Mandell and Keast (2009) argue that network performance is a function of inter-organizational relationships; therefore, the relationships are what matters. Networks are promulgated on the assumption that working in a joint up way with other organizations serves a purpose, as explained in a previous section of this chapter. Mandell and Keast (2009) explain the concept thus:

…networks are a unique type of arrangement, in which interpersonal relationships are a core component and therefore in order for performance measures to be useful, they must be able to identify the true nature of the relations to get at these distinctions. This is because the main purpose or function of a network is to link members to their resources, facilitate joint action and learning and, in doing so, gain leverage from these collective interactions to respond in new and innovative ways to issues. (p. 716).
Effectiveness, the authors explain, is an innovative response, created by leveraging the relationships that are created when operating in a network context. Keast et. al. (2004) explain the most important benefits of a network context are “…relationship building, innovative operating procedures, and community inclusion” (p. 370). Similarly, Gray (2000) suggests that a key outcome for networks should be the creation of relationships, and measuring the extent to which relationships facilitate joint action and learning.

**Figure 4: Definition of Network Effectiveness**

<table>
<thead>
<tr>
<th>Network Effectiveness</th>
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</thead>
<tbody>
<tr>
<td>The extent to which a network “…link members to their resources, facilitate joint action and learning and, in doing so, gain leverage from these collective interactions to respond in new and innovative ways to issues” (Mandell and Keast, 2009, p. 716).</td>
</tr>
</tbody>
</table>

The purpose of this research is to examine the effectiveness of one network with a focus on network level factors, inter-organizational relationships (structure). The research will evaluate relationships in a network to provide conceptual clarity about the types of relationships that affect the work of the network (outputs).

**Research Questions & Thesis**

**Research Question One:** What are the distinctive characteristics of the structure of the network that carried out the activities of the Southern Nevada Public Lands Management Act?

**Research Question Two:** To what degree can the network studied be characterized as collaborative?
Research Question Three: To what extent do structural characteristics of the network context have an effect on the outputs of the Southern Nevada Public Lands Management Act?

Research Question Four: Was the Southern Nevada Public Lands Management Act effective?

The central theses of the dissertation is – The structures of the network, the relationships that are created define the species, of the genus, network and the species of the network, strength of relationships that are created, affect the work of the network.

Answering the Call

This dissertation seeks to answer the current call to research the effectiveness of whole networks. I provide a case study of a public program implemented in a network context. The framework for examining the network is structural. Like an organizational chart provides information about the organization, a picture of a network will too provide information about the network. The central theme of this dissertation is that structural relationships among organizations working in a network context will impact what the network does. Provan and Milward (2001) claim:

What has been lacking in most of this work [scholarship on networks]…is an examination of the relationships between inter-organizational network structures and activities and measures of effectiveness. (p. 414).

A structural framework will clarify relationships among organization in a network and will then be used to measure the influence of those relationships on the outputs of the network.
To construct the analysis, qualitative and quantitative data were drawn from the implementation of a public program. Implementation of the program was designed to include multiple agencies in a network context. Data were collected about the roles, positions and dependencies (network structure) of each agency in the network. Effectiveness of the network is assessed by analyzing the extent to which the relationships affected the work of the network.

One note, the context in which the program is implemented is not the only way the term “network” is used in this dissertation. Network analysis is also discussed in the dissertation. Network analysis is an analytical tool to explore networks. Network analysis is a visual and analytical tool to represent organizations (or individual actors) in relation to other organizations (Hannerman and Riddle, 2005). Network analytical software provides an illustration of the network structure. Network analytical methods seek to uncover and quantify relationships. Like a chemical compound each network is classified by its elements and elements connection to other elements. The structure of the elements is fundamental to the compounds properties.

**Figure 5: Definitions of Network Context and Network Analytical Methods**

<table>
<thead>
<tr>
<th>Network Context</th>
<th>Network Analytical Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The process of facilitating and operating in multi organizational arrangements to solve problems that cannot be solved, or solved easily, by single organizations” (Agranoff and McGuire, 2003, p. 4).</td>
<td>Social network analysis is emerged as a set of methods for the analysis of social structures. Network methods focus on relational aspects of social structures, as compared to attributes. (Scott, 1992)</td>
</tr>
</tbody>
</table>
Finally, Logistic Regression analysis is used to test the extent to which agencies roles, positions and dependencies (structure) can be used to explain the outputs of the network studied.

**Overview of Chapters**

The purpose of the dissertation is to ask a fundamental question about networks: are they effective? The purpose for asking this question is presented in this chapter. Essentially, there is a tension in the current literature regarding the value of networks to the practice of public administration. Scholars suggest that when organizations or people come together to achieve a common purpose there are many mutual benefits (Goldsmith and Eggers, 2004; Weber and Khademian, 2008; Isset et. al., 2011). In contrast, some suggest that networks, as collections of individuals and or organizations working together, have inherent political attributes that may create more problems than they solve (May and Winter, 2007). The answer to this debate lies in understanding network effectiveness. For instance Provan and Milward (2001) state:

> Evaluating network effectiveness is critical for understanding whether networks-and the network form of organizing – are effective in delivering needed services to community members (p. 414-415).

This chapter describes how network effectiveness has been measured in past public management literature. I then present an argument to measure effectiveness at the network level of analysis with a specific focus on the nature of relationships within the network. The quality of relationships is a key component to network effectiveness and the key to network performance.
Chapter 2 reviews several literatures that define and refine the importance of structural aspects of networks and relate them to performance. Three academic literatures are reviewed: intergovernmental relations, networks management and public management collaboration. These literatures provide the theoretical foundations for the network context for public service delivery. The intergovernmental relations literature provides a wealth of theoretical and empirical information about how organizations relate to each other. The networks literature provides a basis for examining structure, measures of structure and a rationale to further explore structure as it relates to effectiveness. Finally, the emerging literature on collaboration in public management is discussed. The reason for collaboration and the necessary conditions for collaboration are noted. Collaboration is revealed as the key attribute of network relationships. Chapter 2 concludes with several propositions regarding the effectiveness of network as a function of their structure.

Chapter 3 begins with a discussion of the case of interest. The case is a network of federal, regional, state and local agencies that have been given the authority to spend public funds to build parks, trails, and natural areas in Southern Nevada. Over ten years the network has nominated 365 projects, parks, trails, and natural areas for funding. Then an outline of the research design, approach, data and methods are presented.

Chapter 4 presents and interprets qualitative and network analytical methods data. The data is used to identify the key components of the structure of the network.
Chapter 5 presents two models to test the extent of network structures effect on the outputs of the network.

Chapter 6 presents a discussion of the findings of the research, identifies the implications and uses for this research and sets forth recommendations for future research.

**Figure 6: Overview of Dissertation**

![](image)

**Limitations of the Study**

The study uses a single case study approach for understanding the effect of network structure on one network’s performance. Single case studies limit the generalizability of the research findings. However, the intent of the dissertation is to identify elements of a network that are generalizable to all network and identify impacts
of these elements. Furthermore, while this case is limited in its generalizability, rarely are so many funds made available to local governments for conservation efforts, the model of federal, state, regional and local governments producing joint-decisions is increasingly being called for. Therefore, examining the joint decision process used in this case can provide information about the process and the effect of the process on outcomes from organizations, networks and constituencies of networks.

**Practical and Theoretical Contributions**

The dissertation provides research to add to an ongoing academic as well as practical debate: do networks, as an organizational form provide services to their constituents well? In order to inform this debate, a research design is adopted to focus on one networks structure, and evaluates effectiveness of a public management network based on the quality of relationships that exist within the network. The research generates knowledge to inform both practice and theory about networks in public management.

In regard to practice, the knowledge generated here is useful when adopting complex systems, such as networks for providing government services. The analysis informs practitioners of the hazards and advantages of particular network structures.

In regard to theoretical contributions, this dissertation offers a systematic analysis of relationships in a network. Multiple methods of data analysis are used to offer validity to the findings. Many theorists have discussed relationships in networks, and scholars have examined the existence of relationships in networks, but there is not a great deal of analysis that examines the quality of relationships and their effect on the network.
Finally, the dissertation provides conceptual clarity for several terms that are currently ambiguous in the literature including: networks and collaboration.
2. A Review of Literature Related To Characterizing Inter-Organizational Relationships and Inter-Organizational Relationships Impact on Effectiveness

Overview

Chapter 1 suggests that networks are a form of organization that can provide resources to overcome the complex problems public administrators face in the process of delivering services. Network arrangements are in contrast to traditional forms of bureaucracy. Therefore the evaluation of these forms requires different evaluation standards. Network effectiveness, as noted in Chapter 1, is a function of inter-organizational relationships, the species of the network.

This chapter reviews three related literatures: intergovernmental relations, networks, and collaborative public management. The intent of the review of literature is to identify how and where these literature converge on the underlying theme of the dissertation: inter-organizational relationships impact the effectiveness of networks. Each of these literatures has contributed a wealth of knowledge regarding: (1) types of relationships that can exist and (2) how relationships affect the work of public sector entities. These literatures warrant the refinement and approach taken to analysis in this dissertation.

Intergovernmental Relations

“Intergovernmental relations are the interaction and interrelationships between levels and units of government in a complex multilayered (federal) system of government” (Stephens and Wikstrom, 2007, p. 1). Scholarship on intergovernmental
relations (IGR) often examines the funding relationship among the tiers of the federal system (Wright, 1988). However, IGR scholarship is also concerned more generally with relationships among governmental agencies. The purpose of reviewing the IGR literature is to identify how these scholars characterize relationships among government agencies and what effect different types of relationships have on the outcomes of government administration.

Denhardt and Denhardt (2009) suggest that the United States early intergovernmental history lasting through much of the 20th century is characterized by dual federalism. Dual federalism describes a system of intergovernmental relationships in which each tier of the federal system is concerned with defining and expanding their own sovereignty. Denhardt and Denhardt (2009) go on to explain, that dual federalism in the United States, resulted in “very little intergovernmental cooperation – indeed, there was substantial conflict” (p. 86).

The turn from dual federalism towards a more integrated system of governing, is cited to have occurred during the public program build up, engineered by President Roosevelt, during the Great Depression (Denhardt and Denhardt, 2009). The Federal Emergency Relief Administration, Works Progress Administration, and the Social Security Act, are all cited as Acts in which the federal government worked in conjunction with states and local governments. Denhardt and Denhardt (2009) describe intergovernmental relations, during this time period, with a metaphor about marble cake (2008, p. 87); a mix of federal, state and local action. Gais and Fossett, (2005) explain,
the tiers of the United States federal system have become “inextricably intertwined and overlapped” (p. 486).

Today, a dominant metaphor for intergovernmental relations is the overlapping authority model. The overlapping authority model holds that agencies use the arenas in which they have sovereignty, to control arenas in which they do not. Liebschutz (1991) describes the system this way:

The federal system is neither a tidy set of separate governments performing separate functions in isolation from each other, nor hierarchical arrangements in which the federal government dominates neither the states, nor the states dominate the localities. Rather, the system is composed of thousands of separate governments, overlapping responsibilities, shared power and multiple access routes where opportunities for change arise repeatedly. There are increasing layers of organizational interdependence… (p.1).

Beer (1978) asserts the importance and truth of this model stating: “…more important than any shifts of power or function between levels of government has been the emergence of new arenas of mutual influence among levels of government” (p. 30). The overlapping authority model is model of relationships between the tiers of the United States federal system, which suggests that all inter-governmental relationships are meaningful and consequential for the work of public management.

A dominant characterization of relationships in intergovernmental relations is that of “exchange” relationships. Stephans and Wikstrom (2007) explain, the system of overlapping authority disperses power widely. Widely dispersed power, makes each entity apt to bargain and or negotiate with other entities, exchange. One organization will exchange their power in one realm to gain power in another. Rather than conflict, or
using power to control another entity, jurisdictions resolve issues through exchanges. Wright (1978) suggests IGR is characterized by “bargaining.” Entities make transactions with each other based on the recognition of others power in future disputes as well as current disputes (Anton, 1989). Exchanges have also been called “mutual adjustment” (Agranoff and McGuire, 2004 p. 295 in O’Toole, 2006), and “negotiated settlements” (Wright, 1998 in O’Toole, 2006).

Scholars of IGR have divergent opinions on the effect that overlapping authority has had on the services of government. The classic case study of implementation in an intergovernmental context by Pressman and Wildavsky (1974) demonstrated that overlapping authority often caused delays in action as one unit waited on another to act. This frustration and delay is similar to that described in an investigation by The United State Senate and United States House of Representatives following Hurricane Katrina. In a national report (2006), several of the 186 findings detail failures that were a result of overlapping authority. For instance.

14. Confusion ambiguity and uncertainty characterized the perceptions of the Army Corps of Engineers, the local levee board and other agencies with jurisdiction over the levee system of their respective responsibilities, leading to failures to carry out comprehensives inspections, rigorously monitory system integrity or undertake needed repairs. (p. 590).

176. The National Response Plan lacked clarity on a number of points, including the role and authorities of the Principal Federal Official and the allocation of responsibilities among multiple agencies under the Emergency Support Functions, which led to confusion in the response to Katrina. (p 604).
Another description of how overlapping authority can affect government performance is cooption. In *TVA and the Grass Roots* (Selznick, 1949) the Tennessee Valley Authority (TVA) had clear goals (regional planning and resource development). However, when the TVA interacts with other area organizations the TVA begins to cede its original goals in order to placate the goals of other organizations. The process of cooptation is defined as “the process of absorbing new elements into the leadership or policy determining structure of an organization as a means of averting threats to its stability or existence” (p. 13). The effect of cooptic relationships is a discrepancy between the originally established goals and the outcomes of the program.

Another negative view of the effect of intergovernmental relations in a federal system is offered by Schrapf (1988). Schrapf describes the “joint decision trap.” When different levels of government make joint decisions, if one tier of the system is unhappy with the decision of another tier they can veto the others’ decision. More simply put, joint decision making requires unanimous approval; however, unanimous approval does not necessarily mean the best option is chosen. The result, Schrapf (1988) discovers in a case study in Germany, is poor performance, a failure to make the best decisions in favor of the decisions that everyone accepts.

Another description of relationships in a federal system is competition. Overlapping authority creates a need to assert authority and gain control. The result is competition. For instance, in a classic article by Tiebout (1956) the author suggests that
localities compete for citizens by offering distinct but similar bundles of services. The self-interested motive of capturing constituents creates competition.

In contrast, many scholars note the propensity of our intergovernmental system to improve government services to the public. Probably the most significant of these arguments was written by James Madison in the Federalist 46. Following the failure of the Articles of Confederation, Madison and other leaders of the time argued for a federal system because it would help to serve people while simultaneously providing for their protection. Seroka (1990) suggests the intergovernmental system provides for personal interests by overcoming distributional inequities. For instance, rural areas may have fewer governments, less revenue, and unprofessional administrators. Seroka (1990) finds the intergovernmental system provides aide to disadvantaged areas.

IGR can also lower the costs of services to constituents. For instance, interlocal service arrangements, voluntary arrangements between governments to share service provision, have been shown to reduce the costs of service delivery (Carr, Gerber and Lupher, 2009). Meir and O’Toole (2004), in a large scale study of school districts in Texas, found that superintendents who regularly interact/“network” with other superintendents were more likely to have higher scores on a range of performance measures for the schools under their direction. The authors suggest more connections to other governmental agencies creates more opportunity for reaching individual goals. Grodzins (1966) summarizes this argument:
It is a story of growing expertise; growing professionalization, growing complexities; it is a story most of all, of an ever increasing measure of contact between officials of the several levels of government within the federal system. (p. 502 in Agranoff, 2001).

All of the above authors identify IGR as a defining and critical feature of American public administration. Some identify positive aspects, including economies of scale and scope, through the combined capacity of many organizations working towards the same goal. Others note the more vexing issues created when multiple agencies with divergent interests must work together. What the intergovernmental relations literature most clearly demonstrates is that different relationships can exist and these relationships have consequences for government performance. However, the intergovernmental relations as a description of how government units relate has fallen out of vogue recently because it tends to focus on divisive relationships instead of more useful relationships. Agranoff and Mcguire (2004), explain “the sheen of network management is brighter today” (p. 443). The authors go on to argue that the vertical and horizontal activity among governments, intergovernmental relations, has become the focus of public management network studies. IGR, they say has come to represent conflicts between governments rather than a system of team work. In contrast, a networks perspective has the “aura of collaboration” that is currently in vogue in public management. Implicit to this argument is the belief that collaboration is the species, the type of relationship, which is necessary for government to improve the services they offer constituents.
Collaborative Public Management

Collaboration is a type of relationship that may exist when organizations work together to meet a similar goal. Collaboration may simply be defined as “to work together jointly” (Merriam-Webster, 2009), or “co-labor” (O’Leary et. al., 2006).

Bardach (1998) describes collaboration as “Any joint activity by two or more agencies that is intended to increase public value by working together rather than separately” (p. 8).

Most often collaboration is described as a process. For instance, collaboration is when organizations are “Engaged in entirely new domains of organized action that themselves process inputs into output that transcend the individual member’s contribution” (Mandell, 1994, p. 112). Thomson (1998) describes collaboration as,

A process in which autonomous actors interact through formal and informal negotiation, jointly creating rules and structures governing their relationships and ways for actors to decide on the issues that brought them together; it is a process involving shared norms and mutually beneficial interactions. (p. 83).

Gray (1989, 2000) describes collaboration as process in which different parties explore solutions that go beyond their own limited vision. More recently, authors from Maxwell School at the University of Syracuse. Have defined collaborative governance as:

…the processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished. (Emerson et. al., 2011, p. 2).

All of these definitions share many similarities.
Most significantly collaboration is a complex process; it requires multiple agents and the development of relationships. Emerson et. al. (2011) describe the process as composed of three “collaborative dynamics.” Collaborative dynamics are the antecedents to collaborative action. Collaborative dynamics are the necessary conditions for collaboration to happen. Collaborative dynamics include:

1. principled engagement,
2. shared motivation and the
3. capacity for joint action (p. 6).

Principled engagement is the act of including actors in the network as well as providing them a role in the initiative without creating power differentials. Shared motivation is the recognition of need that each organization has to have for the other organization in order to create collaboration and a communal sense of the issue. The capacity for joint action is the complex interactions, including joint decision making and co-laboring that agencies may engage in, in order to deliver on the shared goal.

Collaboration, as explained in Chapter 1 is the process that makes intergovernmental relations effective. It is the process by where individual goals are transcended in favor of collective goals and when new and innovative solutions can be generated. Thomson and Perry (2006) explain the concept this way:

A defining dimension of collaboration that captures both the potential dynamism and frustration implicit in collaborative endeavors is the reality that partners share a dual identity: They maintain their own distinct identities and organizational authority separate from a collaborative identity. This reality creates an intrinsic tension between organizational self-interest—achieving individual organizational missions and maintaining an identity distinct from the collaborative—and a
collective interest—achieving collaboration goals and maintaining accountability to collaborative partners and their stakeholders. (p. 5).

Collaboration is about producing action that supplants self-interests with collective interest. Collaboration is a product of a process that transforms individual interests into collective interests. Collaboration is the construct that links a network context for service delivery to effectiveness.

**Figure 7: Definition of Collaboration**

<table>
<thead>
<tr>
<th>Collaboration</th>
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<tbody>
<tr>
<td>A process by which principled engagement, discovery of shared goals and collective action occurs and results in an action that is markedly different than what one organization could produce alone. (Based on Emerson et. al., 2011 and Mandell and Keast, 2009)</td>
</tr>
</tbody>
</table>

Collaboration is different from other types of organization including: coordination and cooperation. Mandell (1994), a collaborative public management networks scholar, offers a characterization of networks based on the types of relationships that are had within them. The relationships can be seen on a continuum from weak to strong, with the main variable, differentiating networks on the spectrum, being the “degree to which the individual members remains separate and autonomous, or, form a new, combined unit for long term change and interaction” (p. 280).

Weak relationships are those where members have loose linkages, their actions are “simultaneous or coordinated” (p. 280). Each unit acts independently and operations within each organization does not differ drastically from those they usually undertake. At the other end of the continuum are networks with tight linkages. Tight linkages mean the
organizations in the network are committed to major system changes. Similarly, Keast et. al. (2007) suggests there is continuum of networks types based on the three “c’s:” cooperative, coordinative and collaborative.

Cooperative networks are composed of relationships that are developed to share information and expertise among independent actors. Interaction is limited. One example is social workers that share routine information about methods and practices for dealing with clients (Mandell and Keast, 2009).

Coordinated networks are said to be focused on the efficient delivery of services (Mandell and Keast, 2009). Each organization in a network is expected to maintain its own individual interests and goals (Kickert et. al., 1997). However, coordinated networks go beyond just sharing information (cooperation). The actors interact. For instance, in the work of Provan and Milward (1995, 2001) on mental health care organizations, multiple organizations interact in order to identify the best way to treat all of the needs of a mental patient. But, coordination does not require that the goals or actions of the individual organization be displaced by the network goals or actions. It only requires that organizations engage with other organizations to meet the network goals in addition to their own goal. Coordination also does not require that the network actors co-labor (Mandell and Keast, 2009).
Both cooperation and coordination are in stark contrast to collaboration. As explained earlier, collaboration requires shared goals and extensive interaction among the component parts. Mandell (1994) describes collaboration thus:

\[\text{...in essence, the network itself is conceived as a management tool, and management techniques that make use of the network are utilized rather than techniques that just try to manipulate, coordinate, and/or otherwise maneuver through individual organizations. (p. 107).}\]

Collaboration, Mandell and Keast (2009) explain is what transforms network relationships into an innovative solution to complex wicked problems, the definition of network effectiveness offered in Chapter 1.

Cooperation, coordination and collaboration are species of networks. They are types of networks distinguished in the literature by the quality of relationships that are forged and maintained.

**Figure 9: Species of Networks Explained**

<table>
<thead>
<tr>
<th>Species of Networks</th>
<th>Degree of Relationship</th>
<th>Degree of autonomy maintained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperation</td>
<td>Low Interaction</td>
<td>Autonomy maintained</td>
</tr>
<tr>
<td>Coordination</td>
<td>Medium Interaction</td>
<td>Autonomy maintained</td>
</tr>
<tr>
<td>Collaboration</td>
<td>High Interaction</td>
<td>Autonomy is not maintained</td>
</tr>
</tbody>
</table>

Based on Keast et. al., 2007
As noted in this chapter, not all scholars differentiate between types of networks based on relationships. Mandell and Keast (2001) argue most scholars of public management networks ignore the existence of network other than collaborative. The dissertation seeks to provide a typology that integrates the species of networks with the structure of networks in order to differentiate networks based on relationships.

**Networks Management**

Networks management is concerned with structuring and developing the skills necessary to manage in a network context. Networks management, however, unlike collaborative public management does not specify the necessary conditions for collaboration to exist. Instead networks management provides a language and framework for identifying the parts of a network that exist. Said another way, collaborative public management is focused on the process of creating cognitive unity among plural actors. Networks theory is concerned with the existence of structural plurality (Klijn & Snellen, 2009). Like an organizational chart depicts the way an organization changes inputs into outputs, networks management is concerned with identifying the parts of a network that change inputs into outputs.

McGuire (2002) claims that increasingly the capacities required to operate successfully in network settings are different that those needed to manage a single organization. For example, O’Toole (1997) identified four factors differentiating management in networks:
The dominant paradigms used to explain public management are based on classic organizational theories, most specifically, that of bureaucracy. However, bureaucracy as a management paradigm is not easily applied to the multi-organizational, multi-governmental, and multi-sectorial forms of governing a network. Therefore, network management is a distinct from hierarchical management (Kettl, 1996a; Milward, 1994; O'Toole, 1997). To this, Frederickson and Smith (2003) argue that as government has become less hierarchical and more reliant upon other systems and structures for the delivery of public services, the study of public administration must shift towards the study of governance. Governance, is conceptualized here as “… a body of theory based on lateral relations, inter – institutional relations, the decline of sovereignty, the diminishing importance of jurisdictional borders, and a general institutional fragmentation” (Lynn, Henirich and Hill, 2002, p. 226). Networks management is concerned with providing effective governance. Public managers do not solely manage subordinates but, in networks, must manage across organizations. This literature attempts to describe and explain management across the organizations of a network.

Kickert et. al. (1997) state, networks management, “Is aimed at coordinating strategies of actors with different goals and preferences with regard to a certain problem of policy measures within an existing network of inter organizational relations” (p.10).
Coordinating, Kickert et. al (1997) explain is what makes networks management different from organizational relations theories. Networks management is not about managing survival in an environment in which other organizations simply exist but engaging with other organizations to meet a mutual goal. A networks management literature refers to two aspects of management: (1) games, facilitating coordination, and (2) structure or constitution of the network (Kickert et, al, 1997). Similarly, Goldsmith and Eggers conceptualize collaborative network as a function of two main phases: the design phase (structure) and the integration phase (games).

Network structure, as a management tool, is about creating and institutionalizing a system in which games may be played (Kickert. Et. al, 19997). The importance of network structure is widely acknowledged throughout the social sciences (Cohen, 1989). Network structure, creates the setting for the action, the “rules and resources recursively implicated in the reproduction of social systems” (Giddens 1984, p. 377). The rules and resources begin to tell the story of how organizations will relate to each other. The “Provan School” (Isset, et. al., 2011) of scholars researching networks in public administration, are focused on the structures of networks and have made significant progress demonstrating the agency of network structure to the understanding network effectiveness.

The framework used to describe network structure is a composite framework derived primarily from the tools of network analysis. The framework applied here is: roles, positions and dependencies (Galaskiewicz & Krohn, 1984; Borgatti, and Everret,
Roles, characterize the members of the network. For instance, in a traditional bureaucracy, one may delineate between a manager and line staff, as they have different roles in the activity of turning inputs into outputs. Similarly, organizations in a network may have various roles in the work of the network. Dependencies are a measure of the characteristics of the relationships that tie the organizations in a network together. Dependencies are fundamental to network structure. Kickert, et. al., (1997), explain the existence of dependencies, the recognition of dependencies and the management of dependencies are what makes networks different from other geneses of organizational forms. Last, position, classifies organizations in a network based on their relationships with other organizations in a network. The types of relationships (dependencies that are forged) create advantages or disadvantages to organizations. Position is a picture of the impact that diverse types of relationships have on the individual organization as well as on the network as a whole.

Roles

As network analysis is an emerging literature, there is little cohesion regarding the types of roles that may exist in networks. The current literature offers many typologies and concepts for exploration. Also, much of the work that has been done is specific to the networks that are studied and is not grounded in a larger theoretical conception of roles.

Despite lack of scholarly solidarity on the types of roles organizations serve in networks, an abundance of scholarship to date points to the importance of an
administrative organization or what Provan and Milward (2001) call a Network Administrative Organization (NAO). The NAO disseminates funds, administers the work of the network and coordinates the activities among the members of the network (Provan and Milward, 2001). The NAO may have formal or informal sanction to govern network activities (Provan and Kenis, 2008). NAOs have also been referred to as network brokers (Lawless and Moore, 1989 and Mandell, 1994). Kickert et. al. (1997) and Agranoff and McGuire (2001) more generally refer to leadership and or management of networks while network analytical scholars often refer to this concept as centrality. Centrality is a quantitative measure of the number of ties each organization has in the network. Greater ties are a measure of a central organization.

The importance of an NAO to the operations and performance of a network is rarely understated. Saz-Carranza and Ospina (2011), for instance, find that NAOs are critical to unifying the organizations of a network and coping with a fundamental tension of all networks, organizations that want to pursue autonomous interests while simultaneously achieving network goals. Provan and Milward (1995) and McGuire et. al. (2011), Moynihan (2008) too, provide evidence that suggests networks with centralized administration are more effective than networks with diffuse administration.

An NAO is quite explicitly distinct from other ways in which governance of network has been characterized. Specifically, an NAO is not to be confused with a lead organization. A lead organization has greater overall power in the organization which in turn gives them the right and or need to provide administration as well. A lead
organization is essentially a hierarchical or vertical attribute of a network as compared to a NAO which is part of the fabric of the network (Provan and Milward, 2007). A lead organization has power over some aspect of the networks operations. Hannerman and Riddle (2005), explain how network analysis has come to incorporate the idea of power, or political relationships into analysis, they state:

…the network approach emphasizes that power is inherently relational. An individual does not have power in the abstract, they have power because they can dominate others -- …Because power is a consequence of patterns of relations, the amount of power in social structures can vary (http://www.faculty.ucr.edu/~hanneman/nettext/C10_Centrality.html).

Marsden (1981) similarly describes power in relational terms, focusing on the constraints and possibilities created by an organization with power.

The existence of powerful lead organization is a detriment to the performance of a network. Etzioni (1961) suggests coercion from the top can alienate involvement of others and enable the creation of moral involvement (Tolbert and Hall, 2009). Provan and Kenis (2007) review several studies in which a lead organization takes a power in the network and find that most conclude that a lead organization hinders the effectiveness of the network. A lead organization hinders the effectiveness of a network because it weakens the condition of principled engagement. Principled engagement allows each member of the network to come to the table and take part in the network as they see fit. A lead organization uses power to coerce network members thus creating unprincipled engagement.
Other typologies of roles in a network have also exhumed in the literature. Linden (2010) defines the role of a champion in networks. A champion (p. 101) in a network is an organization that has influence and expertise in the policy arena of the network but does not necessarily have a high stake in the work of the network. Similarly, Crosby and Bryson (2005), both prestigious public management scholars, view champions as people and or organizations that use knowledge and or skills to advance and sustain the work of the network. The term champion in public management network literature is sometimes stated as a “sponsor” (Keast, et. al., 2004). A sponsor like a champion is an advocate for the network that has high degree of expertise but is not necessarily involved in the work of the network (Crosby and Bryson, 2005).

The role of a champion in a network is often considered integral to the effectiveness of networks. Crosby and Bryson (2005) claim networks are more likely to succeed when champion (and or sponsors) are committed and effective in their role of advocating for knowledge use in networks. In private sector management literature there is currently a move to recognize the importance of chief knowledge officers (CKO) (Jones, Herschel and Mosel, 2003). The CKO, like a network champion, is a warehouse of information and advocates for the use of that information in decision making. The authors call for greater awareness of the role of a CKO for the purpose of long term sustainable advantages. Waugh (2002) in a study of emergency management networks notes the importance of champions to the effectiveness of networks. Waugh (2002) too,
conceptualizes champions as: experts that champion for work to be done well in what is often complex and political environments.

Champions make networks effective because they are inclusionary, part of principled engagement. Networks that include champions do not limit the flow of information but increase the flow of information.

Roles are characteristics of individual organizations intended to classify the purpose that each organization serves in the action of meeting the goals of the networks. Roles describe the way in which organization come together and their interaction is facilitated, principled engagement. As explained, a characterization of roles, in the literature, is just emerging. However, three distinct roles have been identified along with literature to suggest their importance to the effectiveness of networks. An NAO is a distinct administrative organization that is critical to effectiveness. In contrast, a lead organization is a hierarchical organization within the network that because of the power differential has been demonstrated to be a role that often leads to network ineffectiveness. Champions (or sponsors) are organizations in the network with a high degree of expertise but who may or may not be active participants in the work of the network. Champions are critical to the effectiveness of the network as they improve the standards on which decisions may be made.

**Dependencies**

Dependencies are the ties that link organizations to other organizations in a network, the nature of the relationships that exist. Interdependency is when two or more
organizations must take each other into account if they are to accomplish their goals (Litwalk and Hylton, 1962). Therefore, interdependency is not just important to the network management literature but necessary for collaboration to exist.

Interdependency among organizations is a necessity for networks to exist and work (Kickert et. al, 1997). McGuire (2006) states networks are “joint situations in which more than one organization is dependent on another to perform a task” (p. 600). The very act of operating in a network necessitates the recognition of dependence that one organization has for another organization. Similarly, Salomon (2002) suggests there are four characteristics of a public management networks:

1. Pluiformity – Diverse agencies and organizational types;
2. Self-referential – each organization has independent interests, perspectives and incentives;
3. Asymmetric interdependencies – actors are interdependent but not all dependencies are the same; and
4. Dynamic – the features of the network, membership, leadership, goals and strategies evolve and change.

Attribute three states that all networks are characterized by interdependence. Despite the assuredness that interdependence exists in all networks, there is less clarity as to how to characterize those dependencies as well as the extent to which they affect the performance of a network.

Quite simply, dependency is the extent to which one organization needs another organization (within the network) to meet the goals of the network. The extent to which one organization needs another is often considered in private sector inter-organizational theories, including contingency theory and resource dependency. For instance, types of
dependencies may include the need for: information, operations assistance, finance, and/or resources (Pfeffer and Salanick, 1978). Thompson (1967) offers a typology of dependencies based on the extent of need one organization may have for another (pooled, sequential or reciprocal). Malone and Crowston (1994) provide a classification of dependencies based on the process of an organization turning resources into outputs. Theorists of networks, often simply characterize ties as either strong of weak, using various measures of strength (Mandell, 1995).

While the private sector and network scholars tend to recognize variation in dependencies, the collaborative public management literature tends to focus on creating reciprocal interdependency through the process of shared motivation. For instance Crosby et. al. (2005) look inside the “black box” of collaboration and suggest the process by which organization come to define the goal the goals of the network is fundamental to the development of collaboration. The collaborative public management literature asserts that when individual organizations come together they do have their own interests; however, the literature expresses a need to develop a process where the goal is diffused among the actors and begins to supplant the individual interest (Emerson et. al., 2011). The expectation is that when public organizations see a need to provide a service through a network, they will too, come to share the same goal through the process of “discovery” (Emerson et. al., 2011). In contrast, the networks literature does not define a process for changing the nature of dependencies just recognizing the types of dependencies that truly exist.
Interdependency in a network exists, a reason to come together, a goal that no one organization can achieve alone. However, the discussion here suggests there is more variation to interdependency than just what each organization offers the whole. Interdependencies can be tight or loose. These terms are characteristics of the quality of the processes that bring together independent agencies in order to move from simply a network structure to a collaborative network.

While the nature of ties, dependencies, appears critical to the performance of public management networks, there is very little literature that directly measuring the extent of relationships effect on performance. For instance, Mullin and Daley (2009) state “Our focus, like much of the literature on collaborative activities, is on frequency of collaboration as opposed to quality of collaboration” (p. 762). The authors go on to recognize this fact as flaw in their research.

The reason for the lack of literature that explores the nature of relationships is dual (1) lack of conceptual clarity about what makes a relationship meaningful and consequential and (2) the depth of data that is needed to characterize a relationship as strong or weak. Of those that do examine quality of relationships, there is whole hearted support for the hypothesis that strength of relationship is a predictor of performance (Mandell, 2001; Keast et. al., 2004; Hardy et al, 2003; Bardach, 1998; Sarason and Lorentz,1998). These same authors are the one that differentiate types of network based on the quality of relationships. These authors recognize the difference between a network
and collaboration, as a function of the strength of the relationship that exists within a network.

**Positions**

Finally, position is a picture of the interaction (complex or not) among the multiple agencies of a network. Position places agencies into a picture of the network based on the relationships they do and do not have with other agencies. Positions are not characteristics of individual organizations but characteristics of the whole network system. An actor’s position in a network is therefore defined by their ties (existence and quality) to other organizations in the network. Position is a description of the complex interaction that may or may not exist in the network. For instance, a more densely connected network has more interaction than a less densely connected network.

Position is also fundamental to understand as it is part of why antagonists of networks question their value. Specifically, those like Meir and O’Toole (2004) whom suggest, that networks may create inequities in power that cause the network to be ineffective. The position of an organization within a network can create advantages and disadvantages that affect network performance. Powell et. al. (1999) explain the importance of network position as follows:

Network research conceptualizes social structure as enduring patterns of relationship among actors- be they individuals, cliques, group or organizations. The structure of network linkages proves both opportunities and constraints on the action of participants. (p. 2)
Position is often measured using network analytical terms including: Betweeness - the extent to which parts of the network are connected or not connected to other parts and Structural Equivalence or Similarity - the comparative agency of an organization in the network to access the resources of the network compared to other organizations.

Betweeness is a description of a network where one agency is positioned in between other in the fabric of the network. Betweeness is based on a metric that uses the number of ties an organization has compared to the number of ties other organizations have in the network. Betweeness depicts which organizations have connections that link other organizations together in the network. Networks that are not densely connected, or have groups of organization that are connected but are not densely connected to other groups are said to have “structural holes” (Burt, 1995). Betweeness is a measure of the extent to which certain agencies fill structural holes. In a network in which connection is valued, actors who have connections that link organizations to other organizations in the network have unique positions.

There is a strong literature that examines the relationship between position and performance (Gulati, 2007). Burt (1995, 2002) demonstrates that organizations that bridge the structural holes in networks are likely to perform better compared to organization on the periphery of the network. However for overall performance of networks, the existence of structural holes is not commonly associated with high performance. In a network with structural holes, the overall connectivity of the network is lower than if the structural hole did not exist. Therefore, based on the density hypothesis,
overall lack of connection is a negative for performance. Gulati (1995) explains that an organization, at best, can access only what is available to the organizations that they are connected to. Therefore, organizations that are not well connected in the network have fewer opportunities to access the resources of the network. Furthermore, Burt (1992) finds, structural holes create competition among some of the network members. The existence of a structural hole creates competition among network members to access the resources that only those organizations that fill structural holes have. The result is competition among the network members who have limited access to the network.

Betweeness is a quantitative measure of position in organization that highlights the flow of the network. Are all members connected? Or are some organizations connected to all the other organization in a network through between or broker organizations? When networks have structural holes there is evidence in the literature to suggest that overall network performance may suffer. Specifically, structural holes limit the overall connection that exists in a network. Without connection there is little opportunity to create value. Also, members of the network that are not well connected may be forced to compete for access to the resources of the network through the organization(s) that are between them and the rest of the organizations in the network.

Structural equivalence is a measure of the similarity between organizations in regard to their position. Organizations that share the same position are considered to have the same advantages or disadvantages. Essentially, organizations in a broker position may all have the same advantages, while conversely, organization that are on the
periphery of a network with a structural hole are equivalent, they share the same disadvantages.

Structural equivalence alone does not confer power or lack of power, but the position of the organization within the network, and its similarity to other organizations in terms of position does. Therefore, overall performance of the network does not hinge on structural equivalence but does hinge on the number of organization that are in similar positions and how those positions may be empowered to access the resources of the network or limited in accessing the resources of the network.

Betweeness and Structural Equivalence are both network concepts that help to define how organizations are positioned in the structure of a network. Position is a characterization of organizations in relation to other organizations. Because networks are driven by the existence of relations the positions of organizations in a network contributes to understanding how the network operates.

**Review**

The literature review described three literatures conceptual and empirical findings regarding the effect of inter-organizational relationships on performance. The intergovernmental relations highlighted the diverse types of intergovernmental relations that can exist and that those relationships do impact performance. The theme is clear, relationships matter.

The collaborative public management literature takes the intergovernmental relations literature one step further. Collaborative public management suggests that inter-
governmental relationships are effective when the actors strategically collaborate. Collaboration has a positive effect on intergovernmental performance. There are three dynamics that create collaboration.

1. Principled Engagement
2. Shared Motivation
3. Capacity for Joint Action

The network literature takes one step back from intergovernmental relations. The networks literature provides a broad framework that identifies the immutable structures of a network. The conceptual framework includes three variables that describe the structure of a network:

1. Roles
2. Dependencies
3. Positions

The three variables can be used to identify the species of a network, either collaborative or not (coordination or cooperative).

The purpose of this dissertation is to examine the effectiveness of one network. As discussed in Chapter 1, inter-organizational effectiveness is a function of the extent to which the relationships are collaborative. Therefore, the dynamics of collaboration are integrated with the framework for network structure to provide a typology of the species of a network, defined in this chapter as: collaborative, coordinated or cooperative.
Figure 10: Frameworks Applied

<table>
<thead>
<tr>
<th>Species of Network</th>
<th>Cooperation</th>
<th>Coordination</th>
<th>Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roles</td>
<td>Principals of Engagement: <em>No</em></td>
<td>Principals of Engagement: <em>Yes</em></td>
<td>Principals of Engagement: <em>Yes</em></td>
</tr>
<tr>
<td>Dependencies</td>
<td>Shared Motivation: <em>Low</em></td>
<td>Shared Motivation: <em>Medium</em></td>
<td>Shared Motivation: <em>High</em></td>
</tr>
<tr>
<td>Position</td>
<td>Capacity for Joint Action: <em>Not Complex</em></td>
<td>Capacity for Joint Action: <em>Complex</em></td>
<td>Capacity for Joint Action: <em>Highly Complex</em></td>
</tr>
</tbody>
</table>

**Propositions**

Based on the above figure several propositions can be drawn about the affect the structure of a network will have on the likelihood of developing an effective/collaborative network. Propositions, as compared to hypothesis are offered as is usual in case study research (Yin, 2004). Propositions are general statements about what can be expected. The purpose of propositions is to allow the case study to more accurately demonstrate how each proposition may work in action.

Propositions, based on the above figure include:

1. When the roles of the network structure are principled, meaning they are inclusive and do not create hierarchy the network is more collaborative.
2. When interdependency is characterized by a high level of shared motivation among the network actors the network is more collaborative.

3. When the positions of actors in the network support the capacity for joint action the network is more collaborative.

Overview

This chapter begins with an introduction to the case of interest. The approach to the case study is a process evaluation. The purpose of a process evaluation is to examine how a network works. The evaluation of how the network works, leads to understanding what the network does (outputs). The process evaluation includes two stages of methods/analysis. The first stage is a network analysis. The purpose of the network analysis is to use primary data to characterize the structure of the network. Network structure, as discussed in the literature review, is composed of: roles, dependencies, and the positions. The network analysis facilitates answering two of the four research questions in the dissertation:

1. What are the distinctive characteristics of the structure of the network that carried out the activities of the Southern Nevada Public Lands Management Act?
2. To what degree can the network studied be characterized as collaborative?

The network analysis identifies the structural attributes at work in the network that may affect the performance of the network.

The second stage of analysis is a confirmatory analysis. Logistic regression is used to assess the effect of network structure on the performance of the network. The confirmatory analysis is used to answer research question three and four:

3. To what extent do structural characteristics of the network context have an effect on the outputs of the Southern Nevada Public Lands Management Act?
4. Was the Southern Nevada Public Lands Management Act effective?
In summary the purpose of this chapter is to describe the methods and the data that are used to answer the research questions. This chapter explains the data and methods that are used to characterize the concepts about networks, their structure and their performance presented in the literature review.

**Background on Case**

The Southern Nevada Public Lands Management Act (SNPLMA) of 1998 was passed by the United States 105th Congress with the express objective:

…to provide for the orderly disposal of certain Federal lands in Clark County, Nevada, and to provide for the acquisition of environmentally sensitive lands in the State of Nevada. (Public Law 105 263, 1998).

Monies from sale of lands were put into a special account for the acquisition of environmentally sensitive lands as well as to provide for:

- capital improvements in enumerated areas,
- development and implementation of a multi-species habitat conservation plan,
- general conservation,
- implementation and management of the Act,
- multijurisdictional hazardous fuels reduction and wildfire prevention plans, and to carry out the
- Eastern Nevada Landscape Restoration Project.

(Public Law 105 263, 1998).

SNPLMA arises out of a particular need to sell publicly owned lands in Southern Nevada. A large portion of land in Nevada is owned by the federal government. In 1998, federal land was inhibiting the ability of the urban center of Southern Nevada to grow outwards (Southern Nevada Public Land Management Act: 10-Year Report to Congress, 2008). SNPLMA came about in order to allow for contiguous growth of the urban core. With the profits from the sale of public land, local governments were asked to provide parks, trails and recreation areas for public use.

SNPLMA created a process for selling federally owned lands surrounding the urban core in Southern Nevada at auction. Monies from the auction were then placed into a special account to serve the generally stated purpose of conservation of other lands in the region (Public Law, 105 263, 1998). The process for the sale of land is a significant shift from previous methods of releasing public lands. Typically, the Bureau of Land Management would be the sole initiator of the sale or exchange of public lands. SNPLMA had the stated intent of being an inclusive and collaborative approach to the sale of public land. For instance, the Implementation said the goal of this new governing arrangement was:

…promote collaboration among the eligible Federal agencies and local government entities in identifying properties and projects with the greatest public benefit regardless of agency jurisdiction. (Public Law 105 263, as amended, 1998, p. 15).

The implementation agreement goes on to explain:

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The process for allocating the funding in the Special Account involves a high degree of collaboration among Federal, State, and local governmental agencies. While the Secretary of the Interior is charged with approving projects through a series of rounds that match the Federal fiscal years ... the recommendations under consideration come from interagency teams that select projects that best address the strategic goals identified for each of the eight SNPLMA project categories. (Public Law 105 263, as amended, 1998 p. 15).

In a 10-Year report to Congress the BLM described the process thus:

This Federal local collaboration of “joint selection” has been one of the real keys to the success of the SNPLMA program. (Southern Nevada Public Land Management Act: 10-Year Report to Congress, 2008, p. 13).

The case study is focused upon the enumerated legislative intent to allow local jurisdictions and regional actors to acquire funds for the purpose of creating parks, trails and natural areas (PTNA) through a “collaborative” process.

The PTNA legislative intent in SNPLMA was to create parks, trails and natural areas in Southern Nevada. The process for nominating, reviewing and funding parks, trails and natural areas was created as part of the Implementation Agreement written in 1999 (Public Law 105 263, as amended, 1998). The Implementation Agreement specified organizations that were eligible to participate as well as the process for participation.

An organizational network, as explained in the Chapter 1, is comprised of organizations that are mutually dependent and organized without hierarchy. To this definition, Provan et. al. (2007), offer a more applied network definition:

…a group of three or more organizations connected in ways that facilitate achievement of a common goal…formally established and governed and goal directed rather than occurring serendipitously. (p. 482).
The network of interests in the dissertation is the PTNA group of SNPLMA (1998) and fits the Provan et. al. (2007) definition thus:

- Is a group of 26 organizations,
- connected through three administrative subgroups.
- The common goal is to establish parks, trails and natural areas in Southern Nevada, The goal was formally established in the Southern Nevada Public Lands Management Act (Public Law 105 263, 1998).
- Governance of the network was explicated in the Implementation Agreement (Public Law 105 263, as amended, 1998).

The Implementation Agreement (Public Law 105 23, as amended, 1998) clarifies the structure and process the organizations in the network had to follow in order to pursue the objective of building parks, trails and natural areas. The purpose of the case study is to evaluate the structure of the process to understand its effect on the projects that were approved verse not approved as a result of the legislation.

**Research Approach**

The aim of this research is to understand the structure of a network that may affect performance of a network, or to conduct a *process evaluation*. A process evaluation is an assessment of a how a program is delivered (Flay, 1986). The benefits of this approach include:

1. **pragmatism**, a thorough understanding of the critical and practical issues that arise when organizations provide public services in a network context,
2. a theory driven approach to case analysis and
3. reliability and validity of conclusions gained by in-depth study of process and the resulting triangulation of findings.
A process evaluation is an assessment of how a program is delivered (Flay, 1986). The process by which a program is delivered connects the resources that are used to deliver the program to the outcomes of the program (means – end relationships). A process evaluation is a construct for identifying how implementation of a program (in this case, through a network context) affects the outcomes. The purpose of a process evaluation is to determine the completeness and quality of implementation of a public program because implementation is an important step in producing the immediate outputs of a program and therefore a necessary component of social outcomes. Both classical studies such as Pressman and Wildvasky (1973) as well as contemporary study of public management networks, as discussed in the literature review in more depth, note the importance of implementation to the performance of public organizations. Scott (2003) explains that in “natural organizations,” organizational forms comprised of both formal and informal relationships, process is the most important predictor of what is done.

A process evaluation provides validity and reliability to findings of a single case study. Process evaluations create validity because they help to overcome the error of evaluating a program that has not been fully implemented (McDavid and Hawthorne, 2006). Moreover, a process evaluation provides a chain of evidence that increases the validity of the findings (McDavid and Hawthorne, 2006).

Process evaluation provides reliability because the intent is to characterize the true nature of program implementation (Berk and Rossi, 1999). Finally, while the main limitation of a single case study is the limited generalizability, a process evaluation increases reliability by providing a clear, stated theory of the program.
**Research Design**

The research design used here is a single case study with embedded units of analysis. Campbell and Stanley (1963) describe “the one-shot case study” (p. 7) as a “pre-experimental design” (p.7). Gerring (2004) describes the design “as an intensive study of a single unit for the purpose of understanding a larger class of (similar) units” (p. 342). While there are limitations to such a design, Yin (2004) explains, “The distinctive need for case studies arises out of the desire to understand complex social phenomena” (p.2). King et. al. (1994) explains complexity is a common condition in social science for which unique research design and methods must be adopted, such as the case study. To overcome some of the limitations of single case study designs, Robert Yin (2004), in a seminal text, “Case Study Research Design and Methods” provides a method of case inquiry that enables the researcher to use case analysis for description and explanation as well as generalization. Furthermore, the case approach, Yin (2004) argues, allows the researcher to explore a variety of evidence, “beyond what might be available in a conventional historical study” (p.8).

In designing the case approach, Yin (2004) takes a different stance than some other qualitative analysts regarding the role of theory to analysis. Yin (2004), and others choose to begin with theory, not data. Theory allows the author to limit the analysis, better operationalize the case study and makes findings more explicit and credible (Yin, 2004). However, “theory should by no means be considered with the formality of grand theory in social science…Rather, the simple goal is to have a sufficient blueprint for … study” (Yin, 2004, p. 36). Yin (2004) goes on to cite Sutton and Straw (1995) in
describing the role of theory in case study research designs, “A story about why acts, events, structures and thoughts occur” (p. 378).

Another reason for differentiation of the role of theory in case research is the relationship between population and sample. Statistical generalization, used in empirical research regards how a sample can be used to make inferences about a population. In a case study the population is completely within in the frame of analysis. The case research design uses analytical not statistical generalization. Therefore, “previously developed theory is used as a template with which to compare the empirical results of the case study” (Yin, 2004, p. 38).

Yin (2004) summarizes a variety of case designs. The case presented in this dissertation is an example of a single-case with embedded units’ of analysis (p. 40). That is, only one case is described in detail, as compared to multiple cases for compare and contrast. The embedded aspect of the single case suggests more than one unit of analysis within the context of the case exists. SNPLMA is a large public program that required multiple agencies to work together to produce a range of public programs. The multiple agencies are the embedded units’ of analysis. Units of analysis are not necessarily the dependent variable, or the factor one is trying to explain, as they as often stated in empirical research. Scholz and Tietje (2002) explain that the embedded units of analysis comprise the “architecture” of the case that leads from explaining to understanding (p. 30).
Data

Three principals were adopted by the researcher in compiling evidence for the case study:

1. Use multiple sources of evidence.
2. Create a case study database.

The intent is that: “Every piece of information that we gather should contribute to specifying observable implications of our theory” (King, Kehone and Verba, 1994).

Furthermore, transparency of the types of documents selected for review is critical to validity in case study research. As King, Kehone and Verba (1994) state: “the most important rule for all data collection is to report how the data were created and how we came to possess them” (p. 51). For this reason all data that is used in the dissertation is listed here and discussed in detail.

A comprehensive database of projects funded through SNPLMA is maintained by the Bureau of Land Management and can be found on the website: http://www.blm.gov/pgdata/content/nv/en/snplma.html.

The data found on this website includes:

- a description of projects funded,
- a searchable map of projects by location,
- land sale statistics,
- revenues and expenditures by enumerated function in the original legislation,
- and project status reports.

Data also came from government reports and research including:

The majority of these data sources are ‘archival records.’ Cons of archival records include: reporting bias and accuracy (Yin, 2003, 86). However, due to the intensive layers of government oversight that are required in the production of these government records and extensive reporting procedures, it is expected that these published documents are accurate.

Some materials that were of interest were not included on the website or in the government reports listed above. These data include:

- Total number of nominated projects (for contrast with funded projects),
- Rankings of projects by the network, and
- Score cards used by some members of the network to rank projects.

These data were identified for review by contacting the BLMLV directly. The BLMLV was contacted several times, both by telephone and email between September 2010 and December 2010. All documents requested were approved as public record and provided.

Despite, the accommodation of the BLMLV in providing requested info, the BLMLV reported being unable to find some data requested. Missing are the scores for 116 of the 365 projects. The missing data brings the population size of the dependent
variable from 365 to 249. There is no reason to expect that this data was intentionally made “missing.” The office of the BLMLV suggested that there had been turnover in management of the office over the past 10 years and, therefore turnover is the culprit for missing data.

**Research Methods**

Two stages of methods and analysis are used to conduct a process evaluation of a single case. The first stage is a network analysis. The purpose of the network analysis is to answer research question one and two:

1. What are the distinctive characteristics of the structure of the network that carried out the activities of the Southern Nevada Public Lands Management Act?

2. To what degree can the network studied be characterized as collaborative?

The purpose of the network analysis is to characterize the major components of network structure (roles, dependencies and positions), as identified in the review of literature. Each of these variables is examined to identify the extent to which they created collaboration (the measure of effectiveness used in this dissertation). To determine the extent the network in the case study is collaborative three measures of collaboration are used:

1. Principled engagement
2. Shared motivation
3. Capacity for joint action.

Network analysis is used to characterize the structure in the network and the extent to which those structures create collaboration.
The data created in the network analysis is then used in the second stage of the analysis. The second stage of the analysis is a confirmatory analysis used to demonstrate the extent of the effect that network structure has on the performance of a network, the outputs of a network. The second stage of the analysis seeks answers to research question three and four:

3. To what extent do structural characteristics of the network context have an effect on the outputs of the Southern Nevada Public Lands Management Act?

4. Was the Southern Nevada Public Lands Management Act effective?

Conclusions are based on triangulation of data from the two stages of analysis.

**Network Analysis**

Network analysis is an analytical tool used to model relationships among component parts of a network. The purpose of the network analysis is to address, research question one and two:

1. What are the distinctive characteristics of the structure of the network that carried out the activities of the Southern Nevada Public Lands Management Act?

2. To what degree can the network studied be characterized as collaborative?

Network analysis is a tool for depicting the structure of the network. As noted in Chapter 1 and elaborated on in Chapter 2 the structure of a network includes the organizations in the network (roles) the relationships in the network (dependencies), the advantages or disadvantages that are created (position). Examination of structure main clarifies the process organization in the network use to turn inputs into outputs. Network methods, are an appropriate analytical tool to examine process, as compared to other
methods, because the focus is on relationships among actors instead of just individual actors and their attributes (Scott, 2003). Also, as noted earlier, case research is about exposing links in highly contextual and embedded settings. Network analysis provides quantifiable linkages between units of analysis, which can then be used to assess the extent to which this network is collaborative. Finally, network analysis is a tool for analytical generalization, not statistical generalization, in that it generalizes to a theory not a population (Becker, 1990), in this way, it is an appropriate analytical method for a case study research.

**Variables Used to Describe Network Structure and Measurement**

Constructing a network analysis begins by identifying nodes and ties. Nodes are organizations in the network. In order to identify nodes, the Implementation Agreement (Public Law 105 263, as amended, 1998) was reviewed. A list of each agency mentioned in the Implementation Agreement was complied. A member of the Bureau of Land Management, Las Vegas’ PTNA subdivision, also, prepared a list (10/15/10). The two lists were compared. They matched. Therefore all organizations were successfully identified.

Each node is then listed as both a column and row variable to form a matrix. The matrix is filled with data about ties among organizations. A tie is a relationship or lack of relationship between each node. Initial classification of the existence of a tie is based on content analysis of the Implementation Agreement (Public Law 105 263, as amended, 1998). The Implementation Agreement listed agencies and how they were to work together. The node and tie matrix is the foundation of network analysis.
Figure 11: Example of Network Matrix

<table>
<thead>
<tr>
<th></th>
<th>Org 1</th>
<th>Org 2</th>
<th>Org 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Org 1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Org 2</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Org 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data is then be added to the matrix about the attributes of the organizations (nodes) or the attributes of the relationships (ties). Adding attribute data about the organizations develops a contextual understanding of the network. As noted in the literature review, three variables comprise the essential elements of a public management network:

1. Roles
2. Dependencies
3. Position

The network analysis identifies each of these three variables as well as provides analysis to measure the extent to which these three variables contributed to the creation of collaboration:

1. Principled Engagement
2. Shared Motivation
3. Capacity for Joint Action

The next section of this chapter will discuss each of the three variables of network structure, how they measure the degree of collaboration and the data that is used to operationalize the measure. The data and measures used to characterize roles,
dependencies and positions in the network, follow, in order. Note, however, that the most important characteristic of this section is the discussion of dependencies. As mentioned in the literature review, many public management network studies refer to dependencies but do not measure the form, type or extent of dependencies as they exist in networks.

Roles

Roles, as introduced in the literature review, are characteristics of individual organizations in the network that explain what purpose the organization has in turning inputs into outputs. Roles help to measure the extent to which principled engagement exists in the network.

Roles, in the network analysis were identified through content analysis of the Implementation Agreement. Three distinct roles are identified: a network administrative organization (NAO), a lead organization/group and champions.

The Bureau of Land Management’s Las Vegas Office (BLMLV) was conferred several administrative responsibilities in the Implementation Agreement, including conducting the land sales, providing and tabulating the scorecards used to score and rank projects as well as being the agency who’s Director provides final approval, the Secretary of the Interior (Public Law 105 263, as amended, 1998), over the projects to be funded. In 1999 an office and personnel were created and designated specifically for implementation of SNPLMA. Currently, BLMLV hosts the website that houses aggregated information about the Act (http://www.blm.gov/nv/st/en/snplma.html). Also, the BLMLV prepared, disseminated and collected the criteria sheets that were used to
rank projects for funding. These are all administrative duties. Therefore, the BLMLV was characterized as a network administrative organization (NAO). In the literature review, a NAO is defined as an organization which provides administration and carries out administrative duties but is not distinctly given power or authority over other network members (Provan and Milward, 2007). NAO is helpful in creating principled engagement. Characterization of the BLMLV as an NAO is added to the matrix as an attribute of the node representing the BLMLV.

The existence of a lead organization or in this case a lead group was also identified through content analysis. In the literature review, a lead organization was defined as an organization, which had power over other organizations in the network. Power is a function of the ability to control resources. A lead organization is a hierarchical component of what is otherwise a horizontal governance structure, a network. The lead organization, as noted in the literature review, has control over other members because they have power over the resources other members need to complete the goals of the network. A lead organization weakens the condition of principled engagement that is necessary for collaboration to exist.

A Review of the Implementation Agreement (Public Law 105 263, as amended, 1998) suggests that the Executive Committee (EC) has final decision making authority over the work of the PTNA because they release the funding for projects. Therefore, the role of the executive committee members, as lead agencies, is added to the matrix as attribute data.
A champion, as reviewed in the literature is another possible attribute of an organization in a network. A champion, defined in the literature review, is an organization that has expertise and or knowledge in the content area in which the network is working but is not necessarily highly involved in the work product of the network. The champion is someone that is included in the network to offer prestige, advice or information but is not necessarily important to getting the work of the network completed. In this way, a champion is positive for the condition of principled engagement.

In this network, a champion was recognized through content analysis. Review of the Implementation Agreement suggested the National Park Service (NPS) had no specific administrative role in the network, like the BLMLV. Furthermore, none of the proposed projects were in the jurisdiction of a national park, and the NPS was not given authority to nominate projects for approval; however, the NPS is in the business of parks and recreation areas. In this way, NPS has a vast experience and information to call upon when reviewing nominated projects. Moreover, historically, the NPS has been given a role in the planning of parks’ that were not officially under their jurisdiction (Goodsell, 2010). The role of champion is added as attribute data about the NPS.

Content analysis was first used to identify these three roles, then the network measure centrality was used to confirm that each of these organization to have a unique role in the network. Network analysis provides the measure centrality for identifying roles in a network. Barrat et al. (2004) states: “The identification of the most central nodes in the system is a major issue in network characterization” (p. 17). Centrality is
measured by scanning all the possible relationships that can exist in a network. Nodes that have a greater number of ties said to be central. Measures of centrality, in the network analysis presented in the subsequent chapter, are used to assess if the organizations, BLMLV, NPS and EC are distinct among the organization in the network.

**Figure 12: Roles, Defined for Analysis**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measure</th>
<th>Data</th>
<th>Expected Effect on Degree of Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role</td>
<td>Centrality/Network Administrative Organization</td>
<td>Content analysis of the Implementation Agreement and degree centrality</td>
<td>+ Increases Principled Engagement</td>
</tr>
<tr>
<td>Role</td>
<td>Centrality/Lead Organization/Subgroup</td>
<td>Content analysis of the Implementation Agreement and degree centrality</td>
<td>- Decreases Principled Engagement</td>
</tr>
<tr>
<td>Role</td>
<td>Centrality/Champion</td>
<td>Content analysis of the Implementation Agreement and degree centrality</td>
<td>+ Increases Principled Engagement</td>
</tr>
</tbody>
</table>

**Dependencies**

Characterizing dependencies is an important part of this dissertation, and what distinguishes this dissertation from other works that examine public management network structures. Dependencies are the extent to which one organization needs another organization to meet the goals of the network. Dependencies are a characteristic of relationships among organizations as well as a measure of the extent to which they are simple dependencies or more collaborative interdependencies. Dependency is, as discussed in the literature review, an inherent attribute of all networks, but the quality of
the dependency or extent to which organizations work together to achieve network level
goals can vary significantly (Ansell and Gash, 2007).

Dependencies are characterized by both the (1) form and (2) content of the
relationships/ties (Hannerman and Riddle, 2005). Form is the type of relationship that one
organization has with another. For instance, all the organizations need the resources of
the Executive Committee. In this example “resources” is the form of tie that exists.
However, other forms of ties exist as well, for instance, as noted in the literature review,
the need for information, approval, or to co-labor on a project. Content analysis is used to
identify the form of the tie. The form of the tie can also be depicted in the network
analysis as wither directed or reciprocal. A directed tie is not a mutual dependency but
instead it is when one agency provides another agency with something they need. In
contrast, a reciprocal or tie characterizes the form of relationship in which both
organizations have a mutual dependency. Forms of ties were identified through content
analysis of the Implementation Agreement.

The forms of ties are listed both using what type of relationships it is (resources,
information etc.) and if it is directed or reciprocal. The Implementation Agreement
describes what every organization must do as part of the process, if one organizations co-
labors the tie is reciprocal, if an organization needed something from another
organization but that organization does not have to supply anything in return, the tie is
directed.

The content of ties or the quality of relationship is characterized by the extent to
which shared motivation exists. As argued, in the literature review, the quality of the
relationship as well as the existence of relationships is important to the performance of a network. This is an element of network structure that has been under examined in the public management networks literature to date. The content of the dependency seeks to capture the quality of the tie, the development of shared or similar conceived ideas about the work of the network.

In order to measure the quality of ties or the extent of shared motivation: (1) the list of projects that were nominated was reviewed. The agency that nominates the project is listed for each project. No projects were co-sponsored by organizations in the network. Therefore, no projects themselves were collaborated. (2) The scores that each organization assigned a project was reviewed and compared to the score all other organizations gave the project. Closer scores means share motivation, more disperse scores equals less shared motivation. The distance measure, in network analysis is the metric used to capture the extent to which one organization needs another organization in order to have a project approved, shared motivation.

The data used to calculate distance is the correlation between the organizations themselves based on the scores they assigned to projects. This data is only available for some of the organizations in the whole network, discussed in detail in the next chapter. The score each organization gave a project was entered into a network matrix. Each organization is correlated with every other organization based on the score they gave to projects. A high correlation coefficient means two organization score projects similarly; a low correlation means two organizations score projects very differently. Then, the correlations coefficients are transformed into Euclidean Distance in order to visually see
the relationship. Using distance provides a visual representation of the quality of coordination among the PTNA Subgroups.

Interpretation of correlation coefficients can be subject to opinion; for instance, what is a high level of agreement? Therefore, I provide a secondary measure of the extent of collaboration among the PTNA Subgroup members. The consensus procedure in network analysis provides an aggregate measure of the quality of coordination among the members of the network that score projects. The consensus statistic is a method for determining to what extent a group of independents agencies can identify a correct answer among a subset of answers. Borgatti & Halgin (2010) explains the consensus statistic this way:

…provides a way to determine whether observed variability in beliefs is cultural, in the sense that our informants are drawn from different cultures with systematically different beliefs, or idiosyncratic, reflecting differences in individual familiarity with elements in their own culture (e.g., some people know the names of more dog breeds than others). (p.1).

Therefore, the consensus statistic can be used to measure the overall agreement among the node about projects. The consensus statistic provides are eigenvalues based on the agreement of organizations.
Position

Position is a picture of the network derived from identifying both characteristic of individual nodes and their relationships. Position is a characteristic of organizations embedded within the overall network structure. Position illuminates the extent to which the structure has the capacity for joint action or limits the capacity for joint action.

Hanneman and Riddle (2005) describe position in network analysis as follows:

Being able to define, theorize about, and analyze data in terms of equivalence is important because we want to be able to make generalizations about social behavior and social structure. That is, we want to be able to state principles that hold for all groups, all organizations, all societies, etc. To do this, we must think about actors not as individual unique persons (which they are), but as examples of categories -- sets of actors who are, in some defined way, "equivalent." As an empirical task, we need to be able to group together actors, who are the most similar, and to describe what makes them similar; and, to describe what makes them different, as a category, from members of other categories. (12.1).

The network metrics used in the dissertation are: structural similarities, equivalence classes and Betweenness Centrality, the patterns of relationships that divide or integrate the work of the network.

---

**Figure 13: Dependencies Defined for Analysis**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measure</th>
<th>Data used</th>
<th>Expected Effect on Degree of Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependencies</td>
<td>Form of tie: Directed</td>
<td>Content analysis of Implementation Agreement</td>
<td>- Decreases Shared Motivation</td>
</tr>
<tr>
<td>Dependencies</td>
<td>Form of tie: Reciprocal</td>
<td>Content analysis of project nominations</td>
<td>+ Increases Shared Motivation</td>
</tr>
<tr>
<td>Dependencies</td>
<td>Quality Ties/Consensus of Scores organizations gave to individual projects</td>
<td>+ Increases Shared Motivation</td>
<td></td>
</tr>
</tbody>
</table>
Betweeness Centrality is a measure of position that exposes the existence of structural holes. Structural holes, as discussed in the literature review, are areas of a network in which the nodes are not densely connected. Where there are no dense connections, one agency may fill the hole in the network, connecting peripheral elements of a network. A node that fills a structural holes has high Betweeness centrality. Betweeness centrality is an important measure of position because research, as noted in the literature review, has shown that equivalence classes can be based upon who is between and who is not between (Burt, 1992). Also, agencies that are between have advantages because they have access to the full value of the network, ties to all the parts. In contrast, those that are not between, are their own equivalence class, that may have disadvantages based on their lack of connection to all members of the network, ability to capture the full value of the network. Most importantly, a network with structural holes limits the capacity for joint action.

Betweeness centrality is a measured using the data that composed the original network matrix. Betweeness centrality helps to establish if the position of organizations in a network creates advantages or disadvantages. An agency that is between may control the interactions of nonadjacent persons.

Structural Equivalence or “cliques” in a network are used to define which organizations are similar or dissimilar, their position is a function of whom they are and who they are related to. Different cliques limit the capacity for joint action. Simply, looking at a well-constructed network picture can give clues about who is equivalent or not equivalent. Therefore, the clique metric is simply a quantitative assessment of who is
similar to who based on the original network data of nodes and ties. However, the importance of structural equivalence is that relationships among classes many be important to the performance of the network. Specifically, as noted in the literature review, when two organizations are similar competition may be created. For instance, the intergovernmental relations literature refers to overlapping authority, which is when organization has equivalent authority.

Simply, position is a function of mapping agencies based on who they are similar or dissimilar too based on attributes and ties of organizations in the network. Mapping position provides a picture that can then be used to understand how parts of the network may act.

**Figure 14: Position Defined for Analysis**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measure</th>
<th>Data</th>
<th>Expected Effect on the Degree of Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
<td>Betweenness Centrality</td>
<td>The number of ties, identified through content analysis of the Implementation Agreement</td>
<td>- Decreases the capacity for joint action</td>
</tr>
<tr>
<td>Position</td>
<td>Structural Equivalence/Cliques</td>
<td>The similarity in the number of ties, identified through content analysis of the Implementation Agreement</td>
<td>- Decreases the Capacity for joint action</td>
</tr>
</tbody>
</table>

Roles, dependencies and positions are variables used to describe the structure of the network. The previous section of this chapter describes the variables used to identify
the major components of network structure and the measures and data that will be used in the network analysis. The intent of the network analysis is to first, examine the major component structures and second, to see if the component structures increase or decreases the conditions for collaboration. In the previous section figures with the variable, measure, data and expected relationship are included. The next figure is an overview of all three variables of network structure and the expected effect on the degree of collaboration that is created.

**Figure 15: Overview of Variables in Network Analysis**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measures</th>
<th>Expected Effect on Degree of Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role</td>
<td>NAO</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Lead</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Champion</td>
<td>+</td>
</tr>
<tr>
<td>Dependencies</td>
<td>Directed</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Reciprocal</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Distance</td>
<td>+</td>
</tr>
<tr>
<td>Positions</td>
<td>Betweeness</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Cliques</td>
<td>-</td>
</tr>
</tbody>
</table>

The purpose of the network analysis is to characterize the component parts of a network structure. Network analysis characterizes the network based on the variables described above. The network analysis also provides a picture of the extent to which the network is collaborative. The extent of collaboration is important because it affects the overall performance of the network. The next section of this chapter describes how the data from the network analysis is used in the second stage of analysis the confirmatory analysis.
Regression Analysis

The second stage of the analysis uses the variables of network structure, findings from the first stage of analysis, in a confirmatory analysis of the extent to which these variables impact the work of the network. This stage of the analysis is used to address research question 3 and 4:

3. To what extent do structural characteristics of the network context have an effect on the outputs of the Southern Nevada Public Lands Management Act?

4. Was the Southern Nevada Public Lands Management Act effective?

While network analysis characterizes the structure of the network the second stage of the analysis examines the extent to which the structure had an effect on the performance of the network. The purpose of the confirmatory analysis is to understand the impact of network structure on network performance. The second stage of the analysis includes logistic regression models completed in SPSS version 19. The next section of this chapter discusses how the variables of network structure are used in the confirmatory analysis.

The dependent variable in this analysis is outputs of the network, the actual work of the network (Hill and Lynn, 2009). Outputs are the total number of projects that were adjudicated upon by the network. Over 10 years, 349 projects were nominated. Of those 169 are approved along with a total expenditure of over $500 million dollars.
Table 1: Projects Nominated and Approved by the SNPLMA Network

<table>
<thead>
<tr>
<th>Rounds</th>
<th>Projects Nominated</th>
<th>Projects Approved</th>
<th>$s Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>$5,205,000.00</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>6</td>
<td>$8,555,042.19</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>20</td>
<td>$31,155,544.53</td>
</tr>
<tr>
<td>4</td>
<td>28</td>
<td>28</td>
<td>$83,300,193.26</td>
</tr>
<tr>
<td>5</td>
<td>71</td>
<td>40</td>
<td>197,873,631.25</td>
</tr>
<tr>
<td>6</td>
<td>97</td>
<td>46</td>
<td>218,630,193.27</td>
</tr>
<tr>
<td>7</td>
<td>46</td>
<td>6</td>
<td>$5,225,513.62</td>
</tr>
<tr>
<td>8</td>
<td>32</td>
<td>9</td>
<td>$771,544.73</td>
</tr>
<tr>
<td>9</td>
<td>23</td>
<td>12</td>
<td>$2,587,521.41</td>
</tr>
<tr>
<td>10</td>
<td>19</td>
<td>10</td>
<td>$9,308,202.00</td>
</tr>
<tr>
<td>Totals</td>
<td>348</td>
<td>169</td>
<td>$562,612,386.00</td>
</tr>
</tbody>
</table>

Full data is available for only 249 projects (N=249), as discussed prior in this chapter.

The purpose of this analysis is to find out to what extent structure of the network affected a projects approval status.
The dependent variable is a binary variable coded 0 if the project was not approved and 1 if the project was approved. The independent variables of interest in the analysis are characteristics of the structure of the network, including, roles, dependencies and positions. Two control variables are also included, project score and strategic orientation.

Roles are attributes of the organization themselves, as discussed in a previous section of the chapter. Three distinct roles: Network administrative organization (NAO), lead organization, and champion are identified in the network analysis. Dummy variables for the administrative organization and champion are included as independent variables in the confirmatory analysis. The lead organizations are not included in the confirmatory analysis. The lead organizations provided resources for the network but were not directly engaged in the work of the network. Therefore, while the existence of a lead organization(s) is a critical component of characterizing the network their effect on the work of the network itself must be examined outside of the confirmatory analysis. This is further explicated in the next chapter.

Dependencies are the form and content of relationships. Dependencies and their content are elaborated on significantly in the network analysis (next chapter). In the confirmatory analysis one measure of the variable is used to capture the nature of interdependency in the network, distance. The distance between two organizations is the extent to which one organization needs another organization to get a project approved or

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2 The Implementation Agreement specifically states that while the Department of Interior has the final approval of projects “... the recommendations under consideration come from interagency teams that select projects that best address the strategic goals identified for each of the eight SNPLMA project categories” (Public Law 105 263, 1998, p. 15)
the extent to which the organizations share motivation to approve the project. This variable is measured using the standard deviation about the mean of each organizations score for a project. The range in the standard deviations is divided into two equal cut points to reflect projects in which there was high interdependency and projects in which there was low interdependency.

One variable for position is included in the confirmatory analysis. The position variable is a dummy variable for all structurally equivalent organizations, which are not fully connected to all parts of the network (identified in the first stage of analysis). The variable is coded as an ordinal scale (1-10) based on the number of projects that an organization nominates.

In addition to the independent variables of interest two control variables are used: Project Score and Strategic Orientation. Project score is the total score a project received. Project score is a measure of the perception of the project aggregated among all nodes. The score for each project is collapsed into two cut points around the mean, project score for all projects, and coded 1 if the project had a high score and 0 if the project had a low score.

Strategic orientation is a dummy variable that classifies the type of project that is nominated. The score card used to score the projects lists four discrete objectives for a project: Demand, Resource Protection, Connectivity and Cost of Project. In order to assign a strategic orientation to each project, the scoring sheets were reviewed. The raw
scores given to each project for each of the four criteria were calculated as percentages.\(^3\)

The average highest percent a project was given in one of the four criteria was used to classify a project’s strategic orientation. A dummy variable was created to categorize each project by its strategic orientation.

**Figure 16: Coding Used in Confirmatory Analysis**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coding</th>
</tr>
</thead>
</table>
| Dependent Variable - Projects | 0 Not funded  
1 Funded (Referent Category) |
| Role, Node 13             | 0 High Score  
1 Low Score                               |
| Role, Node 15             | 0 High Score  
1 Low Score                               |
| Dependency                | 0 Short Distance  
1 Long Distance                       |
| Position                  | 1-10, based on number of projects nominated |
| Project Score             | 0 Low Aggregate Score  
1 High Aggregate Score                 |
| Strategic Orientation     | 1 – Demand  
2 – Resource Protection  
3 - Connectivity  
4 – Cost and Value |  

**Review**

This chapter begins with an overview of the case of interest. I then describe the research approach, a process evaluation. A process evaluation seeks to understand network performance based on the process by which performance is created. The purpose is to understand the extent to which the structure of the network impacted the performance of the network. Several variables to characterize a network’s structure are

\(^3\) Calculating percentages first was necessary because the raw scores that could be assigned to each project varied.
noted. Measure of these variables and data that are used to measure these variables is
described in depth. The effect on the extent to which these variables create collaboration is
included. I discuss how each variable is identified through network analysis.

The variables identified in the first stage of analysis are then used in the second
stage of analysis. This chapter describes the variables in the confirmatory analysis and
how they are measured and coded for use in logistic regression analysis. Stage two, the
logistic regression, uses the findings from the network analysis, to examine the extent to
which network structure impacts what the network does.
4. Analysis of Network Structure

Overview

The purpose of this chapter is to use network analysis, as described in Chapter 3, to characterize the structure of the network that is of interest in this dissertation. Network analysis is an analytical tool for examining relational data. The analysis in this chapter addresses research questions one and two:

1. What are the distinctive characteristics of the structure of the network that carried out the activities of the Southern Nevada Public Lands Management Act?

2. To what degree can the network studied be characterized as collaborative?

This chapter will examine the network of interest in depth.

Description of Whole Network

The first step in the description of a network is to identify nodes and ties. In this network, nodes are organizations that were part of the PTNA objective of the SNPLMA legislation and were identified through content analysis of the Implementation Agreement (Public Law 105 263, 1998). Twenty-eight distinct nodes, organizations, are in this network. Relationships or ties are based on content analysis of the Implementation Agreement as well. In the Implementation Agreement three subgroups were noted, each with their own nodes and purpose. Before showing this with network analysis I describe the Implementation Agreement in more depth.

The Implementation Agreement defines the actors and their activities in the network. The Implementation calls for three distinct subgroups that are part of the process of nominating and reviewing projects, the creation of parks, trails and natural
areas. The three subgroups are: (1) The Parks, Trails and Natural Areas Subgroup (PTNA), (2) The Partners Working Group (PWG) and the (3) The Executive Committee (EC).

**PTNA: The Parks Trails and Natural Areas Subgroup**

The Parks Trails and Natural Areas Subgroup (PTNA) was comprised of local governments, regional governments and the local offices of federal agencies involved in SNPLMA. The units of analysis or organizations of interest within the PTNA subgroup include:

- Clark County,
- City of Las Vegas,
- City of North Las Vegas,
- City of Henderson,
- Lincoln County,
- White Pine County,
- Washoe County (with limitations)
- Boulder City (with limitations)
- Carson City (with limitations)
- Southern Nevada Water Authority,
- Regional Flood Control District
- Clark County Sanitation District /Clark County Water Reclamation District (105-263, Implementation Agreement, p.30)
- Bureau of Land Management, Las Vegas Field Office (Clark County), Chair
- Bureau of Land Management, Ely Field Office (Lincoln County)
- National Park Service
- USDA Forest Service, Humboldt-Toiyabe National Forest
- U.S. Fish and Wildlife Service, Desert National Wildlife Refuge Complex

Among the members of the PTNA Subgroup, several had specific authority to nominate projects, those entities include:
• Clark County,
• City of Las Vegas,
• City of North Las Vegas,
• City of Henderson,
• Lincoln County,
• White Pine County, and
• Washoe County (with limitations)
• Southern Nevada Water Authority,
• Regional Flood Control District
• Clark County Sanitation District /Clark County Water Reclamation District
• Boulder City (with limitations)
• Carson City (with limitations)

Other organizations that sat on the PTNA Subgroup but did not nominate projects included:

• The Bureau of Land Management, Las Vegas Field Office
• The Bureau of Land Management, Ely Field Office
• National Park Service
• USDA Forest Service, Humboldt-Toiyabe National Forest
• US Fish and Wildlife Service, Desert National Wildlife Refuge Complex

After nominating a project, the full PTNA subgroup provides an initial review of the project. The review of projects is done using scorecards. The agencies in the subgroup all received scorecards that reflect four criteria on which projects should be judged:

1. Demand – the extent to which the project meets the needs and demands of the demographics of Southern Nevada residents
2. Resource Protection – the extent to which project protects the integrity of resources or improves the quality of the environment
3. Connectivity – the extent to which the project is part of a federal, regional or local plan for parks, trails or natural areas
4. Cost and Value – the costs of the project is lesser than the value of the project

4 See Appendix A
Members of the PTNA Subgroup scored each project that was nominated. They returned the scorecards to the Bureau of Land Management – Las Vegas (BMLV) who then tabulates the scores. Tabulation of the scores resulted in a ranking of the nominated projects by the overall score each project received. The ranking of projects is a suggestion of the order in which projects should be funded, from the perspective of the PTNA Subgroup.

**Partners Working Group (PWG)**

The second subgroup is the Partner’s Working Group (PWG). The PWG is composed primarily of regional and state entities. Those entities included:

- Bureau of Land Management, Las Vegas Office (Chair)
- State of Nevada (appointed by the Governor)
- One seat to represent all of the local & regional governmental entities in Clark, Lincoln and White Pine Counties, Nevada (selected by the Parks, Trails, and Natural Areas Subgroup)
- Rural Nevada (a member of NACO per decision of the Governor)
- National Park Service
- U.S. Fish and Wildlife Service
- USDA Forest Service
- Bureau of Reclamation, Lower Colorado Regional Office

The PWG’s role in the process was to: (1) review the costs of the proposed projects that had been ranked by the PTNA Subgroup and (2) make their own ranking of projects to be funded based on the availability of funds from the sale of public lands in each year. Essentially, they provided information to the Executive Committee about the availability of funds for project construction. While the PTNA’s focus was on the evaluation projects based on criteria, the PWG’s focus is on the affordability of projects in each year.
**Executive Committee (EC)**

The final subgroup is the Executive Committee (EC). The EC was comprised of federal agencies that were given final approval of projects, in each year, as designated by the legislation. The EC included:

- Bureau of Land Management - State Director, Nevada State Office (Chair)
- National Park Service - Regional Director, Pacific West Region
- U.S. Fish & Wildlife Service - Manager, California/Nevada Operations Office
- USDA Forest Service - Regional Forester, Inter-Mountain Region (Region 4)
- Bureau of Land Management Chief Executive Officer, or his or her designee, as a non-voting financial advisor (p. 17-18)

The EC, headed by the Secretary of the Interior provided the final signature to approve releasing funds for the projects. The EC had complete oversight in approving or not approving a project.

The following figure depicts the process of adjudicating upon projects among the three subgroups in the network.
Figure 17: Process from Nomination to Approval of Projects for SNPLMA

The flow chart above is a broad outline of the process, the means–end relationship for taking resources from the sale of public lands and for putting them to work to create parks, trails, and natural areas for development under the SNPLMA legislation. In the 10-year Report to Congress (2010) the process was described thus:

The process for allocating the funding in the Special Account involves a high degree of collaboration among Federal, State, and local governmental agencies. While the Secretary of the Interior is charged with approving projects through a series of rounds that match the Federal fiscal years, the recommendations under consideration come from interagency teams that select projects that best address the strategic goals identified for each of the eight SNPLMA project categories. (Southern Nevada Public Land Management Act: 10-Year Report to Congress, 2008, p. 15).
The purpose of this dissertation is to examine this structure and process, just described, in greater depth, using the approach of process evaluation. While the flow chart shows how the process is supposed to work, it does not provide a characterization of how organizations actually work in practice. Moreover the intention is clearly for the actors to engage in a collaborative process; therefore the evaluation will examine the extent to which collaboration actually happened. The dissertation seeks to characterize the networks structure and then confirm the effect of structure of the performance of the network, a function of the degree of collaboration among the plural actors.

**Network Analysis**

In the first characterization of the network, nodes are organizations in the network and ties are the relationships that exist based on membership into one of three distinct subgroups in the network. Subgroup one, is the parks trails and natural areas (PTNA) subgroup. In this subgroup there are 17 nodes. The next subgroup is the Partners Working Group (PWG). The PWG is comprised of 8 total nodes. Two of those 8 nodes are also members of the PTNA Subgroup. The last subgroup is the Executive Committee (EC) and is comprised of 5 nodes. Nodes are color coded by subgroup. There are two nodes that cross subgroups their color is yellow.
The above figure exhibits the nodes and ties based on the existence of subgroups. The first variables of interest in this picture are certain roles.

As noted in Chapter 3 and further elaborated on in Chapter 4, there are three particular roles of interest in the network: the NAO, the lead subgroup and a champion. BLMLV (node 16) serves as the network administrative organization (NAO). Data regarding the different functions (distributing information, housing data, calculating and tabulating scorecards etc.) of the BLMLV suggested the BLMLV played this unique role in the network. Network analysis helps to confirm this role.

The NAO is a central organization. The metric of Degree Centrality, as noted in the previous chapter is based upon the number of ties that an organization has. The BLMLV has more ties than any other organization in the network (24) (see table below).
The NAO in this network coordinates the autonomous activities among each subgroup in order to achieve the networks objectives.

The role of champion, an organization with expertise and information in the arena in which the network is working, but not necessarily involved in the activities of the network, was also identified through content analysis of the Implementation Agreement, as fully discussed in Chapter 4. This role is made clear through network analysis, as well. The National Park Service, node 17, is central (see table below). The National Park Services like the BLMLV serves on multiple subgroups. While other possible champions may exist, NPS has a higher degree of centrality than other organizations that could be possible champions. Also, as content analysis of the Implementation Agreement proves they have no clear administrative role. Therefore they are champions, informed in the policy arena of developing parks, trails and natural areas. The NPS serves in multiple subgroups to advise the network.

Table 2: Degree Centrality

<table>
<thead>
<tr>
<th></th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLMLV Node 16</td>
<td>24</td>
</tr>
<tr>
<td>NPS Node 17</td>
<td>22</td>
</tr>
<tr>
<td>Other PTNA Subgroup members</td>
<td>16</td>
</tr>
<tr>
<td>Other PWG Subgroup Members</td>
<td>7</td>
</tr>
<tr>
<td>Other EC Subgroup Members</td>
<td>5</td>
</tr>
</tbody>
</table>
The last role of interest is that of a lead organization or subgroup. A lead organization (or subgroup) is defined as lead because they have authority or power over other network members. However, unlike an NAO or a champion the existence of a lead organization decreases the ability to collaborate. In this case, the EC had control over the resources that were needed to meet the objectives of the network. For this reason, the EC may be considered lead, or having power over the other agencies. Control over resources is a significant advantage for a lead subgroup. Several steps were taken to confirm if the EC used their control over the resources of the network to manipulate the work of the network. Each subgroup prepared a ranking of projects to be funded. When comparing the ranks from each subgroup they are robustly similar. Table 3 reports the correlation coefficients for project rankings across the three subgroups.5

Table 3: Correlations Among Subgroups on Project Rankings

<table>
<thead>
<tr>
<th></th>
<th>PTNA Project Rankings</th>
<th>PWG Project Rankings</th>
<th>EC Project Rankings</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTNA Project Rankings</td>
<td>1.000</td>
<td>.974</td>
<td>.974</td>
</tr>
<tr>
<td>PWG Project Rankings</td>
<td>.974</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>EC Project Rankings</td>
<td>.974</td>
<td>1.000</td>
<td>1.000</td>
</tr>
</tbody>
</table>

5 The Kendalls Tau –B is reported. Kendalls’ Tau-B is a non-parametric test of association, based upon the Pearson Correlation Coefficient. Population studies do not report confidence intervals.
The above table exhibits robust similarity among the three subgroups about the projects to be approved by the whole network. There is no evidence that the EC, as the lead subgroup abused their control of resources to co-opt the work of the network. Each group has a very similar rank of projects to be funded. Such robust agreement suggests that the EC, while contextually may have been a lead subgroup did not affect the work of the network.

In network analysis subgroups are often called cliques (Hannerman and Riddle, 2005). A clique is a subset of organizations that are more closely tied to each other than they are to other organizations in a network. Noting the existence of subgroups or cliques is integral to network analysis because it captures how the network operates as a whole, as well as the equivalence classes/positions that nodes hold in the network.

Table 4: Cliques in the Network

<table>
<thead>
<tr>
<th># of Cliques</th>
<th>Nodes in Each Clique</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-17</td>
</tr>
<tr>
<td>2</td>
<td>16-23</td>
</tr>
<tr>
<td>3</td>
<td>24-28</td>
</tr>
<tr>
<td>4</td>
<td>16, 24, 27</td>
</tr>
<tr>
<td></td>
<td>All different offices of the Bureau of Land Management</td>
</tr>
</tbody>
</table>

The existence of cliques demonstrates the whole network operates not as a cohesive whole but through partitioned activity. Clique one, is comprised of the nodes in the bottom right hand corner of the figure, colored blue, and the two yellow nodes. Clique one is the PTNA Subgroup and consisted of agencies that nominated and reviewed projects. Agencies 1-12, nominated projects. Agencies 1-17 review projects that are nominated. The PTNA subgroup used the projects scores to create a rank of projects.
The rankings of the projects are then sent to the PWG. The PWG is clique 2 and is color coded red and also includes the two yellow nodes. The PWG makes a suggestion about how many of the ranked projects, provided by the PTNA, can be funded in any one year. The PWG create their own rankings based on the PTNA ranks but cuts down to the total number of projects to be funded based on availability of funds raised through the sale of land. The PWG then passes their rankings on to the EC, clique 3, in green, for final review. The EC uses the PWG rankings to appropriate funds to the individual agencies in the PTNA subgroup who have nominated projects. Funds appropriated by the EC go to the individual agencies that nominate projects. In sum, information was passed from the PTNA to the PWG to the EC and then the EC passes resources back to the PTNA.

**Figure 19: Forms of Dependencies in the Network**
The flow of information and resources, through the cliques are what network analysts would call directed ties. A directed tie, as noted in the Chapter 3, is when an organization in a network provides a resource (of any kind) to another organization so they may meet the objective of the network. Each subgroup provides something to another subgroup. The PTNA Subgroup provides information to the PWG. The PWG then provides information to the EC. The EC, then, provides resources to the PTNA. The flow of directed ties characterizes how the network completes their objective, to create parks trails and natural areas. The form of dependencies, directed ties, limits the capacity for joint action, an antecedent to collaboration.

In addition to the form of ties this dissertation is concerned with the quality of ties. Within the PTNA subgroup of the network, the individual organizations pursue joint activity (deciding which projects to approve). The PTNA subgroup consists of the organizations that nominate projects and score all of those projects. The PTNA subgroup initiates the process. As shown in the last section the PWG and EC robustly agree with whatever the PTNA decides, making their role even more interesting to analyze. Therefore, the quality of relationships is only measured among the PTNA Subgroup.

The PTNA subgroup is comprised of organizations that both nominate and score projects, as well as organizations that just score projects. Project scores are based on four criteria, noted earlier in this chapter (See Appendix A). The process of scoring projects is characterized by reciprocal ties. The organizations of the PTNA subgroup purpose simultaneous activity in order to create a ranking of projects for approval. Organizations in this subgroup must come to a consensus decision about the projects to approve. All
organizations are part of the decision process. However, the issue is how this process resulted in shared motivation, or a shared understanding of what the network would do.

In order to examine the degree of collaboration the dissertation examines the extent that each node agrees on the projects for approval. Each project receives a score from each organization. Each score was made into a ratio: the score received/total possible score a project could receive.

Table 5: Descriptive Statistics of Project Scores Given by PTNA Subgroup

<table>
<thead>
<tr>
<th>Project Scores</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>332</td>
</tr>
<tr>
<td>Range in Project Scores</td>
<td>0 -.92</td>
</tr>
<tr>
<td>Mean in Project Scores</td>
<td>.58</td>
</tr>
<tr>
<td>Standard Deviation Mean</td>
<td>.19</td>
</tr>
</tbody>
</table>

The score, each organization gave a project, was converted into a network matrix using the “Similarities” procedures in the network software UCINET (Borgatti, Everett, & Freeman, 2002). Each cell of the matrix becomes a correlation coefficient representing how similar an organization scored projects, as compared to another organization.
Table 6: Correlations Between Organizations Based on Project Score

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.22</td>
<td>.34</td>
<td>.20</td>
<td>.24</td>
<td>.62</td>
<td>.05</td>
<td>.13</td>
<td>.23</td>
<td>.08</td>
<td>-.1</td>
<td>.34</td>
<td>.11</td>
<td>.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>.22</td>
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<td>.38</td>
<td>.34</td>
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<td>.51</td>
<td>.11</td>
<td>.25</td>
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<td>.03</td>
<td>.22</td>
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<td></td>
</tr>
<tr>
<td>3</td>
<td>.34</td>
<td>.46</td>
<td>.45</td>
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<td>.14</td>
<td>.37</td>
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<td></td>
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<tr>
<td>5</td>
<td>.24</td>
<td>.34</td>
<td>.33</td>
<td>.31</td>
<td>.53</td>
<td>.28</td>
<td>.31</td>
<td>.21</td>
<td>.18</td>
<td>.43</td>
<td>.54</td>
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<tr>
<td>6</td>
<td>.62</td>
<td>.42</td>
<td>.53</td>
<td>.38</td>
<td>.27</td>
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<td>.49</td>
<td>.52</td>
<td>.45</td>
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<tr>
<td>7</td>
<td>.05</td>
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<td>.41</td>
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<td>.28</td>
<td>.07</td>
<td>.04</td>
<td>.28</td>
<td>-.0</td>
<td>.28</td>
<td>.33</td>
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<tr>
<td>9</td>
<td>.23</td>
<td>.51</td>
<td>.34</td>
<td>.21</td>
<td>.31</td>
<td>.49</td>
<td>.07</td>
<td>.17</td>
<td>-.0</td>
<td>.51</td>
<td>.07</td>
<td>.06</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>.08</td>
<td>.11</td>
<td>.20</td>
<td>.16</td>
<td>.21</td>
<td>.15</td>
<td>.52</td>
<td>.04</td>
<td>.17</td>
<td>.29</td>
<td>.23</td>
<td>.36</td>
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<td>11</td>
<td>.11</td>
<td>.35</td>
<td>.16</td>
<td>.14</td>
<td>.54</td>
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<td>.28</td>
<td>.07</td>
<td>.36</td>
<td>-.0</td>
<td>.13</td>
<td>.43</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>12</td>
<td>.13</td>
<td>.22</td>
<td>.31</td>
<td>.37</td>
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<td>.31</td>
<td>.33</td>
<td>.06</td>
<td>.52</td>
<td>.40</td>
<td>.16</td>
<td>.43</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Nodes 8, 11 and 12 did not participate. Node 6 only had 12 observations and therefore the similarity procedure does not correlate observations for which there is not enough data. Also, in network analysis you ignore the diagonal as that is every organization correlated with itself.*
Table 7: Descriptive Statistics of Correlations Between Organizations Based on Project Score

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>.28</td>
</tr>
<tr>
<td>Mean</td>
<td>.268</td>
</tr>
<tr>
<td>Max</td>
<td>.62</td>
</tr>
<tr>
<td>Min</td>
<td>-.1</td>
</tr>
</tbody>
</table>

Similarity in how organization scored projects is not robust. Overall, the mean and median show that there was generally not a robust agreement among any of the organization in regard to how they scored projects.

The next figure is visual representation of the correlation matrix. The figure places nodes at specified distances based on the coefficient of correlation between each organization.
In this figure, if two nodes are far apart they scored projects more similarly than two organizations that are placed closer in the picture. The above figure and the correlation matrix demonstrate there is not a great deal of similarity in how organizations within the subgroup scored projects. Few organizations consistently perceive the projects that are nominated the same. The result is a wide range of scores for each project and overall a lack of similarity among the organizations in regard to how they score projects.

Lack of similarity is evidence of a failure for the process to create shared motivation, a dynamic necessary for collaboration. Another network procedure helps to confirm this findings as well.
As noted in the previous chapter, the consensus procedure can be used to identify the extent to which there is agreement among multiple nodes of a network. The consensus procedure is a method to determine to what extent a group of independents agencies can identify a “correct” answer among a subset of answers. Essentially, the consensus procedure predicts the extent to which this group of actors agreed on the projects to be funded, a necessary dynamic for collaborative action.

**Table 8: Results of Conesnsus Procedure**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Largest Eigenvalue</strong></td>
<td>64.893</td>
</tr>
<tr>
<td><strong>2nd Largest Eigenvalue</strong></td>
<td>41.740</td>
</tr>
<tr>
<td><strong>Ratio of Larges to Next</strong></td>
<td>1.55</td>
</tr>
<tr>
<td><strong>No. of Negative Competencies</strong></td>
<td>69</td>
</tr>
</tbody>
</table>

The results of the consensus procedure are eigenvalues based on the agreement of organizations about projects. The eigenvalues confirm that there is a lack of agreement, and there are explicit differences among the organizations about the score projects. To interpret the consensus procedure you examine the ratio between the first and second eigenvalue (Borgatti and Halgin, 2010). A ratio greater than three means there is a single right answer, consensus, among the independent agencies. A ratio less than three, as is found in this network means there is not a dominant opinion among the organizations about project scores. That is, no clear consensus, about what projects/activities the network should fund exists. This indicates there was as failure to initiate a process to develop shared motivation, an antecedent to collaboration.
The last issue in regard to collaboration development is position and the degree to which position facilitates joint action. As discussed in chapter 1, 2 and 3, position is a characteristic of a whole network. Position is a picture of the organizations within the network and provides a metric of the extent to which the network structure creates or inhibits joint action. The capacity for joint action is the third collaborative dynamic and is concerned with the ability of the actors to co-labor. Position identifies Betweeness and structurally equivalent classes as factors that inhibit joint-action.

Betweeness, suggests not only that component parts of a network exist, but that the parts are not densely connected. Lack of dense connection, the existence of structural holes mean the full capacity for joint action is limited instead of increased. As noted before, two nodes are between, facilitating the work of the network but also limiting the dense connection necessary to create joint action.

<table>
<thead>
<tr>
<th></th>
<th>Betweeness Centrality</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLMLV Node 16</td>
<td>177</td>
</tr>
<tr>
<td>NPS Node 17</td>
<td>45</td>
</tr>
<tr>
<td>Other PTNA Subgroup members</td>
<td>0</td>
</tr>
<tr>
<td>Other PWG Members</td>
<td>0</td>
</tr>
<tr>
<td>Other EC Members</td>
<td>0</td>
</tr>
</tbody>
</table>

The measures of Betweeness centrality above demonstrate that the BLMLV and NPS are between the subgroups facilitating interaction between the subgroups. But their existence
also suggest there are limits the overall capacity for joint action among the network subgroups.

The other position of interests is that of structurally equivalent classes, especially equivalent nodes that are not fully integrated into the work of the network. As discussed in detail in Chapter 2, nodes on the periphery connected through between nodes are often found to compete for the resources of the network because they are limited by the resources they can capture due to their position. Often the result is competition among the structurally equivalent nodes.

In this network, all of the PTNA members are connected to the resources of the network (EC) through the BLMLV. This means that all the members for the PTNA subgroup are actively trying to acquire the resources of the network (funding) through the same means. This position creates opportunity for competition. Competition may exist among the 12 organizations that were given the authority to nominate projects for review by the network in the PTNA Subgroup.
Of the twelve nodes that could nominate projects, two never nominated a project. Therefore, competition is possible among the 10 projects that took part in both nominating and then scoring projects. The set of 10 organizations are all local governments. These 10 organizations had a great deal to gain by nominating a project and being approved and a great deal to lose (resources spent preparing a nomination) in not getting approved.

The next figure is a visual representation of those 10 organizations that could nominate projects. The size of the node is adjusted for the total number of projects they nominated.
This figure demonstrates that among organizations that nominate projects there is a variety in the number of projects they nominated. The organizations that applied for more funding are depicted larger, while the organizations that applied for less funding are depicted smaller. There are various reasons why organizations would nominate more or fewer projects. The variation in number of projects depicts the competition among the structurally equivalent nodes. For example, nodes one, two and three are more competitive for funding than all other organizations and vice versa, because they nominate more projects. Therefore, those organization should have been more competitive, or score the projects of their competitors in such a way to gain advantages.

The extent to which one organization is more or less competitive can be discussed in terms of this picture. A number of projects a node nominated should be linearly
correlated with the number of projects they had approved. However, it could be that less competitive organizations purposefully lowered the scores to in order to diffuse the competitiveness of the organizations.

**Conclusions from Network Analysis**

The whole network examined in this case study is a function of roles, dependencies and position. Exploration of these three variables provides information about the critical factors of a network in practice as well as how these factors influence the degree of collaboration in the network, as it exists in practice.

Three roles are identified: an NAO, a lead subgroup and a champion. The three roles result in principled engagement, an inclusive, non-hierarchical network. Principled engagement is a necessary dynamic to create collaborative action. The BLMLV serves as an NAO. The NAO administers the work of the network. The NAO also insures that all members to participate.

A lead subgroup is identified, the Executive Committee (EC). The EC has significant power, as discussed, in this network. However, the analysis demonstrates that lead subgroup does not co-opt the work of the network. The lead subgroup provides the resources but does not take a hierarchal role in the network. The lack of hierarchy insures principled engagement.

Finally, the NPS is a champion. The inclusion of a champion insures principled engagement a broadly inclusionary process. The NPS provides knowledge and information about the policy arena in with the network operates but does not actively engage in the work of the network.
The analysis presented in this chapter demonstrates that the roles of network structure, as practiced in this network create principled engagement. Principled engagement is a necessary condition for collaborative action. However principled engagement is not the only condition for collaborative action.

Dependencies among the network organizations were assessed for both form and content. In the chapter two forms of directed ties, information and resources are identified. The directed ties suggest that information and resources flow between the groups, but the capacity for joint action is limited by the lack of reciprocal ties. The subgroups divide the labor instead of share in the labor. The description of the network, (1) as having cliques, (2) having various dependencies (information and resources) and (3) being composed of directed ties indicates that the species of network studied is coordinated as compared to collaborative. A coordinated network, as defined in previous chapters is comprised of agencies that share a mutual goal but the activities of the agencies remain primarily autonomous. Moreover, coordinated networks, are managed by recognizing various dependencies, each organization needs something from another. In order to get the work of the network done the various dependencies must be managed. Each subgroup has a different activity in pursuing the objective of the network. Each subgroup must wait for another subgroup to provide something in order to complete their activity in the process of meeting the objective. Again, various cliques, with multiple, directed dependencies are proof of a coordinated network but not a high degree of collaboration.
The other measure of dependency analyzed is the quality of dependencies. The quality of dependency is a function of the development and or existence of shared motivation, a necessary condition for collaboration. Shared motivation is the process by which organizations develop a collective, strategic idea about the work of the network. Two procedures, the similarity procedure and consensus analysis were used to assess the extent to which the network members had developed a collective sense of the issue the strategic development of parks trails and natural areas. Both measures demonstrate a lack of collective agreement. That is, a failure to develop a process to enable the autonomous agents to act in such a way that they represent a collective interests instead of an individual interest.

Position is the last variable analyzed in this chapter. Two measures of position are assessed: Betweenness and competition among structurally equivalent classes. The existence of structural holes, bridged by brokers, between nodes, limits the capacity for joint action in this network. The capacity for joint action is a collaborative dynamic necessary for collaborative action. The capacity for joint action specifically refers to the institutional arrangements that enables or disables organizations to work together. The existence of a structural hole, a position, creates a subgroup of structurally equivalent nodes that are on the periphery of this network. These nodes must compete for the resources of the network. The existence of structurally equivalent nodes that are not densely connected to the resources of the network limit the capacity for joint action by specifically incentivizing competition among the nodes.
Roles, dependencies and position in the analysis provide a framework to identify the degree to which the network is collaborative. Overall the network is not collaborative. One of the three necessary collaborative dynamics exits in the network, principled engagement. Principled engagement is a function of the inclusive structure and lack of hierarchy. In contrast there is a lack of shared motivation and capacity for joint action. The lack of shared motivation is a function of the poor quality of ties. The actors do not similarly conceive of the projects for funding. The capacity for joint action is a function of positions and directed dependencies in the network. The network is portioned into cliques, the only interaction is the sharing of information and resources, there is not reciprocal, participatory action taken. Moreover, the work is facilitated by a between agent further limiting joint action. In fact, competition is created because one subgroup is not well connected to the rest of the network.
Table 10: Findings from Network Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measure</th>
<th>Effect on the Degree of Collaboration</th>
</tr>
</thead>
</table>
| Roles      | NAO     | + & –
|            |         | Increases principled engagement      |
|            |         | Decreases capacity for joint action   |
| Lead       |         | No Effect in Practice                  |
| Champion   | +       | Increases principled engagement       |
| Dependencies | Directed | -                                    |
|            |         | Decreases the capacity for joint action|
| Reciprocal | Not Applicable – does not exist in practice |
| Distance   |         | -                                     |
|            |         | Decreases the development of shared motivation |
| Positions  | Betweenness | -                                    |
|            |         | Decreases the development of capacity for joint action |
| Clique     |         | -                                     |
|            |         | Decreases the capacity for joint action |

The results of the network analysis suggest that the degree of collaboration in the network is quite low. The network analysis demonstrates the lack of collaboration using multiple variables, measures and data. The next stage of the analysis is to examine the effect of the structure on the work of the network. Together the findings from the network analysis and the confirmatory analysis will help to answer the question of effectiveness.

Overall the network analysis provides a picture of how this network works: the organizations in the network, what their activities are, who they are dependent upon.
The next chapter will use these variables to assess the extent to which they impact the work of the network, outputs.
5. Confirmatory Analysis

Overview

The purpose of this chapter is to examine the extent to which network structure affects the work of the network, outputs - the projects that are approved or not approved.

This chapter addresses research question 3:

3. To what extent do structural characteristics of the network context have an effect on the outputs of the Southern Nevada Public Lands Management Act?

In order to assess the extent to which structural characteristics of the network affect the likelihood of getting a project approved two models are presented. The variables used in the model are described in detail in Chapter 3. The dependent variable is a binary variable for a project being approved or not approved, and the independent variables are measures of the structure of the network that are expected to explain why a project is approved or not approved.

Table 11: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Va.</td>
<td>.52</td>
<td>.50</td>
<td>362</td>
</tr>
<tr>
<td>Collaboration</td>
<td>.496</td>
<td>.500</td>
<td>250</td>
</tr>
<tr>
<td>Competition</td>
<td>2.712</td>
<td>1.761</td>
<td>362</td>
</tr>
<tr>
<td>Node 16</td>
<td>.405</td>
<td>.492</td>
<td>170</td>
</tr>
<tr>
<td>Node 17</td>
<td>.277</td>
<td>.448</td>
<td>249</td>
</tr>
<tr>
<td>Project Score</td>
<td>.505</td>
<td>.500</td>
<td>350</td>
</tr>
<tr>
<td>Strategic Orientation</td>
<td>2</td>
<td>1.09</td>
<td>258</td>
</tr>
</tbody>
</table>
Before, running the model the independent variables were all scanned for multi-collinerarity. Node 16 and Node 17 were collinear. Moreover, Node 16, the NAO stopped scoring projects in round 6 in order to attend to their administrative duties, and had another field office of the BLM take over this duty. Therefore there is a great deal of missing data for Node 16 and they were removed from the model.

Tests of the independent variables effect are reported in the next table. A significant Chi-square test statistic means you can reject the null hypotheses; the variable has no effect on the dependent variable. Three variables in the model do not appear to have an effect. However, they remain in the model because of theoretical relevance.

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Chi-Square</th>
<th>Df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration</td>
<td>1.524</td>
<td>1</td>
<td>.217</td>
</tr>
<tr>
<td>Competition</td>
<td>2.156</td>
<td>1</td>
<td>.142</td>
</tr>
<tr>
<td>Node 17</td>
<td>8.549</td>
<td>1</td>
<td>.003</td>
</tr>
<tr>
<td>Project Score</td>
<td>117.876</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Strategic Orientation</td>
<td>3.419</td>
<td>3</td>
<td>.331</td>
</tr>
</tbody>
</table>

**Model One**

The model including five predictor variables is significantly improved over the intercept only model (67.176** compared to 142.577). The Pseudo R2 measure, Nagerleke, suggests the model predicts 52% of the variance in the dependent variable.
Comparing observed verse predicted observations the model correctly predicts 81.6% of the cases correctly. The model, including the variables that measure network structure and the two control variables accurately predict the status of a project being approved or not approved quite well.

Table 13: Model One

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-3.801</td>
<td>.987</td>
<td>14.884</td>
<td>1</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Collaboration</td>
<td>.565</td>
<td>.457</td>
<td>1.528</td>
<td>1</td>
<td>.216</td>
<td>.718</td>
</tr>
<tr>
<td>Competition</td>
<td>-.162</td>
<td>.112</td>
<td>2.108</td>
<td>1</td>
<td>.147</td>
<td></td>
</tr>
<tr>
<td>Node 17</td>
<td>1.756</td>
<td>.626</td>
<td>7.870</td>
<td>1</td>
<td>.005</td>
<td>5.789</td>
</tr>
<tr>
<td>Project Score</td>
<td>3.930</td>
<td>.440</td>
<td>79.715</td>
<td>1</td>
<td>.000</td>
<td>50.921</td>
</tr>
<tr>
<td>Strategic Orientation 1</td>
<td>.267</td>
<td>.692</td>
<td>0.149</td>
<td>1</td>
<td>.699</td>
<td>1.307</td>
</tr>
<tr>
<td>Strategic Orientation 2</td>
<td>1.185</td>
<td>.798</td>
<td>2.204</td>
<td>1</td>
<td>.138</td>
<td>3.270</td>
</tr>
<tr>
<td>Strategic Orientation 3</td>
<td>.234</td>
<td>.832</td>
<td>0.079</td>
<td>1</td>
<td>.779</td>
<td>1.263</td>
</tr>
</tbody>
</table>

Number of Obs. 249
Chi2 193.276
Prob>chi2 .000
2 Log Likelihood 107.018
Pseudo R2 Nagelkerke 0.720

The overwhelmingly significant and robust predictor of a project being approved (verse not approved) is project score. The variable, project score, is the sum score a project received across all organizations that scored projects as a percentage of the total
possible score a project could receive. Therefore, and not surprisingly, score is the most accurate predictor of a project being approved. A project that received a high score is 50 times more likely to be funded than a project that did not receive a high score (OR = 50.921**).

**Model Two**

The robust indicator of project score makes it difficult to interpret the rest of the variables. In order to clarify the relationship between the structural variables and the dependent variable, model two holds project score at the mean. Holding the project score at the mean will explain the variance in project approval that is not attributable to project score. This method is often used in logistic regression (Agresti, 1996) Model two includes four predictor variables and holds project score at the mean (.505).

Model two is significantly improved over the intercept only model. Comparing observed verse predicted observations the model correctly predicts 70.7% of the cases. When the project score is held at the mean (a project is neither high scored nor low scored) structural variables about the network predict about 34% of the variance in the status of a project being approved.
Table 14: Model Two

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>Std. Error</th>
<th>Wald</th>
<th>Df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-2.300</td>
<td>.637</td>
<td>13.045</td>
<td>1</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Collaboration</td>
<td>.759</td>
<td>323</td>
<td>5.520</td>
<td>1</td>
<td>.019</td>
<td>2.136</td>
</tr>
<tr>
<td>Competition</td>
<td>-.194</td>
<td>.082</td>
<td>5.600</td>
<td>1</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Node 17</td>
<td>2.645</td>
<td>.449</td>
<td>34.672</td>
<td>1</td>
<td>.000</td>
<td>14.085</td>
</tr>
<tr>
<td>Project Score@Mean</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Strategic Orientation 1</td>
<td>.193</td>
<td>.480</td>
<td>.161</td>
<td>1</td>
<td>.688</td>
<td>1.213</td>
</tr>
<tr>
<td>Strategic Orientation 2</td>
<td>.994</td>
<td>.562</td>
<td>3.132</td>
<td>1</td>
<td>.077</td>
<td>2.702</td>
</tr>
<tr>
<td>Strategic Orientation 3</td>
<td>.139</td>
<td>.573</td>
<td>.059</td>
<td>1</td>
<td>.808</td>
<td>1.149</td>
</tr>
<tr>
<td>Number of Obs.</td>
<td>249</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chi2</td>
<td>75.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob&gt;chi2</td>
<td>.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Log Likelihood</td>
<td>142.013</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pseudo R2 Nagelkerke</td>
<td>0.343</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The significant variables in the model include, collaboration, the extent to which there was consensus among the organizations in how a project is scored, competition, who scale measuring who nominated the project and how many project overall they nominated, the control variable for strategic orientation 2, resource protection, and the score from node 17.

Collaboration, measured as the extent to which organizations agree about individual projects to be approved is quite low (demonstrated in Chapter 4). The model shows that the extent to which collaboration exists or does not exist about a project is also a significant predictor of a project being approved or not approved. A value close to zero
for the logit coefficient for this variable illustrates that as collaboration increases the likelihood of getting funded decreases. Interestingly, this finding demonstrates that projects in which there was agreement had a lower odds of getting funded. On further examination, it appears, organizations most often agree about the project that will not be funded as compared to the projects that will be funded. There is an overall lack of collaboration about the approved projects. This finding about collaboration supports the findings from the network analysis. Overall the network is characterized by a lack of agreement about the main objective of the network organizations did not agree. Organizations in the network were more likely to collaborate on projects that were not approved, than approved. Collaboration has little absolute effect on approval of projects.

Competition is also not a robust predictor of the dependent variable. The variable for competition is an ordinal scale based on the number of projects nominated by nodes in the PTNA Subgroup. The variable captures the extent to which, competition fostered by being part of a structurally equivalent clique, affects the likelihood of getting a project approved. As discussed in the literature review and network analysis, nodes that nominated more projects would be more competitively trying to access the resources of the network. The variable competition captures the extent to which organizations that nominated more projects were more likely to get a project approved.

The model demonstrates, that when holding project score at the mean, projects nominated by less competitive organizations (nominated fewer projects overall) were more likely to get approved. That is competition among the organizations for the resources exists, but it is inversely related to getting approved. A less competitive
organization is more likely to get a project approved. Therefore, competition is not the
dominant structure for getting the work of this network done. Competition was offered as
counter hypothesis to collaboration as the means by which this network got things done.
However, model 2 demonstrates that competition is not the structure by which projects
are approved. The next figure is used to explicate this finding.

A contingency table between competition and the dependent variable, approved
verse not approved, demonstrates that as a percentage of approved projects, organizations
that nominate fewer projects (higher number) have more projects approved, or an
increased likelihood of getting funded.

Competition, the autonomous interests of the organization did not dominate the
decision making process for approving projects. Instead, it appears there is a mechanism
for distributing project approval across all agencies that nominate projects, a non-linear
dynamic. The non-linear distribution of projects across the organizations’ can be seen
below.
A uniform distribution of projects across the organization demonstrates that competition does not explain the action taken by the network. The next chapter elaborates on this finding.

The other significant variables were node 17, the NPS, who was a champion and Strategic Orientation 2, resource projection. A project with a high score from Node 17 increases the odds of funding by a factor of 14 (OR=14.085**). Again, the logit coefficient demonstrates, Node 17 is not an overwhelming predictor of the dependent variable. However, node 17’s effect size (odds ratio) demonstrates that the projects that Node 17 approved were highly likely to get approved. This finding is consistent with the role of Node 17 as a champion. As a champion they would approve the projects that were best, similar to the project score variable. However, the champion is not an
overwhelming predictor. Therefore, the champion did not co-opt the work of the network.

Only one category of strategic orientation, the control variable for the type of project that was proposed, was a significant predictor of getting funded. Strategic Orientation 2 is the variable for resource protection. If a project was classified as resource protection it was two times more likely to get funded than if it was categorized as a cost and value project (OR = 2.072 *). The lack of a strong predictor amongst the strategic orientation variables is further evidence of the lack of cohesion about the goals of the network.
6. Discussion, Implications and Conclusion

Overview

The chapter triangulates the findings from the network analysis presented in Chapter 4 and the regression results presented in Chapter 5. The chapter also includes suggested remedies for the issues that were identified with this network and suggestions for future research.

Discussion of Findings

Networks as an inclusive structure for organizing interactions between government agencies for the provision of public services have the potential to improve the effectiveness of government services. Therefore, the purpose of the dissertation is to evaluate a public network that provides parks, trails and natural areas in Southern Nevada with the intent to evaluate the effectiveness of the network form of organization.

Through network analysis, and logistic regression analysis, the dissertation demonstrates that elements of the structure of the network impact the work of the network. The network analysis illustrates how structure can be used to identify and measure areas in which networks collaborate or fail to collaborate. Collaboration is a key structural factor affecting the work of a network. Findings from the network analysis suggest the degree of collaboration in the network is low. Findings from the regression analysis demonstrate the structure of the network impacts the outputs of the network.

The network analysis indicates the structure of the network influences the quality of relationships that are forged. Quality relations are the key factor in creating effective
networks. However, not all networks are structured the same and therefore not all networks relationships provide the same value. Structure can enable or limit the effectiveness of a network. Thompson et. al. (2007) say this:

Collaboration is often assumed as one way to efficiently allocate scarce resources while building community by strengthening inter-organizational ties. Case research suggests, however, that practitioners in this environment face significant collective action problems that undermine their potential for building collaborative relationships. (p. 4).

The case research presented here, supports this claim. Collaboration was called for and but not developed. Collaboration was not an attribute of the network studied. The lack of collaboration is demonstrated in the network analysis in several ways.

Collaboration is process composed of three dynamics: principled engagement, shared motivation and joint action. The network analysis shows the existence of principled engagement. Principled engagement is about creating an inclusive network without hierarchy. Several roles in the network reinforced principled engagement rather than detracted including the existence of a Network Administrative Organization and a champion. However, while principled engagement exists, shared motivation and the capacity for collective action were not developed.

Shared motivation is the process by which individual actors develop a collective goal for the network. The network analysis demonstrates that the actors did not similarly conceive of the work that they were doing. The consensus procedure demonstrated that plural beliefs about the work of the network exist among the organizations in the network. More simply, the scores of projects, the outputs of the network, assigned by the
organizations in the network, varied significantly. Few nodes in the network agree about what projects to approve or not approve. Moreover, a variable that would demonstrate the existence of a collective goal, strategic orientation, also did not explain the outputs of this network.

Developing collaboration is also a function of creating institutional arrangements for joint action. The network analysis demonstrates several structural arrangements limited the development of joint action. Cliques or subgroups exist in this network. Cliques indicate that the work of the network is divided rather than unified. Furthermore the ties that connect the groups are directed ties. Directed ties indicate that the groups provide resources and information to each other but the ties are not reciprocal. Furthermore, within the subgroup in which the main work of the network is done (scoring projects) a process for joint decision making existed that did not incentivize reciprocal relationships. The joint decision process maintained the autonomy of individual organizations rather than creating a collective process. Finally, the subdivision within the network creates relational advantages and disadvantages for some members of the network; this is the concept of position. The position of the PTNA subgroup on the periphery of the network connected to the resources of the network through a between actor, a broker, incentivizes competition (instead of collaboration) among the subgroup members. The subgroup members are in direct competition for the resources of the network. All of these factors limit joint action rather than leveraging the value of connection to increase joint action.
The findings from the network analysis indicate, the network is not collaborative. In the continuum of species of networks, cooperative, coordinated and collaborative (Keast et. al., 2007), the network is most like a coordinated network. Coordinated networks share information and resources with the intention of providing services more efficiently (as compared to effectively). The SNPLMA network did create new relationships to provide public services but there is no evidence that the relationships are of high quality. The structure of this network created significant challenges to developing collaborative action. The structure reinforced individual interests rather than leveraging the capacity of connections.

After identifying the structure of the network as coordinated variables of network structure measured using network procedures are used to test the hypothesis that structure of the network impacts the work of the network. The findings from the logistic regression analysis demonstrate the work of the network, the outputs (projects approved verse not approved) is a uniform distribution of projects across entities. The projects chosen for approval have no significant strategic orientation and are the not the projects in which there was significant agreement/consensus about.

The resulting output distribution from this network is not the result of a collaborative dynamic and is therefore not collaborative action. Collaboration is defined as action that is taken that transcends the individual interests of any one organization. It is a process of principled engagement, shared motivation and joint action. Collaboration is a joint action that leverages connections among entities to provide something that an individual organization could not do alone. Therefore the effectiveness of the network
form of organizing in this network is limited. Network effectiveness was defined in this dissertation as:

The extent to which relationships among organizations in a network (1) exist and (2) are of quality, the extent to which the relationships “…link members to their resources, facilitate joint action and learning and, in doing so, gain leverage from these collective interactions to respond in new and innovative ways to issues” (Mandell and Keast, 2009, p. 716).

Clearly, the outputs from this network are not the function of collective interactions and are not innovative policy responses. Instead the outputs are a division of resources among all the members of the network. The projects in this dissertation are the result of autonomous agencies acting across organizational boundaries but not with the aura of collaboration that is expected from such an arrangement. However, while the network level measure of effectiveness is not realized there is evidence that at the organizational level or greater constituent level effectiveness may have been realized. For instance, organizations did gain funding for the development of parks and recreation, and constituents do benefits from over $500,000,000 in new parks and recreation areas in Southern Nevada.

Nonetheless, the pattern of relationships in this dissertation does not meet the standards of formative effectiveness put forth. Moreover, this pattern is similar to the concept of mutual adjustment. Mutual adjustment is not often considered in the networks literature or collaborative public management literature; but is a common attribute of intergovernmental relations literature. Mutual adjustment is a pattern of exchange for the purpose of maintaining a system (McGuire and Agranoff, 2004). Mutual adjustment is a
criticism of rational choice model of public management. Mutual adjustment suggests that plural actors do have individual interests and those interests are not easily supplanted by collective interests. Therefore, policy decisions are efficient responses to all individual policy interests at any one time rather than a strategic choice. Mutual adjustment is a process of simplification; allowing everyone to have their own interests met. Instead of identifying the state of affairs that is most wanted, the actors create a state of affairs that is acceptable to everyone. Charles Lindbloom (1959) describes mutual adjustment this way:

In the United States, for example, no part of government attempts a comprehensive overview of policy on income distribution. A policy nevertheless evolves, and one responding to a wide variety of interests. A process of mutual adjustment among farm groups, labor unions, municipalities and school boards, tax authorities, and government agencies with responsibilities in the fields of housing, health, highways, national parks, fire, and police accomplishes a distribution of income in which particular income problems neglected at one point in the decision processes become central at another point. (p.85).

Lindbloom (1959) goes on to suggest that public managers are muddling through, a pattern of sharing and stop gap action that has no strategic purpose or rational explanation. Mutual adjustment is a function of the plural interests that are present at any one time. While this process does not live up to the potential that network advocates hold; it does have some positive attributes. Lindbloom (1959) say this,

For all the imperfections and latent dangers in this ubiquitous process of mutual adjustment, it will often accomplish an adaptation of policies to a wider range of interests than could be done by one group centrally. (p.85-86).
Mutual adjustment is a non-linear dynamic, a function of complex interactions and exchanges that exist in an intergovernmental setting. Mutual adjustment is not inherently effective but it is not a strategic action that benefits the masses.

Therefore, this is a story about the failure of a network from the beginning to establish a structure, a web of relationship among multiple organizations that enables them to do something differently than they would alone. This finding is significant for academics as well as practitioners. Most research on network effectiveness focuses on the multiplexity of effectiveness which may obscure the critical process by which organizations come together. Furthermore, attention has been spent on developing interpersonal relations and managing collaboration without identifying the key features of structure that would enable or hinder the development of collaboration. Structure is a starting point for developing collaboration. Based on the findings presented here increased attention should be given to the structure of networks - setting up networks, identifying the proper actors to include in the networks, engaging actors in the process, providing a system for developing shared goals and developing reciprocal and quality interactions among all of the members, not portioning the work.

Two key barriers to developing collaboration in this network were structural. The BLMLV gave the goals to the network rather than letting the entire network develop their own goal and coalesce around those goals, i.e. develop consensus and shared motivation. This process while arduous, I believe may allow actors to become more clear about their goals, begin to value different perspective and develop closer ties to other agencies. Moreover, the scoring procedure was a significant barrier to developing collaboration,
specifically limiting both the development of shared motivation and the capacity for joint action. The scoring procedure allowed each individual agency to rate a project based on their own perspective. The scoring procedure limited the interaction between the agencies. And finally, the scoring procedure made the sum score a project received the most significant predictor of getting a project approved. But, the sum score does not reflect a shared idea about the project; instead the sum score is an imprecise measure of the network goals. The sum score takes into account all of the variation that exists among a group that has not developed a single perspective but instead each has a unique perspective. Furthermore, the sum of scores is subject to bias, created when organization gave higher or lower scores to a project in order to improve the score of their own projects.

Network structure, the process that creates relationships across organizations is a significant factor in developing the necessary dynamics for collaboration to exist. External provision of goals and a scoring procedure that allows autonomous agencies to maintain their individual perspective limits the development of collaboration, as this dissertation demonstrates. The next section will offer some rules for practitioners when developing network structures to encourage results different than were identified in the dissertation.

**Implications**

The research demonstrates the structure of the network can limit the ability to collaborate. Collaboration is important because it is through collaboration (not just networks) that innovative policy responses are developed. Based on the analysis in this
dissertation several implications can be drawn about how to structure a network so as to develop not detract from the process of collaboration.

   First, the structure needs to engage diverse and broad partners, principled engagement. Principled engagement allows for an inclusive process. While each partner does not have to have the same role in the work of the network, no actors can have a more powerful role than others. Hierarchy limits the process of engagement.

   Second, the structure should be based on reciprocal ties instead of directed ties. Directed ties, limit interaction instead of providing a forum for the development of shared motivation. Limited interaction limits the capacity for joint action. For instance, the joint decision process of scoring projects limits the capacity of connections instead of leveraging the capacity of connections. Moreover, scoring projects maintains autonomous interests instead of developing a collective interest.

   Third, a process must exist for developing shared motivation. The current network was provided with the metrics on which to score projects (strategic orientation variables) by the BLMLV. The nodes themselves did not have a process for discovering and defining the goals of the network themselves. Providing criteria and having individual organization score projects, maintained individual interests rather than developed a collective interest.

   The model that SNPLMA used to identify and fund projects with monies garnered from the sale of land has been said my some to be a model for the West. Therefore the implications provided here can be used to improve the structure of a network that would come together for this purpose. However, the implications are not limited to just
networks for the same purpose as SNPLMA. The implications, three broad guidelines about how to structure a network are generalizable to the range of public management networks that are concerned with innovative policy responses. From health care to transportation networks public managers are looking to generate more resources, gain more capacity and generate new solutions. Networks may provide these solutions but it is not the network form alone that allows networks to be useful and create these advantages. The disadvantages of networks lie in the development of collaboration, a process that transcends individual interests and leverages resources to develop innovative responses.

Developing collaboration is not a simple feat. Collaboration will probably require a good structure, good interpersonal relations and a good leader. The implications from the dissertation are suggestions about what a good structure is. As suggested, a good structure is one that is inclusive, has a process in places for developing shared motivation, and develops the capacity for joint action. One idea for developing an inclusive network is having a lead or administrative agency conduct a stakeholder analysis. A snowball sampling technique may then be used, where each stakeholder that was identified is then asked to also complete a stakeholder analysis. Any additional organizations that are mentioned could be asked to complete a stakeholder analysis. The snowball method is used until no new organizations are noted in a stakeholder analysis. This method would bring interested parties from a variety of perspectives into the fray. Developing shared motivation may be as easy as fostering a conversation among the members about the goals of the network. Just as developing a mission is important way
to share goals within an organization (Goodsell, 2010) developing network goals will help to share motivation among the network members. Method for developing goals from multiple stakeholders are well documented in the planning literature and include charettes, retreats and other group facilitation methods. The first step, however, is a structure that allows this discussion to occur. Finally, a structure must be used that allows for joint action. Joint action is to co-labor or work across individual organizational boundaries. This can occur in many forms. In this instance, two options would have been to ask organization to co-sponsor projects and/or choose projects for approval by a super majority (instead of sum of scores). Both are simple changes that would allow for greater joint action.

**Future Research**

The dissertation provided conceptual clarity about networks. Networks are not an inherent structure for improved governance. They are a broad type of organizational form, a genus, with both positive and negative attributes. Therefore, the effectiveness of the network lies in the species of network. In contrast to past research, the species of network in the dissertation is based on the quality of relationships that are formed and maintained within the network. Future research should compare and contrast networks based on species, not genus as effectiveness lies in the quality of the relationships that the network creates not the organizational form alone.
Conclusions

In regard to the four research questions asked at the beginning of the dissertation, the dissertation demonstrates the following:

Research Question One: What are the distinctive characteristics of the structure of the network that carried out the activities of the Southern Nevada Public Lands Management Act?

The distinctive characteristics of the structure of the network that carried out the activities of SNPLMA, include, roles (NAO, lead and champion), directed dependencies of different content, resources and information, and directed dependencies of different quality and an overall networks in which the position of agencies is such that they are not all densely connected.

Research Question Two: To what degree can the network studied be characterized as collaborative?

There is very little evidence of collaboration in this network. The network engages diverse members and lacks hierarchy. However there is little evidence of shared motivation or the capacity for joint action.

Research Question Three: To what extent do structural characteristics of the network context have an effect on the outputs of the Southern Nevada Public Lands Management Act?

The structural characteristics of the network affect the outputs of the network. The model that included structural attributes of the network (collaboration & competition) explains approximately 70 of the 168 projects that were approved correctly.
The structure created a network with a uniform output distribution. The uniform output is a pattern of mutual adjustment in which the resources of the network are shared across all organizations in the network.

Research Question Four: Was the Southern Nevada Public Lands Management Act effective?

Based on the definition of effectiveness provided in the dissertation,

The extent to which relationships among organizations in a network (1) exist and (2) are of quality, the extent to which the relationships “…link members to their resources, facilitate joint action and learning and, in doing so, gain leverage from these collective interactions to respond in new and innovative ways to issues.” (Mandell and Keast, 2009, p. 716),

The network is not effective. The structure of the network created no incentive to leverage the resources of the individual interests to provide an innovative policy response.

In regard to the rationale for this study, the cleavage that exists between the positive attributes of networks and the negative attributes of networks, the dissertation provides a great deal of information to close the debate. The answer to the debate is that networks alone are not an inherent organization form that increases the effectiveness of public management acts. The value of networks lies not in simply having a network but insuring the network is effective, leverages the capacity of the individuals to do something they could not alone. Leveraging individual interest’s means making sure the structure supports the process of collaboration not detracts from the process of
collaboration. The issue in this debate is not is networks improve governance but the extent to which networks are collaborative.

Networks are a form of organization with unique dynamics. Networks do in fact function differently than traditional organizations. Specifically, they are based on relationships among organizational units. Therefore, relationships are the key factor in understanding networks. However, the existence of relationships alone is not enough to characterize a network. Characterizations of networks should include measures of the quality of connections. The structure of the network, the roles, dependencies and positions of organizations, that characterize relationships in the network affect the work of the network. Moreover, this dissertation proves that the quality of relationships impacts the work that is done.

The dissertation demonstrates that the structure of the network has a significant impact on the work of the network. Deference must be given to structure in both practice and theoretical analysis of networks. The structure of the network made collaboration, as scholars understand it today difficult to achieve. Collaboration is important because it the process that makes a network effective. The network in the dissertation did not create collaboration because it limited the processes of developing shared motivation and joint action. Instead, the structure partitioned the work of the network in such a way that makes this network better described as coordinated than collaborative.

To date, there is not a significant literature on the effect of network structure on the work of networks. In fact, few studies even consider networks as varied based on structure. Therefore, the dissertation fills that cleavage in current knowledge about the
structural factors that make networks an effective organizational form. Support for the conclusion that structure affects performance is provided in the dissertation. Individual actors of the complex system that is a network respond to the conditions (structure) that they are put in. The result is pattern that emerges from the structure. Specifically, the actors divvy resources rather than generate projects that leverage the capacity of the group.

Structure is unequivocally a factor in creating the pattern of outputs that resulted in this dissertation. The non-linear pattern of outputs is a result of a coordinated network structure. The outputs are the efficient division of resources meant to satisfy all the members of the network. They are not a strategic activity meant to improve the services the network offers constituents.
Appendix A: Criteria Used by PTNA Subgroup to Score Projects

1 Demand: Provides a new or improves an existing park, trail or natural area to meet the demands and changing demographics of residents and visitors
   a. The project meets an unfilled demand or deficiency for parks trails and natural areas
   b. Describes how the facility meets the need(s) of the target demographic
   c. The project is unique and or significant to the region it is or will be established in
   d. Addresses, remedies or improves a safety concern(s)

2 Resource Protection: Protects or improves the integrity of environmental, cultural, historical, scientific, and open space resources.
   a. Significance of environmental, cultural, historical scientific or open space resources
   b. Nature of any threat to the resources, urgency for action and desired outcomes
   c. The project seeks to protect or minimize impact of environmental, cultural, historical, scientific, and or open space resources.
   d. Provides educational value related to resource protection.

3 Connectivity: Will connect parks, trails and natural areas to form a more unified system.
   a. Provides connectivity to a regional/local park, trail or natural area
   b. The park, trail or natural area is part of an approved regional or local plan. (If no formal regional/local approved plan describes the planning process)
   c. Is a direct phase of a previously approved SNPLMA project?

4 Cost and Value of Investment: Evaluates, describes, and considers the costs and benefits of the project.
   a. The projected budget, associated costs, and phasing considerations of the proposal are stated and justified.
   b. Evaluation of Public demand/use vs. investment required (i.e. service of areas/radius, communities benefitted)
   c. Design or approach of project minimizes future maintenance and or replacement costs to the extent possible for the type of project.
   d. Partnerships and value of contribution to the project (i.e. financial, volunteerism)
Appendix B: Definitions Used in Dissertation

Betweeness – a measure of position in a network where one agency is positioned in between others in the fabric of the network.

Capacity - “...the ability to do what is needed and wanted” (Cigler 2011, p 231).

Capacity for joint action - an institutional arrangements that allows for complex interactions, among plural actors including joint decision making and co-laboring, in order to deliver on the shared goal.

Champion - an agency that has influence and expertise in the policy arena of the network but does not necessarily have a high stake in the work of the network.

Collaboration - A process by which principled engagement, discovery of shared goals and collective action occurs and results in an action that is markedly different than what one organization could produce alone. (Based on Emerson et. al., 2011 and Mandell and Keast, 2009)

Cooperative networks - are composed of independent actors that share information and expertise.

Coordination - The act of managing interdependencies between activities performed to achieve a goal (Malone and Crowston, 1994); requires principled engagement but does not exhaust the development of shared motivation or force the capacity for joint action.

Coordinated networks - each organization in a network maintains individual interests and goals but interact with other agencies to improve the efficiency of the work.

Dependencies - the ties that link organizations to other organizations in a network

Governance - “... a body of theory based on lateral relations, inter – institutional relations, the decline of sovereignty, the diminishing importance of jurisdictional borders, and a general institutional fragmentation” (Lynn, Henirich and Hill, 2002, p. 226).

Intergovernmental relations - the interaction and interrelationships between levels and units of government in a complex multilayered (federal) system of government” (Stephens and Wikstrom, 2007, p. 1).

Lead organization - an agency with greater overall power in the work of the network.

Interdependency - when two or more organizations must take each other into account if they are to accomplish their goals.
Networks – “…a more or less stable pattern of social relations between mutually dependent actors, which form around a policy, program, and/ or cluster of means and which are formed, maintained and changed through series of games” (Kickert et. al., 1997, p. 6).

Network analytical methods - “Social network analysis has emerged as a set of methods for the analysis of social structures, methods which are specifically geared towards an investigation of the relational aspects of these structures. The use of these methods, therefore, depends on the availability of relational rather than attribute data.”

Network Effectiveness – The extent to which relationships among organizations in a network (1) exist and (2) are of quality, the extent to which the relationships “…link members to their resources, facilitate joint action and learning and, in doing so, gain leverage from these collective interactions to respond in new and innovative ways to issues” (Mandell and Keast, 2009, p. 716).

Network Administrative Organization (NAO) - disseminates funds, administers the work of the network and coordinates the activities among the members of the network.

Network Structure - “patterns of particular ties between actors, where variation in the …strength of ties is meaningful and consequential” (Cook and Whitmeyer, 1992, p. 118).

Position - picture of the network that places agencies into the picture based on the relationships they do and do not have with other agencies.

Principled engagement is the act of including actors in the network as well as providing them a role in the initiative without creating power differentials.

Process evaluation - evaluation focused on the steps that lead to outcomes

Roles – attributes of individual organization in the means-end relationship of a network.

Shared motivation - the process of developing a collective goal among plural members of a network.

Structural equivalence - similarity among organizations based on their position in the network.
References


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Curriculum Vitae
Josephine Gatti

EDUCATION
8/07 - Exp. 5/12 University of Nevada, Las Vegas, School of Environmental and Public Affairs, Las Vegas, Nevada
Ph.D. Candidate in Public Affairs
Dissertation: A Flower Blooms in the Desert: Managing Networks for Collaboration

8/05 - 5/07 Appalachian State University, Department of Public Administration, Boone, North Carolina
Master of Public Administration
Capstone: Structure and Accountability in Local Economic Development Agencies

8/02 – 8/05 Appalachian State University, Department of Communications, Boone, North Carolina
Bachelor of Arts in Communications/Public Relations, Minor in English

WORK HISTORY
8/11- Present Assistant Professor of Public Administration, Texas A&M University-Corpus Christi

8/07- 8/11 Graduate Assistant and Part Time Instructor, University of Nevada Las Vegas, NV

5/05 -5/07 Restaurant Manager, Blowing Rock Country Club, Blowing Rock, North Carolina

5/07 -9/07 Economic Development Intern, Holly Springs, NC

8/05- 5/07 Graduate Assistant, Appalachian State University, Boone, NC
TEACHING
Spring 2012  State and Local Politics, Undergraduate
Spring 2012  Public Budgeting, Graduate
Spring 2012  Program Evaluation, Graduate
Fall 2011  Management of Public Organizations, Graduate
Fall 2011  Theory and Practice of Public Administration, Graduate
Fall 2011  Strategic Planning, Graduate
Fall 2010  Seminar in Fiscal Administration, Graduate
Summer 2010  Survey of Public Administration
Summer 2010  Leadership in Public Bureaucracies
Spring 2010  Intergovernmental Relations
Spring 2010  Public Budgeting and Finance
Fall 2009  Public Budgeting and Finance, online
Summer 2009  Leadership in Public Bureaucracies, online
Summer 2009  State & Local Government Administration, online
Spring 2009  Public Budgeting and Finance
Fall 2008  Survey of Public Administration,
Summer 2008  Survey of Public Administration, online

PUBLICATIONS


PRESENTATIONS


**DEVELOPMENT AND WORKSHOPS**

**Spring 2012**  Peer Collaboration Workshop (teaching), Texas A&M University - Corpus Christi, 15 hours

**Fall 2011**  New Faculty Development, Texas A&M University - Corpus Christi, TX 15 hours

**May 2011**  Workshop in Network Analysis, Political Networks Association, Ann Arbor, MI 24 hours

**June 2009**  International Political and Social Sciences Consortium, Ann Arbor, MI 54 hours

**June 2003**  Completion of North Carolina Real Estate License training 75 hours

**GRANT APPLICATIONS**

**2012**  Center for Faculty Excellent, Development Grant, $500

**2011**  Sustainable Communities Regional Planning Grant (HUD NOFA FR 5500 N 30FA), $1,800,000

**2011**  Sustainability Research Networks Competition (NSF 11-574)

**2011**  Texas A&M University – Corpus Christi, New Faculty Research Grant, $2,500

**2010**  University of Nevada, Las Vegas, Graduate Student Travel Funding, $500
ACTIVITES, AWARDS AND HONORS
2011 National Science Foundation, Fellowship Stipend, (SES-0851084), $600
2011 2nd Place Graduate Research Symposium, University of Nevada, Las Vegas
2010-2011 President, Public Administration Graduate Association, UNLV
2010 Academic Achievement Award, Public Administration Graduate Association, University of Nevada Las Vegas
2010 Volunteer, Association of Volunteers (ASVO), Matapalo, Costa Rica
2009-2011 Volunteer, Wilderness Ranger with Friends of Nevada Wilderness
2009-2012 Volunteer, HELP of Southern Nevada Christmas Drive
2009 Dean’s Scholarship recipient Greenspun School of Urban Affairs, University of Nevada Las Vegas
2008 Scholarship recipient Appalachian State University Local Government Alumni Association, Boone, NC

PROJECT MANAGEMENT
2011 New Brochure for Master in Public Administration Program at Texas A&M University, Corpus Christi
2008 Website development and maintenance for the Department of Public Administration and School of Public Affairs, University of Nevada Las Vegas
2007 Citizen Survey on Economic Development, “Retail Wants and Needs” presented to City Council Holly Springs, NC
2007 IMPLAN Analysis, the effects of NOVARTIS Manufacturing on Holly Springs, North Carolina
2005 Customer Service of Watauga County staff, survey and presentation for citizens, staff and Council