PUBLIC HIGHER EDUCATION GOVERNING BOARDS: THE ROLE OF SOCIAL NETWORKS

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ABSTRACT

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A defining feature of American higher education is the provision for authority over the institution by an external governing board consisting of lay members of the public (Thelin, 2004). Studies of higher education governing boards typically focus on structure and performance (Kezar & Eckel, 2004; Kezar, 2006; McGuinness, 2003; Minor, 2006; Tierney, 2004b) as well as assume governing boards endorse institutional policies created under the leadership of the executive officer (Mintzberg, 1979). Research has yet to explore in any depth the impact of higher education governing board members as social actors.

Situated in the current financial crisis and a trend of declining public investment in higher education (Fairweather, 2009, 2006; NACUBO/NCSE, 2010; Weerts & Ronca, 2006; Zumeta, 2006), the current study examines the social network patterns of governing board members at public institutions and expands the knowledge of how governing boards work. The study sought to determine whether identifiable social networks for public higher education governing board members exist, to develop an overall picture of public higher education governing board networks, and to understand the internal and external factors impacting how governing boards' social networks during times of fiscal crisis.

This study draws upon the technique of social network analysis as a means to understand how public governing boards work. As an analytical tool, social network analysis examines the

relations and patterns of relations among actors by mapping interactions and relationships (Marin & Wellman, 2010; Wasserman & Faust, 1994).

Data collected from four public post-secondary governing boards from two states demonstrated that identifiable social networks did in fact exist for each governing board. Commonalities in the social networks were present across the four participating institutional governing boards. Additionally, governing board members' unanimously indicated that the recent financial crisis has created a unique period for higher education and is impacting institutional governance. Implications for research, practice, and policy are discussed.

DEDICATION

I dedicate this dissertation to John Thomas who has filled my life with laughter and love.

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At Michigan State University a community of colleagues welcomed me. My academic experience was a product of all my interactions with this community. Thank you for infusing it with new perspectives, challenging ideas, helpful guidance, and good humor.

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To those who began and to those who joined me on this journey thank you for a meaningful chapter of my life.

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CHAPTER 1

Introduction

A defining feature of American higher education is the provision for authority over the institution by an external governing board consisting of lay members of the public (Thelin, 2004). Governing boards are accountable for supporting the mission of their institution and have legal, fiduciary, and ethical responsibilities (AGB Statement on Board Responsibility for Institutional Governance, 2010). As stewards, they are responsible for advancing the institution's mission, integrity, and quality (AGB Statement on Board Accountability, 2007). In less stressful times governing boards often are seen as mechanisms for approving formally the initiatives of the administration. In turbulent times when the fate of the institution may be at stake the role of the governing board may well be much more consequential.

Most research about governing boards is based on the belief that boards typically assume a passive role and endorse institutional policies and practices created under the leadership of the executive officer (Mintzberg, 1979). Not surprisingly the majority of scholarship about governance is situated in a traditional theoretical structural view (Minor, 2006; Mortimer, 1971) and focuses on understanding as well as rethinking the concept of shared governance (Birnbaum, 1991a,b & 2004; Baldwin & Leslie, 2001; Eckel, 2000; Finsen, 2002; Gayle, Tewarie, & White, 2003; Hamilton, 2004 & 2009; Johnston, 2003; Longin, 2002; Mortimer & McConnell, 1979; Tierney & Lechuga, 2004; Tierney, 2004a) or improving the integral relationship between the governing board and the executive officer (AGB Leadership Imperative, 2006). Scholars who have synthesized governance literature claim that existing research in this field is commonly based on structural configurations of governance as well as historical, cultural, and constituency

based frameworks (Kezar & Eckel, 2004; Tierney, 2004b). Moreover, a majority of the writing on governance materializes in the form of association reports and is often based on shared experiences and reflection (Tierney, 2004b).

In periods of environmental distress, such as the current financial crisis, it is not clear that governing boards play this passive role. Governing boards may potentially be taking more deliberate actions on matters of consequence. Nor is it clear that traditional structural models are effective in examining a potentially more active (and direct) role by governing boards in institutional governance. What is needed is a study of higher education governance from an alternative perspective. In particular, thinking about governing board members as social actors enables understanding of the breadth of information and information sources governing boards draw from to inform decisions about institutional policies. The current study addresses these shortcomings by examining the social network patterns of governing board members and exploring the broad range of relationships that can influence governing board members' actions in a time of crisis. A better understanding of the attributes of governing board networks will be useful for researchers and practitioners interested in the impact of social interactions on higher education governance.

For the purposes of this study, the term governing board refers to a post-secondary institution's structure responsible for the policies, principles, and practices for institutional governance. Institutional governance refers to accountability for 1) institutional mission and heritage; 2) American higher education values of self-regulation, academic freedom, shared governance, educational quality, and fiscal integrity; 3) appointment and assessment of presidential leadership; and 4) ensuring public trust (AGB Statement on Board Responsibility for Institutional Governance, 2010). Formally defined by Wasserman & Faust (1994), social

networks are a set of network members (commonly referenced as actors/nodes/vertices) tied by one or more types of relations (commonly referenced as edges/ties/relations). In this study social networks represent the relationships between governing board members with individuals both within and beyond the institution (referenced in the current study as actors).

To begin, I highlight the harsh financial realities confronting institutional governing boards. I then delineate the traditional governing board's role and boundaries as institutional stewards and offer an alternative perspective of institutional governing boards. After I establish this context and conceptual framework, I present the purpose of the study and corresponding research questions.

Financial Crisis

In the Fall of 2008 the world economic markets entered a period of significant turbulence, a reality that when compounded with a long-term, steady decline in state funding, tuition increases, and decreasing endowment returns has intensified the challenges confronting higher education institutions (Fairweather, 2009; Long, 2010; NACUBO/NCSE, 2010; Weerts & Ronca, 2006). Experts often indicate that significant factors affecting higher education today make it difficult, if not impossible, for colleges and universities to sustain the business practices they have followed for many decades (Chaffee, 2010; Wellman, 2002). It has even been suggested that the American higher education system is migrating from an era of competition and relative prosperity to an era of survival (Morrison & Merrill, 2009; Wellman, 2009).

Key points of stress for public higher education institutions are the financial struggles confronting states. Illuminated in the State Budget Update (July 2009) by The National Conference of State Legislatures a majority of states projected an overall cumulative state budget

shortfall of $142.6 billion for fiscal year 2010, a gap projected to grow during the course of the fiscal year. Moreover, 24 states reported an anticipated budget shortfall of $58.5 billion for fiscal year 2011 and nine states were already expecting a budget shortfall of $21.2 billion for fiscal year 2012.

At the National Governors Meeting (Fall 2010) a fiscal survey of states was released. The report confirmed growing state budget shortfalls and indicated that one of the clearest signs of continued state fiscal stress is the use of mid-year budget cuts: "In fiscal 2010, 39 states made mid-year budget cuts totaling $18.3 billion. In 2009, 41 states made mid-year budget cuts, further exemplifying how difficult fiscal 2009 and fiscal 2010 were for states. For fiscal 2011, 14 states have already made $4.0 billion in mid-year cuts" (National Governors Meeting, Fiscal Survey of States, Fall 2010) (see, Table 1.1).

Policymakers in virtually every state are scrambling to balance budgets while confronting gaping budget holes. State policymakers are taking a variety of measures to close their budget gaps. The approaches often include decreased budget allocations to public higher education institutions (Weerts & Ronca, 2006). As reported by the National Governors Meeting of the 39 states making mid-year cuts in fiscal 2010, 32 of them enacted cuts to higher education general fund expenditures. Moreover, cuts in fiscal 2011 have thus far mirrored those of fiscal 2010 as nine states have cut higher education spending (National Governors Meeting, Fiscal Survey of States, Fall 2010).

Table 1.1

Fiscal Mid-Year Higher Education Cuts for 2010 and 2011

State	Total State Budget Cuts Made After Fiscal 2010 Budget Passed	2010 Mid-Year Higher Education Cuts	% of Higher Education Cuts (Mid-Year 2010)	Total State Budget Cuts Made After Fiscal 2011 Budget Passed	2011 Mid-Year Higher Education Cuts	% of Higher Education Cuts (Mid-Year 2011)
Alabama	611.0	117.2	19.18%			
Alaska						
Arizona	439.0	0.0	0.00%			
Arkansas	246.9	0.0	0.00%			
California						
Colorado	489.4	231.8	47.36%	6.2	0.0	0.00%
Connecticut	149.5	0.4	0.27%			
Delaware						
Florida						
Georgia	1598.4	420.0	26.28%			
Hawaii	312.1	52.1	16.69%			
Idaho	187.7	31.8	16.94%			
Illinois	382.9	6.8	1.78%			
Indiana	458.0	142.0	31.00%	547.0	13.7	2.50%
Iowa	564.4	59.8	10.60%			
Kansas	330.0	18.0	5.45%			
Kentucky	1110.5	110.0	9.91%			
Louisiana	777.0	108.9	14.02%	106.7	12.5	11.72%
Maine	72.0	8.0	11.11%	207.0	0.0	0.00%
Maryland	565.0	66.0	11.68%			
Massachusetts	228.0	0.0	0.00%			
Michigan						
Minnesota	1456.3	0.0	0.00%			
Mississippi	411.8	77.7	18.87%			
Missouri	807.7	29.2	3.62%	233.7	61.4	26.27%
Montana	11.4	1.5	13.16%	28.4	5.4	19.01%
Nebraska	61.2	21.3	34.80%	153.0	20.1	13.14%
Nevada	262.9	92.4	35.15%	22.2	0.0	0.00%
New Hampshire	38.0	0.0	0.00%	80.0	0.0	0.00%
New Jersey	1910.0	64.7	3.39%			
New Mexico	368.9	35.3	9.57%	150.9	24.3	16.10%
New York	1083.0	160.0	14.77%			

Table 1.1 (cont'd)

North Carolina	510.1	202.5	39.70%			
North Dakota						
Ohio						
Oklahoma	249.0	33.0	13.25%			
Oregon				954.6	94.4	9.89%
Pennsylvania	195.5	0.8	0.41%	212.0	0.0	0.00%
Rhode Island	113.6	12.1	10.65%			
South Carolina	566.5	53.0	9.36%			
South Dakota	5.5	0.7	12.73%			
Tennessee						
Texas	436.9	123.3	28.22%	813.2	395.1	48.59%
Utah	57.3	0.3	0.52%			
Vermont	28.0	0.0	0.00%			
Virginia	1044.0	214.1	20.51%			
Washington	81.0	0.0	0.00%	520.0	8.5	1.63%
West Virginia	119.3	12.3	10.31%			
Wisconsin						
Wyoming						
Total	**18339.7**	**2507.0**	**13.67%**	**4034.9**	**635.4**	**15.75%**

Note. Dollar values are in millions. At time of report publication, budget cuts for fiscal 2011 were currently ongoing. Adapted from "Fiscal Survey of States" by National Governors Association (NGA), Fall 2010, pp. 9-10,13-14. Copyright 2010 by the NGA & National Association of State Budget Officers.

Unrelated to state funding, but a clear indication of the effect of the downturn of the global financial markets, many post-secondary institutions experienced declining endowments (NACUBO/NCSE, 2010). As reported by the Commonfund Study of Endowments (2010), data gathered from 850 colleges, universities, and affiliated foundations showed an average decline of 18.7% (net of fees) in fiscal year 2009. The study reported longer-term returns remain lower, reflecting a legacy of market downturn: "the cautionary note is that three-, five- and 10-year returns remained below the level needed to fund missions for the long term after accounting for spending, inflation and expenses. We hope that the data contained in the annual NCSE will serve as a useful tool for trustees and staff as they make important decisions for their institutions"

(NCSE Full Press Release, 2011, p. 4)

The *2010 Private Colleges and Universities Financial Conditions Survey* surveyed board chairs from private universities and colleges to gauge responses to the economic downturn (Long, 2010). The study focused on fiscal year 2009 and reported that forty-two percent of private institutions experienced endowment losses of 10-20 percent. Moreover, approximately 90 percent of private institutions reported that the portion of the operating budget supported by the endowment either decreased or stayed the same. Fewer than 10 percent reported increases. A highly publicized example was the dramatic announcement by Harvard Universities about the $11-billion loss of endowment wealth (Harvard Magazine, Nov/Dec 2009). As a result the institution has drastically cut expenditures in key academic units as well as halted significant expansion construction projects.

The Association for Public Land-Grant Universities ("APLU") recently published *Coping Strategies of Public Universities During The Economic Recession of 2009: Results of a Survey on the Impact of the Financial Crisis on University Campuses*. According to this report, "the picture painted by survey respondents is dreary, with 85 percent of institutions reporting a decrease in state appropriations and nearly one-half of institutions experiencing cuts of 10 percent or greater" (Keller, Nov. 2009, p. 4). Among the other findings, fifty-five percent of survey respondents reported that declines in state appropriations are harming their ability to hire and retain faculty and staff, invest in new technology, sustain student support services, and maintain campus infrastructure. Furthermore, more than one-half of the institutions responding believed more cuts in state appropriations were likely and another one-half were pessimistic about their institution's fiscal future during the next 18 months. Even respondents from institutions that escaped the most severe cuts expressed concern about the long-term ability of

their state to fund higher education institutions.

It appears that the stabilization funds provided to states from the American Recovery and Reinvestment Act did not ameliorate these fiscal conditions in a meaningful way. Despite these funds, many states were forced to cut programs and services. Appropriations for public universities and student financial aid were not spared in most states. Policy analysts often indicated the stimulus funds were insufficient and poor band-aids: "Recovery Act funds have increased the federal share of total state budgets to 34.7 percent in fiscal 2010 from 26.3 percent in 2008. The removal of these funds, when combined with an extremely slow recovery in state revenue collections, could result in severe cuts to state programs and services" (National Governors Meeting, Fiscal Survey of States, Fall 2010). Moreover, stimulus funds and short-term cost-saving generators such as furlough days only postpone the severity of the financial impact.

It is important to acknowledge that the current financial crisis impacting higher education institutions is situated in a trend of declining public investment in higher education (Fairweather, 2009; Fairweather, 2006; Weerts & Ronca, 2006). Decreasing state appropriations are not a new experience for public universities. A 2003 special report from the National Center for Public Policy and Higher Education, *College Affordability in Jeopardy: A Special Supplement to National Crosstalk*, demonstrated that state support for higher education, measured in current dollars, increased only 1.2 percent, a sharp decline from the year prior (3.5 percent) and the smallest increase in a decade. Appropriations actually dropped in 14 states. Moreover, tuition and fees increased in all states. As reported by Zumeta (2006) in all fifty states there was an erosion of appropriations for public higher education over a 25-year period. As indicated in Figure 1.1, state appropriations for public higher education per $1000 of personal income

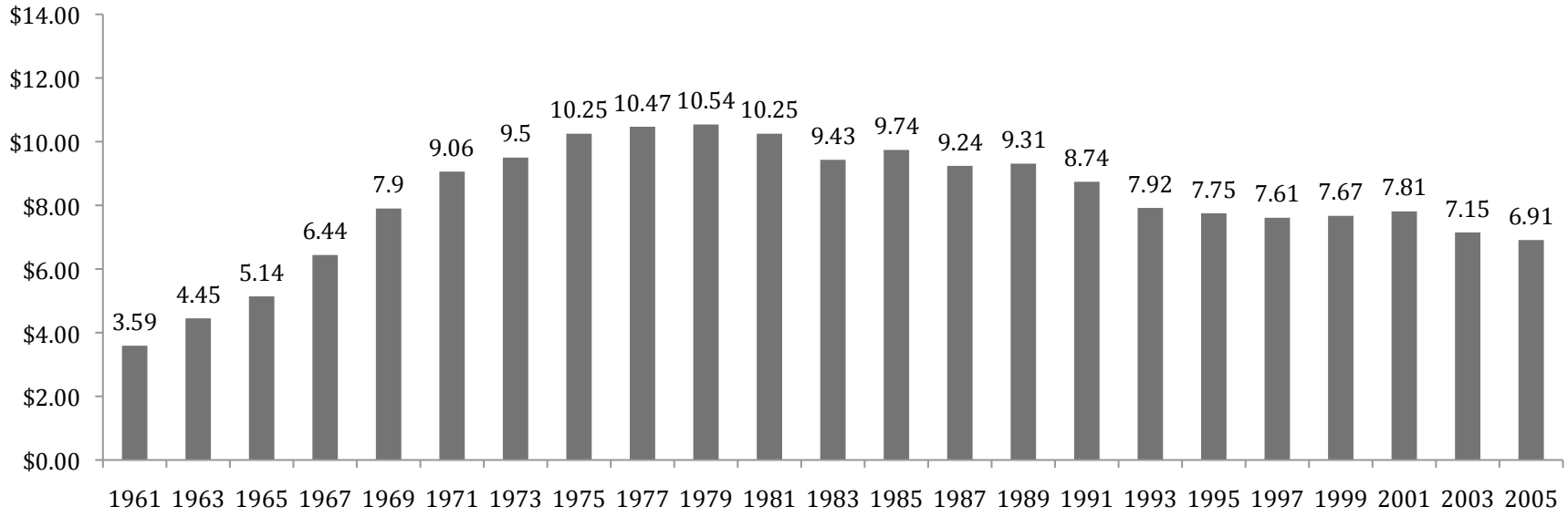
declined from $10.54 in fiscal year 1979 to $6.91 in fiscal year 2005, a 34.4% decrease and demonstrated a shift away from funding the academic sector after 1980 by state governments (Zumeta, 2006). In Fairweather's discussion of the effect of the global financial crisis on academic systems he states, "data demonstrate that the trends toward the relative reduction in public financing of U.S. higher education, especially at the state government level, and increased reliance on student tuition were in place well before the global financial crisis in 2007-2009" (2009, p. 12).

Although the impact of the collapse of the global economy presented immediate, acute conditions for both public and private universities, the broader picture suggests a chronic condition particularly for public institutions. Both situations may require higher education governing boards to engage more actively in decisions because of the implications for the future of these institutions.

Respondents of the APLU survey indicated the use of both short-term and long-term budget cutting and revenue enhancing strategies (Keller, 2009). Nearly 80 percent of survey respondents reported reductions in both permanent and temporary staff positions with one-half moving beyond position reductions to staff layoffs. Tuition and fee increases were the norm across all institutions as universities struggled to find new sources of revenue in face of increasing or stable student enrollments. The survey results indicate APLU universities are striving to protect the core educational mission of their institutions, with administrative units, professional and support staff, facilities and support operations experiencing the most intense scrutiny and deepest reductions (Keller, 2009). In a similar fashion one of the most common immediate cost-reduction strategies at private institutions was the implementation of hiring

Figure 1.1

Appropriations per $1000 Personal Income



Note. Adapted from Zumeta, W. (2006). The new finance of public higher education. In H. Wechsler (Ed.) *The NEA 2006 almanac of higher education*. Washington, DC: National Education Association. P. 39

freezes or restrictions (51.9 percent) as well as salary reductions or freezes (50.9 percent) as reported by Association of Governing Boards of Universities and Colleges ("AGB") (Long, 2010). In addition, eighty-seven percent of private institutions reported that they would increase tuition in the 2010-11 academic year. The average institution will raise tuition 4.5 percent. These two reports illustrate the very real financial hurdles higher education institutions must overcome. However, as noted by the AGB, "compared to their public counterparts, private institutions face fewer obstacles (e.g. state executive agencies, legislative funding and mandates, etc.) in preparing for an uncertain future" (Long, 2010, p. 11).

In summary, declining public investment in higher education preceded the current global financial crisis. However, the current financial situation is especially precarious because of the magnitude of the recent cuts and the cumulative effects of decades of declining financial support. As one of many examples, in California, both the University and State systems have ordered furlough days to generate savings. In the University of California (UC) system, more than 108,000 full-time equivalent positions (faculty and staff), will be required to take from 11 to 26 furlough days amounting to a salary reduction of 4% to 10% over the 12 months beginning in September 2009. The furlough plan is expected to save the UC system $184.1 million in payroll savings. The California State University (Cal State) trustees have ordered all full-time faculty members to take 24 unpaid furlough days that results in about a 10% pay cut. The measure is expected to save the Cal State system $275 million in payroll savings over a 12-month period. (NCSL State Budget Update, July 2009). To generate even more savings and address the continued budget shortfalls, UC recently passed a 32% increase to student tuition.

This reality has resulted in higher education becoming a focus on states' agendas: "higher education ranks as the third most important issue in the 50 state capitals for 2010,… In the two

decades that NSCL has conducted its annual survey of legislative leaders asking them to rank their top issues, higher education has never ranked this high" (Novak, 2010, p.3 as reported by the National Conference of State Legislatures). Another major state-based organization, National Governors Association, will spend a full year examining post secondary education. Beginning in 2010, the initiative is intended to investigate accountability, productivity, graduation rates and degree attainment, and college and university governance (Novak, 2010).

In several states proposals and legislation are percolating. At least five states have created special commissions looking at various aspects of state-university relationships. The Texas Higher Education Coordinating Board, under the executive order of Governor Rick Perry, is undertaking a major study on cost efficiencies including faculty workloads, course redesign, articulation and student transfer agreements, distance learning, and funding based on course completion. Other states are pursuing new efforts at deregulation, tuition autonomy, and performance agreements. A select number of states are advancing ambitious sets of proposals to recast higher education institutions and systems. For example, Oregon may consider the ideas contained in a report by former University of Oregon President, David Frohnmayer. He has proposed making the state's three largest institutions (Oregon State, Portland State, and the University of Oregon) quasi-independent public corporations with their own governing boards. Ties to the university system would continue through formal compacts that would set institutional performance standards. The compacts would be tied to the system's strategic goals contained in its 2007 strategic plan, An Investment in Oregonians for Our Future. The state board would continue to fully oversee the regional universities. Among other freedoms, creating the corporations would allow the three universities to set their own tuition levels, be free from some state reporting requirements, and set their own employment rules (Novak, 2010).

The harsh fiscal realities may make it easier to highlight the internal and external factors impacting governing boards' social networks that might not be evident in more "business as usual" times. During less stressful times governing boards often adopt the institutional policies and practices based on the recommendations of the administration. In contrast, during the current acute financial crisis governing board members are likely to make decisions that have dramatic implications for the future of colleges and universities. As such, governing boards potentially may rely on a broader array of social networks to inform their decisions.

Conceptual Framework

This study draws upon the technique of social network analysis as a means to understand how public governing boards work. Social network analysis is the formal study of systems of people with an emphasis on their relations. As an analytical tool social network analysis examines the relations and patterns of relations among actors by mapping interactions and relationships (Marin & Wellman, 2010; Wasserman & Faust, 1994). By measuring the interactivity of individuals through mapping relationships, social network scholarship can uncover the dynamics between and within groups and illustrate how individuals utilize their connections to achieve desired outcomes (Coleman, 1988).

Although governing board configurations vary greatly from institution to institution (Kerr and Gade, 1989), governing boards frequently are studied under the assumption that they function within their defined structures (Kezar & Eckel, 2004). These structures have remained relatively static over time (Longin, 2002). Only recently have they been studied in relationship to institutional effectiveness (Minor, 2006). The application of social network analysis as a framework to study higher education governing boards is one way to answers calls to further

examine governance in consideration of human dynamics (Kezar & Eckel, 2004). Established in the literature is the scholarship of Baldridge (1971), Cohen & March (1986), and Birnbaum (1988, 1989), who all linked the importance of human dynamics research to higher education research. However, this older as well as more recent scholarship (Del Favero, 2003) primarily focuses on the relationships among faculty and administrators within structural, political, or symbolic contexts. The current study adds to the literature by examining governing boards from a new perspective (social actors) as well as by using an analytical perspective not applied to the study of higher education governing boards previously. Ultimately this current study will bring a greater understanding to the complexity of public higher education governing boards' social networks and expand the knowledge of how governing boards work.

Purpose

Regardless of the framing of the current higher education landscape, it is clear that colleges and universities will need new models for delivering affordable, accessible, high-quality education and for ensuring the health and effectiveness of the economic and administrative structures by which they fulfill their missions. Governing boards will need to encourage institutional leadership to develop the capacity to make hard decisions much more quickly than typical structures and practices afford. Ultimately, new strategies that are dynamic and respond proactively will be a necessity (AGB Strategic Imperatives: New Priorities for Higher Education, 2009). In the near term, institutional survival is at issue.

During this period of fiscal instability active governing board intervention may be more necessary than during less turbulent times. Furthermore, it is likely that governing boards' actions matter in important ways during times of complexity and times when the future trajectory

of the institution is determined. Gaining an insight about the attributes of governing board networks and understanding the influences on governing board networks is one means to study how governing boards work.

Additionally, considering governing boards as social networks challenges the concept that governing boards behave in bureaucratic, hierarchical ways. The actions and decisions of individual board members and of the board as a whole cannot be separated from the social context under which they operate (Wesserman & Faust, 1994). Interdependency between actors is a key assumption when viewing governing boards from a social network perspective (Wesserman & Faust, 1994). An implication of studying governing boards' social networks is that it will aid scholars in understanding the influence and impact of social relationships within governing boards.

Situated in the financial crisis and based on this understanding of social networks, the purpose of this current study is to identify the social network patterns of governing board members at public institutions and explore the broad range of interactions that can influence governing boards' networks. By expanding the network of relationships of governing boards to include both external and internal campus stakeholders the study can begin to assess the role these broader interactions play in influencing an individual board member's network and potentially the collective board network during times of financial crisis.

Although considerations for improving board effectiveness and performance are important, the goal of this study is to determine if identifiable social networks for public higher education governing board members exist, to capture an overall picture of public higher education governing board networks, and to understand the internal and external factors impacting governing boards' social networks during times of fiscal crisis. The design of this

study does not include the influence of governing board social networks on specific institutional policy decisions.

Research Questions

The study will address the following research questions:

1. Are there identifiable social networks for public higher education governing boards?
2. If so, how much variation exists in the social networks across governing board members and governing boards as a collective team?
3. To what extent do internal and external factors impact governing boards' social networks?

This introductory chapter established a context and conceptual framework for the current study as well as presented the purpose of the study and corresponding research questions. In chapter two, I provide a review of pertinent literature related to higher education governance and social network analysis. In chapter three, I explain the study design, detailing the methods by which I carried out the study. In chapter four, I present the findings of the study. Finally, in chapter five, I discuss the results of the study with emphasis on implications for research, practice, and policy.

CHAPTER 2

Literature Review

This chapter will provide a review of literature on higher education governance and social network analysis. The purpose is to locate the current study within the context of existing and relevant scholarship. The review is divided into two major categories that inform and situate the examination of public higher education governing boards' social networks. The first category explores literature related to higher education governance, while the second category reviews literature related to social network analysis.

Higher Education Governance Literature

The discussion of higher education governance literature is presented in four sections. Section one provides an overview of higher education governance with an emphasis on public institutions. Section two examines the concept of shared governance prevalent throughout higher education institutions. Section three reviews empirical research on higher education governance. Section four assesses the theoretical frameworks used to study governance.

Overview of higher education governance.

The evolution of American higher education has resulted in plethora of post-secondary institutions with considerable variation among institutions and governance structures (McGuinness, 2005; Minor, 2008; Thelin, 2004): "American higher education remains perhaps the most diverse, decentralized, private, market-driven system (if it even can be called a system) in the world" (McGuinness, 2005, p. 201). The role of the Federal government in higher education is based primarily on funding research and development and on providing student

financial aid (Gladieox, et al., 2005). The role of state governments in U.S. higher education is more central. It varies considerably from state to state (McGuinness, 2005).

Common to public post-secondary institutions is gubernatorial appointment of governing board members by governors, state education commissioners, or confirmed political officials (Minor, 2008). Forty-seven states have systems wherein the governor appoints all or a portion of board members within their respective states. Fifteen of the 50 states have dual systems in which a portion of board members are elected and a portion are appointed. Only in two states (Nevada and South Carolina) are all governing board members elected by general election (Center for Higher Education & Policy Analysis, 2004). As reported in *2010 Policies, Practices, and Composition of Governing Boards of Public Colleges, Universities, and Systems,* gubernatorial appointment is the selection method for the vast majority of public post-secondary governing boards: "the majority of members of most public governing boards (77 percent) were appointed by the governor, 60 percent with confirmation by the state legislature and 17 percent without; 5 percent of boards were elected, 3 percent were appointed by legislatures, and 15 percent were selected in a combination of ways or in some other manner" (AGB, 2010).

Beyond the diversity of selection processes of public governing board members, the structures and authority of governance vary considerably across and within states. A number of researchers have identified, described, and developed categorization schemas of state higher education governance structures (Dressel, 1980; Hearn & Griswold, 1997; McGuinness 2003; Millard, 1980; Millett, 1975; Minor, 2008; Mortimer & McConnell, 1979). As described by Minor, "15 states have segmented governance systems whereby a portion of public institutions are governed by a system board and a portion are governed by individual boards. At least 8 states employ government entities that coordinate institutional activity, some of which still use

individual boards in addition to coordinating boards" (2008, p. 832). This statement underscores the extensive diversity in governance structures that exists from state to state as well as supports the conclusion by some scholars that attempting to categorize governing structures is virtually impossible (Kerr & Gade, 1989).

Moreover, leaders in post-secondary education often reference states as having strong or weak coordination regardless of established coordinating structures with rational-legal authority (McGuinness, 2003, Novak, 2010). For example, a state with a coordinating governance structure may espouse a goal of harmonization across institutions yet functionally have little coordination in the state system. Furthermore, Login (2002) argues that these structures have remained relatively static over time. Minor (2006) concludes governance structures are often inconsistent with institutions' current mission and activity. Regardless of these systemic differences, governing boards according to Pusser (2003) consistently serve as links to powerful political and economic interest groups beyond the institution.

McGuinness is often credited for developing one of the better governance structure categorizations. His scheme was influenced by close work with state boards conducted by the Education Commission of the States and is more recent than many of the other categorizations (Hearn & Griswold, 1997). McGuinness (1988, 1997, 2003) delineates three major categories of state higher education governance structures based on the role a central higher education board plays in relation to setting state higher education policy.

The three major types of state higher education boards are 1) a governing board, which has authority to establish and enforce state higher education policy for institutions; 2) a coordinating board, which has authority to coordinate financial and human resources and curriculum distribution across institutions; 3) a planning/regulatory/service agency board, which establishes

plans and goals for state higher education, but has less authority or power to enforce their recommendations or plans at the institutional level (McGuinness, 2003). According to this typology, there are 21 governing board states, 25 coordinating board states, and 4 planning board states. Within each classification additional layers of governance structures exist for individual states. The variation primarily consists of the existence and number of state governing and coordinating boards for university or state colleges as well as community/technical colleges, autonomous single institutional governing boards, and multi-campus or consolidated system governing boards for the diversity of higher education institutions in the state.

Table 2.1

Categorization of State Higher Education Governance Structures

Higher Education Governance Structure Category	State
Governing Board	
Combined / Mixed	
▪ Single statewide governing board for universities, coordinating for two-year campus	KS
▪ Separate governing boards for universities, coordinating board for locally governed community colleges	AZ, IA, MS, OR, SD, WY
Separate	
▪ One statewide governing board for universities, one statewide governing board for state colleges and community colleges	VT
▪ One statewide governing board for research universities and two-year colleges, one statewide governing board for technical colleges	GA, WI
▪ One governing board for universities and state colleges, one governing board for community/technical colleges	ME, NH, NC
Consolidated	
▪ Single statewide consolidated governing board for all public institutions	AK, DC, HI, ID, MT, NV, ND, PR, RI, UT
Coordinating Board	
State Coordinating / Separate Governing Board	
▪ State governing board for locally governed universities, single statewide board with coordinating responsibility for locally governed community colleges	FL

Table 2.1 (cont'd)

▪ Single statewide coordinating board and two separate state-level governing boards, one for universities and one for universities, community colleges, and technical institutions.	TN
▪ Single statewide coordinating board. Public institutions are organized under three state-level boards: a governing board for research universities, a governing board for other state universities, and a coordinating or governing board for locally governed community colleges.	CA, CT, LA, NE
State Coordinating / Institutional Board	
▪ Single statewide coordinating board. Institutional level governing boards for several colleges and universities. Individual governing boards for community/technical colleges. Multi-campus governing board for universities and 2-year campuses.	AR, NM, OH, OK, WV
▪ Single statewide coordinating board. Institutional level governing boards for several colleges and universities. Individual governing boards for community/technical colleges. Multi-campus governing board for universities.	MD, MO, NJ
▪ Single statewide coordinating board. State level governing boards for multi-campus systems, state level governing or coordinating boards for community/technical colleges, and institutional level governing boards for some universities.	AL, CO, IL, IN, SC, TX
State Coordinating / Mixed Institutional Boards	
▪ Single statewide coordinating board. Each public university is locally governed by a governing board. State governing boards for community colleges either govern the colleges or coordinate locally governed community colleges.	KY, VA, WA
Combined / Mixed	
▪ One statewide governing board for research universities and other university campuses. One statewide governing board for state colleges and community colleges. The second board also has responsibility for planning and coordinating all public postsecondary education.	MA
Agency Coordinating Board / Separate Governing Boards	
▪ Single statewide coordinating board for all postsecondary education. Two separate boards have responsibility for public institutions. One board governs state-operated universities and coordinates locally governed community colleges. The other board governs city universities and community colleges.	NY
<u>Planning/Regulatory/Service Board</u>	
▪ Each public institution has a governing board. The planning/regulatory agency has no formal coordinating authority.	DE
▪ Each public university has a governing board. Each community college has a local governing board. A state-level planning/regulatory agency for community colleges either governs the colleges or coordinates locally governed community colleges.	MI

Table 2.1 (cont'd)

▪ Two separate state-level governing boards are responsible for all public institutions. The planning/service agency has no coordinating authority related to governing boards.	MN
▪ One or more multi-campus or statewide consolidated governing boards for universities. Institution-level governing boards for some universities. Locally governed community colleges. The state-level planning/regulatory board has limited planning and regulatory authority related primarily to community colleges.	PA

The Association for Governing Boards of Universities and Colleges ("AGB") recently conducted a survey to collect and analyze the policies, practices, and composition of governing boards of public colleges, universities, and systems (AGB, 2010). Of interest is the profile of a typical governing board presented in the report. Using averages and the most common survey responses revealed prototypical characteristics and traits for public governing boards.

The typical public governing board has 12 voting members: nine are men and three are women; nine are White, two are African American, and one is another race. Half of the board, six members, are alumni of the institution. The President is not included as a member of the board and neither is the governor; one member of the board is a student, but there are no faculty or staff members serving on the board. One board member is under 30 years old, two are between the ages of 30 and 49, eight are 50-69 years old, and one is 70 or older. Ten board members are currently working and two are retired. Their primary occupations are or were: business (six), professional services (three), education (two), and other professions (one). Many serve on other governing boards: five on a nonprofit board, three on a corporate board, two on the board of a university-related foundation, and one on the board of another college or university.

Board members are appointed by the governor with confirmation by the state legislature,

serve six-year terms, and are not subject to term limits. The board includes no emeritus members. There is a policy in the state's statutes for removal of unsatisfactory board members and this power is vested in the governor. The board chair, a white male, was selected by the full board and is serving a one-year term. There is no limit on the number of consecutive terms the chair may serve.

The board meets seven times a year, uses a consent agenda, and the business portion of each meeting lasts about four-and-a-half hours. Remote participation (e.g. by telephone, video conference, or Internet) counts as attendance, and electronic voting is permitted. When the board meets in executive session, it limits the agenda to topics such as personnel, real estate, and legal issues, and the chief executive is included in at least a portion of the executive session. Nearly all board members attend each board meeting. The board has five standing committees: finance, audit, academic affairs, executive, and buildings and grounds. Committee meetings are typically held in conjunction with board meetings. The executive committee met four times in the past year. In addition, boards typically held a retreat in the past five years to plan and assess institutional goals, but it has not recently held a retreat for the purpose of looking at its own performance. The board budgets for educational activities and engaged an outside consultant within the past three years to address board education or governance issues.

Another source of variation among states is the funding mechanisms to public higher education institutions. For example, in the state of New York tuition dollars from SUNY institutions are captured by the state government and are discretionally reallocated by the legislature. The Public Higher Education Empowerment and Innovation Act currently before the legislature would require that *all* tuition, fees, and other self-generated revenues in the SUNY system be invested back into the institutions. Louisiana's Postsecondary Education Review

Commission has recommended that the state's governing boards be granted authority to set tuition levels. Currently, two-thirds of the legislature must approve all increases approved by the governing board. These two examples illustrate the control states have in allocating public resources to higher education (Zimpher, 2010). In addition, state policy trends such as merit-based student aid and performance based funding vary considerably across states (McGuinness, 2005). Despite the variation in funding mechanism overall state appropriations to higher education have declined and the demands are outpacing the state's fiscal capacities (Fairweather, 2006; Zumeta, 2006).

In summary, public higher education varies extensively in governance structures at both the state and institutional levels (Longin, 2002, Minor, 2006). Only recently has public debate and discussion explored reconfiguring state higher education systems (Novak, 2010). Moreover, resource allocation by the state varies, but has consistently declined (Zumeta, 2006). These varied state and federal contexts – declining state resources, widely varied governance structures – potentially affect individual governing boards and their responsibility to establish a public agenda for higher education, attain educational quality, and achieve some form of public accountability. Despite this great variation in state governance structures, governing boards retain a commitment to the concept of shared governance. The following section explains shared governance and references the extensive body of literature dedicated to the concept.

Shared governance.

The 1967 Statement on Government of Colleges and Universities by the American Association of University Professors ("AAUP"), AGB, and American Council of Education ("ACE") affirms the shared responsibility and cooperative action for academic governance. The

authors of the document recognized the interdependence of various academic leadership roles, including governing boards, administrators, and faculty members, in the following statement: "important areas of action involve at one time or another the initiating capacity and decision-making participation of all the institutional components" (AAUP Statement on Government of Colleges and Universities, 1967, p.10). In other words, higher education governance can be characterized as a system that supports the collaboration of multiple constituents to make decisions affecting colleges and universities.

Individual colleges and universities define participation in governance consistent with their history and culture (Johnston, 2003; Morphew, 1999). As stated by Minor, "[t]he diversity of college and universities and the structures within them make it nearly impossible to prescribe a 'one size fits all' approach to governance" (2006, p. 23). Minor's statement acknowledges the considerable variation in how governance functions within individual campuses.

Much scholarship has been dedicated to understanding as well as rethinking the concept of shared governance (Birnbaum, 1988, 1989; 1991a,b, 2004; Baldwin & Leslie, 2001; Longin, 2002; Minor, 2006; Tierney & Lechuga, 2004; Hamilton, 2004 & 2009). This body of literature focuses most heavily on faculty governance or the relationships between the faculty and the administration (Del Favero, 2003; Dill & Helm, 1988; Eckel, 2000; Finsen, 2002; Gayle, Tewarie, & White, 2003; Johnston, 2003; Mortimer & McConnell, 1979; Mortimer & Sathre, 2006, 2007). Although student governance is discussed in student development and affairs literature, only a few resources are dedicated to student participation in institutional governance (Miller & Nadler, 2006; McGrath, 1970). Empirical scholarship dedicated to the governing board is growing yet remains minimal (Bastedo, 2005; Chait, Holland, & Taylor, 1991, 1996; Kezar, 2006; Minor, 2008; Pusser, Slaughter, & Thomas, 2006; Tierney, 2004a, 2006;

McGuinness, 2005). The bulk of the writing found on governing boards is often anecdotal and based on individual experiences or institutional experiences (Tierney, 2004b). Most of that work appears as association reports and occasional papers (e.g. Hill, Green, & Eckel, 2001). The scarcity of scholarship on governing boards suggests a need for more research on how governing boards work and who board members rely on as they fulfill their responsibility as institutional stewards. I now turn to discussing studies related to higher education governing boards.

Studies related to higher education governing boards.

Scholarship on governing boards can be segmented into two categories. The first category is literature dedicated to governing boards. The other category discusses governing boards in the larger context of shared governance. In this latter category, governing boards are one of many constituencies discussed in relationship with other constituencies. This literature review is intended to focus on the related findings about higher education governing boards that emerge from scholarship dedicated to the first category.

The study by Chait, Holland, & Taylor (1996), *Improving the Performance of Governing Boards,* explores how private boards of trustees can learn to improve their performance. This book was a transition to practical application from their theory-based work in identifying competencies of effective governing boards published in *The Effective Board of Trustees* (1991). While both studies focused exclusively on private board governance, these two works are regarded as the most significant and rigorous studies of governing board members at post-secondary institutions (Tierney, 2004).

Chait et al. (1991) found three major trustee competencies. First, dimensions of governing board characteristics and behaviors influence the effectiveness of boards. These

dimensions include contextual, educational, interpersonal, analytical, political, and strategic. For example in consideration of the contextual dimension of governance, effective boards ensure that trustees understand and take into account the culture and norms of the organization it governs. The study suggests that effective boards adapt to the distinctive characteristics of an academic environment, rely on the institution's mission, values, and traditions as a guide for decisions, and reinforce the institution's core values through decisions. Another illustration is the analytical dimension. This competency focuses on the board's capacity to assess complex problems and to draw upon multiple perspectives to address institutional matters. It is advocated that boards create an environment conducive to open discussion and welcoming to multiple perspectives. Second, the authors found a positive relationship between a governing board's performance and the institution's performance. The authors made this determination by relating the six dimensions of governing board competency to measures of institutional financial health. Lastly, the authors concluded that trustee self-assessments potentially are not accurate "barometers of a board's effectiveness" (1991, p. 2) rather are more likely to be valuable catalysts for discussions and measures of self-perception.

The authors' discussion on private board performance (Chait, et al., 1996) focused on lessons to improve individual trustee competencies, governing board learning and development, and board processes and cohesion. A primary lesson advocated by the authors is to create multiple opportunities for trustees to learn about the institution, the relevant profession, and the larger environment. Essential to these educational programs is varied formats, content clearly germane to the institution's priorities, and direct access to constituency perspectives through collaboration on meaningful tasks. Moreover, effective boards continually reexamine their behavior and performance in light of institutional strategy. Progress occurs when the chair, the

president, or a subset of legitimately empowered trustees assumes responsibility for the way the board does business and determining whether the board should do business differently as institutional circumstances change.

Another lesson focused on ensuring the board operates as a cohesive and goal-oriented entity: "the most competent boards consciously form and assiduously maintain a cohesive unit, in which the whole is more than the sum of the parts" (Chait, 1996, p. 83). As such, the authors concluded, a board can be a formidable source of strength for an institution by providing ideas, insights, solutions, and advocacy. Lastly, the authors advocate that effective board meetings are essential to improving board performance. Critical to the design and execution of board meetings are agendas that reflect institutional strategy, structures that support consequential work, effective leadership, and timely and pertinent information.

In 2006, Kezar expanded on Chait's and his colleagues work by conducting a national study to capture elements of public board performance and effectiveness. She identified six thematic elements of effective public governing boards (leadership/board agenda, culture, education, external relations, relationships, and structure) and compared these findings to private, corporate, and non-profit governing board literature. The author's work found that many of the same principles of performance for private institutions as defined by Chait et al. (1991, 1996) applied to public institutions. Kezar (2006) identified a set of elements necessary to facilitate high performance among public governing boards, many of which overlapped with categories found by Chait and colleagues. The distinctive areas for public institutions concerned the political nature of public governing boards, the influence of stakeholder interests on leadership and agenda setting, and the impact of governance layers.

Scholarship also has focused on the selection of public governing boards. The Center for Higher Education Policy Analysis in 2004 conducted a study on the selection and appointment of public college and university boards. Two sets of criteria are essential: one for individual nominees and the second for the board as a whole. The report advocates that prior to selection or appointment, individual boards members should be able to (a) demonstrate a commitment to public education; (b) show record of public or community service; (c) express knowledge of complex organizations and academic institutions; (d) articulate, understand, and develop collaborative leadership; (e) demonstrate a willingness and availability for constructive engagement; (f) commit to open-minded, non-partisan decision making; and (g) illustrate a record of integrity and civic virtue. The report recommends that the governor or nominating committee should consider the diversity, unique skills or competencies, as well as complementary skills and perspectives represented on the board.

As part of the research team, Minor (2008) considered the various appointment processes in relationship to the performance of state higher education systems. He measured performance based on four categories of the *Measuring Up 2004* report - participation, affordability, completion, and benefits. To reduce the variation in appointment process as well as state governance structures, Minor compared governing board selection across three dimensions: restrictions, qualifications, and evidence of scrutiny as well as categorized governance structures. His study concluded that the top performing state higher education systems rely more heavily on the use of qualifications and scrutiny of potential trustees. Among the five bottom-performing states, he found virtually no evidence of qualifications or methods to scrutinize the appropriateness of candidates. Minor noted that "[i]n each of the top-performing states there is substantial statewide coordination of public higher education. Four of the five top-performing

states have coordinating bodies" (2008, p. 841).

In writing about states' roles and relationship to higher education, McGuinness (2005) found that states differ in the overall performance of the state system, financing policies, authority and responsibility of state structures, and legal specifications for budgeting and financing between states and institutions. McGuinness' work provided a strong foundation for understanding the context which public governing boards work.

The AGB publishes a variety of literature on higher education governance ranging from board basic manuals/guides (e.g., *Effective Governing Boards: A Guide for Members of Governing Boards of Public Colleges, Universities, and Systems*, 2010) to research studies on aspects of governance (e.g., *Faculty, Governing Boards, and Institutional Governance*, 2009). Plus on a monthly basis the AGB publishes *Trusteeship*. This magazine is dedicated to examining contemporary topics related to higher education governance. Contributing articles often come from institutional leaders, state higher education officials, and academic scholars.

The AGB also endorses statements (approved by AGB board of directors) that provide principles for higher education governance. These documents are not prescriptive in nature. Rather they provide a foundation for discussions on policies and practices of good governance. Often these documents offer questions for governing boards to consider and illustrative examples. These works reflect the voice of AGB, higher education leaders, and member institutions and establish a tone for higher education governance to aspire to achieve high performance. Two most recent publications include: *Association of Governing Boards of Universities and Colleges Statement on Board Responsibility for Institutional Governance* (2010) and *AGB Statement on Board Accountability* (2007). In addition, the senior scholars and consultants of AGB who have experience in the field of higher education often write on topics

related to governance (e.g. Kerr & Gade, 1989; Morrill, 2010; Bornstein, 2010).

To this point, the literature I reviewed focused on structure and performance. Salient and applicable to my study is literature that examines the theoretical frameworks used to study governance. The following section reviews the common frameworks used to examine governance and creates a foundation to introduce social network analysis as a new framework for examining how governing boards work.

Frameworks to study governance.

Little literature on higher education governance uses theoretical frameworks to study governance. Over the last forty years, a majority of scholarship has been dedicated to traditional structural theories (Tierney, 2004b; Kezar & Eckel, 2004). Most recently three major reviews of shared governance literature indicate what has been learned from the study of governance and expose the theoretical gaps in studying higher education governance.

Writing in the *Higher Education: Handbook of Theory and Research,* Tierney implies that recommendations to improve governance are hindered by the lack of theoretical frameworks and often are "based on intuition rather than a logically nuanced framework" (2004, p. 86). He encourages future scholarship to go beyond the four frames through which governance has been examined – historical, structural, constituency-focuses, and research-based. He advocates exploration of governance through communication or as he states the "codes through which governance gets enacted" (2004, p. 125).

Kezar's & Eckel's (2004) synthesis of literature on governance indicated that scholarship has focused on structural conditions with some dedication to political and cultural frameworks. Scholars who examine governance through structural theories emphasize the importance of

authority, roles, procedures, and entities responsible for decision-making. Human relations, cultural, and social cogitation theories remain underutilized frameworks for the study of governance. Kezar and Eckel recommend focusing on the role of human dynamics in college and university governance. This recommendation is consistent with that of Baldridge (1971), Cohen and March (1974/1986), and Birnbaum (1988) all of whom emphasized the importance of human dynamics in organizations to higher education research. These foundational works found that decision-making in higher education institutions is not always rational; it is frequently political. In addition, decision-making involves the dynamic interaction of both structure and people. However, this older scholarship limited its focus to administrator-faculty relationships; it did not apply these concepts to institutional governing boards.

A recently published *New Directions for Higher Education* highlights the need to study governance using different theoretical perspectives (Tierney & Lechuga, 2004). Kaplan (2004) challenged the usefulness of governing structures in explaining administrative actions and cautioned against overemphasizing the importance of structure. Kezar (2004) argued that a key to improve governance lies in developing internal leadership and relationships rather than in changing the structure of shared governance. Pope (2004) introduced the concept of trust as a new conceptual way to investigate governance in colleges and universities. Although Tierney and Minor (2004) claim that structures have a place in studying governance, they also support Kaplan's argument that governance structures are not always central to effectiveness. Tierney and Minor suggest that communication among relevant actors is essential to effective governance.

Although these three reviews advocate for scholarship to embrace new frameworks to study governance, some scholars disagree and argue that structures are critical to meet calls for

state accountability (Lingenfelter, 2004; Mingle, 2005; MacTaggart & Mingle, 2002). These scholars advocate that higher education can establish and advance a higher education policy agenda, hold institutions accountable for performance, holistically rethink funding and student aid, and ensure greater alignment between higher education and state economic needs.

The application of social network analysis as a framework to study higher education governing boards seems one way to combine calls to explore the human relationships in governance in the context of existing governance structures. I now provide a foundational introduction to social network analysis and discuss relevant studies of social networks.

Social Network Analysis

In this section I first discuss the history of social network analysis. Next I describe social network analysis as a tool to study relationships and explain core concepts of social network analysis. Finally, I provide an overview of relevant social network studies.

History of social network analysis.

The broad field of network science focuses on the study of relational structures in a wide range of physical and social phenomena (Borgatti, et al., 2009; Butts, 2008; Hansen, Schneiderman, & Smith, 2011). Social network analysis is the application of network science to the formal study of systems of people with an emphasis on representing, measuring, and modeling human relationships (Butts, 2008).

Two seminal theoreticians laid the groundwork for what became social network theory: Auguste Comte in the 1800s and Georg Simmel in the early 1900s. Comte coined the term sociology with the goal of uncovering the laws of society. This goal, he argued, required both theory and systematic observation as a means to view society in terms of the interconnections

among social actors (Freeman, 2004). Comte claimed that society was more than simply a group of people and imagined society as a network of relationships of reciprocal influence (Hansen, et al., 2011). Perhaps the most explicitly structural perspective adopted by any of the late nineteenth and early twentieth century social thinkers was displayed in the work of Georg Simmel. Simmel said, "[s]ociety exists where a number of individuals enter into interaction" (cited in Freeman, 2004, p. 15). In making this comment, Simmel considered sociology exclusively as the study of the patterning of interactions. And Simmel's student, Leopold von Wiese, went even further and talked in contemporary terms about a "system of relations" and a "network of lines between men" (Freeman, 2004, p. 16).

The two sociologists saw patterns of social ties as the main focus of sociology in contrast to the study of individuals and their attributes. Moreover, both scholars defined society using the kinds of structural perspective and terms found today in social network analysis (Freeman, 2004). The concept of connected actions has remained a core belief of the social sciences and underlies modern social network analysis (Breiger, 2004). As leading social network analysts put it, social network analysis is grounded in a belief that "the social world is found in interactions rather than in an aggregation of individuals" (Marin & Wellman, 2010, p. 4).

Efforts to create a systematic language to record social relationships started in the twentieth century (Scott, 2000). With foundational roots in graph theory (Euler in 1736) and in the later development of the sociometry/sociogram (Moreno in 1934), scholars built on these concepts to capture the nonrandom connections that occur among groups of people (Freeman, 2004). For example, teams at Harvard University worked to advance social network analysis. Lead by W. Lloyd Warner and Elton Mayo, a group explored interpersonal relationships in the workplace (See, Western Electric Wiring study by Roethlisberger and Dickson (1939)). At the

same time, Quine, Chapple and Arensberg collaborated to develop computational tools to describe a system of relations quantitatively (Freeman, 2004). Over time, the approach by these scholars at Harvard was based on a structural perspective, involved the collection of empirical data, used graphic imagery, and followed explicit mathematical models. Collectively these advancements represent all of the features of contemporary social network analysis (Breiger, 2004; Wellman, 1988). However, the surge of scholarship by teams of collaborators from sociology, psychology, anthropology, and mathematics that occurred in the 1930s was then followed by a period of stagnation (Freeman, 2004; Hansen, et al., 2011).

Combining prior social network research with the advancements in mathematical graph theory and the development of random graphs, Milgram (1967) explored the idea of small world networks by conducting research on the randomness of connections between any two people. The study became known as “Six Degrees of Separation” and, despite its modern day popularity, it is likely that Mark Granovetter's articles on "The Strength of Weak Ties" (1973) and "Threshold Models of Collective Behavior" (1978) were the first to ignite public fascination with social networks and the spread of ideas. Focusing on employment and how people discover new job opportunities, Granovetter (1973) found that job news passed through connections that were not the closest and most intense relationships. An individual’s “weak ties” brought news from distant parts of the social network to which “strong ties” did not have access because they occupied such a similar place in the network of the individual job seeker (Granovetter, 1973). This finding demonstrated that weak ties are particularly useful in acquiring novel information. Moreover, weak ties are less intense and less costly to maintain in terms of time and attention.

Granovetter (1978) advanced models of collective behavior based on behavioral thresholds. The models are valuable to understanding situations when the outcome does not

seem intuitively consistent: "By explaining paradoxical outcomes as the result of aggregation processes, threshold models take the 'strangeness' often associated with collective behavior out of the heads of actors and put it into the dynamics of situations" (Granovetter, 1978, p. 1442). This threshold model of social behavior was later popularized by Malcom Gladwell's (2000) best selling *The Tipping Point.*

In his work Gladwell (2000, p. 33) described three agents of change in the tipping points of epidemics. Gladwell describes change agents as connectors, mavens, and salesmen. In Gladwell's words connectors "span many different worlds" and have the ability to provide links (2000, p. 49). Mavens are sources of new information and have the ability to start epidemics because of their knowledge, social skills, and ability to communicate (2000, p. 69). Salesmen are individuals with powerful negotiation skills and described by Gladwell as "persuaders".

Presently, the application of social network analysis is widely found throughout a range of disciplines including sociology, anthropology, communications, computer science, education, economics, physics, management, medicine, political science, public health, psychology, biology, and the humanities. One prominent commentator on the history of social scientific thought and on contemporary development writes that "network sociology is doing the very thing that early sociologists and anthologists saw as crucial – the mapping of the relations that create social structures" (Turner, 1991, p. 571). For example, communications researchers study social media to evaluate the diversity of technologies that support social interaction such as asynchronous (email) and synchronous (chat/IM) conversation, world wide web, collaborative authoring (wikki/google docs), blogs and podcasts (WordPress, Twitter), social sharing (YouTube), social network services (Facebook), online markets (eBay), and virtual worlds (World of Warcraft) (Hansen, et al., 2011).

Researchers across multiple disciplines have developed through a sizable body of empirical work a coherent set of characteristics and principles to guide social network analysis (Wellman, 1988). In addition, the field is supported by a professional association for social network analysts, International Network for Social Network Analysis ("INSNA"), formed in 1997 by Wellman. The association hosts an annual "Sunbelt" conference and is involved in the publication of three professional journals (Freeman, 2004).

Having just provided an overview of the history of social network analysis, let me now turn to discussing social network analysis as a tool to study relationships.

Social network analysis as a paradigm.

The study of social networks is grounded in the belief that relationships are the building blocks of the social world. As an analytical tool social network analysis examines the complex relations and patterns of connections among individuals by mapping interactions, calculating measures of the network as a whole, and by determining positions of individuals within the network (Marin & Wellman, 2010; Wasserman & Faust, 1994). As the prominent social network analyst Barry Wellman states, "[structural analysis] is a comprehensive paradigmatic way of taking social structure seriously by studying directly how patterns of ties allocate resources in a social system" (Wellman, 1988, p. 20). In making this comment, Wellman argues that the strength of social network analysis lies in its integrated application of theoretical concepts, intellectual unity about the characteristics of structural analysis, and ways of collecting and analyzing data (Wellman, 1988). The following components of this section review key terminology helpful to understanding social network analysis, types of social networks, levels of analysis applied to social network research, and ways to represent social networks (including

software alternatives).

Key terminology and language.

Social network analysts use specialized terminology for describing the structure and contents of networks (Hanneman & Riddle, 2005; Marsden, 1990; Scott, 2000). Formally defined by Wasserman and Faust (1994), social networks are a set of network members (commonly referenced as nodes/vertices/actors) tied by one or more types of relations (commonly referenced as edges/ties/relations). An actor is represented in a network diagram by a node, or point in space. A tie, the relational connection or linkage between two actors, is represented by a line connecting the two nodes. Appendix A provides a glossary of terms for reference.

Network analysis focuses on the relations among actors, not on individual actors and their attributes. Actors are usually not selected with traditional independent probability sampling. Rather, network studies are much more likely to include all of the actors within some boundary (Hanneman & Riddle, 2005). Although not necessary for network analysis, collecting attribute data that describes each actor can add insights to the analysis and visualization of networks (Hansen, et al., 2011).

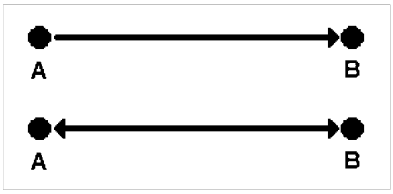
The boundaries of the populations studied by network analysts are of three main types (Laumann et al., 1992). According to Hanneman & Riddle (2005), the most common boundaries are those imposed or created by the actors themselves. As such, "social network studies often draw the boundaries around a population that is known, *a priori*, to be a network" (Hanneman & Riddle, 2005, Chp 1). In essence these networks are naturally occurring formal clusters of actors. Alternatively, a network analyst might take a more event-based approach to defining population boundaries (Laumann, et al., 1992). In this instance a social network analyst might

have reason to suspect that networks exist, but the entity being studied is an abstract concept (Hanneman & Riddle, 2005). For example, an analyst might impose a geographic boundary in studying a set of actors who live near each other. Lastly, boundaries may be based on small set of actors within a population of interest and then expanded to include other actors sharing particular types of relations. Laumann et al. (1992) defined this type as a relational-based approach to boundary specification. In this study I used the first approach where the formal members of the governing board defined the network boundary.

Ties represent the variety of relations among actors. The two major types of connections are undirected ties and directed ties. An undirected tie (symmetric) represents the existence of a relation between two actors. No origin or destination is necessary in these mutual relationships. Moreover, these ties cannot exist unless they are reciprocated. On the other hand, directed ties (asymmetric) have clear origins and destinations. It is not necessary for directed ties to be reciprocated. For example, if actor A claims a relationship with actor B, an arrow is drawn between the nodes pointing to actor B. If actor B also claims a relationship with A, then the arrow would be bi-directional and represent an undirected tie (see, Figure 2.1).

Figure 2.1

Illustration of Directed and Undirected Ties



Note. Arrows indicate the direction of the tie.

Borgatti et al. (2009) identified four broad categories of relations – similarities, social relations, interactions, and flows. Similarities are location, membership, and attribute ties

between nodes. Social relations are ties between nodes based on roles (kinship, friend, competitor of) as well as affective (likes, hates) or cognitive (knows about) dispositions. Interactions are behavior-based ties (speak to, help) between nodes. Flows are relations based on exchanges or transfers (resources, information, influence) between nodes. Similarities and social relations are considered undirected ties, while interactions and flows are directed ties. In this study I asked board members to identify individuals they draw upon to inform their role as a governing board member. My goal was to capture interaction and flow relationships and represent these ties in a directed graph.

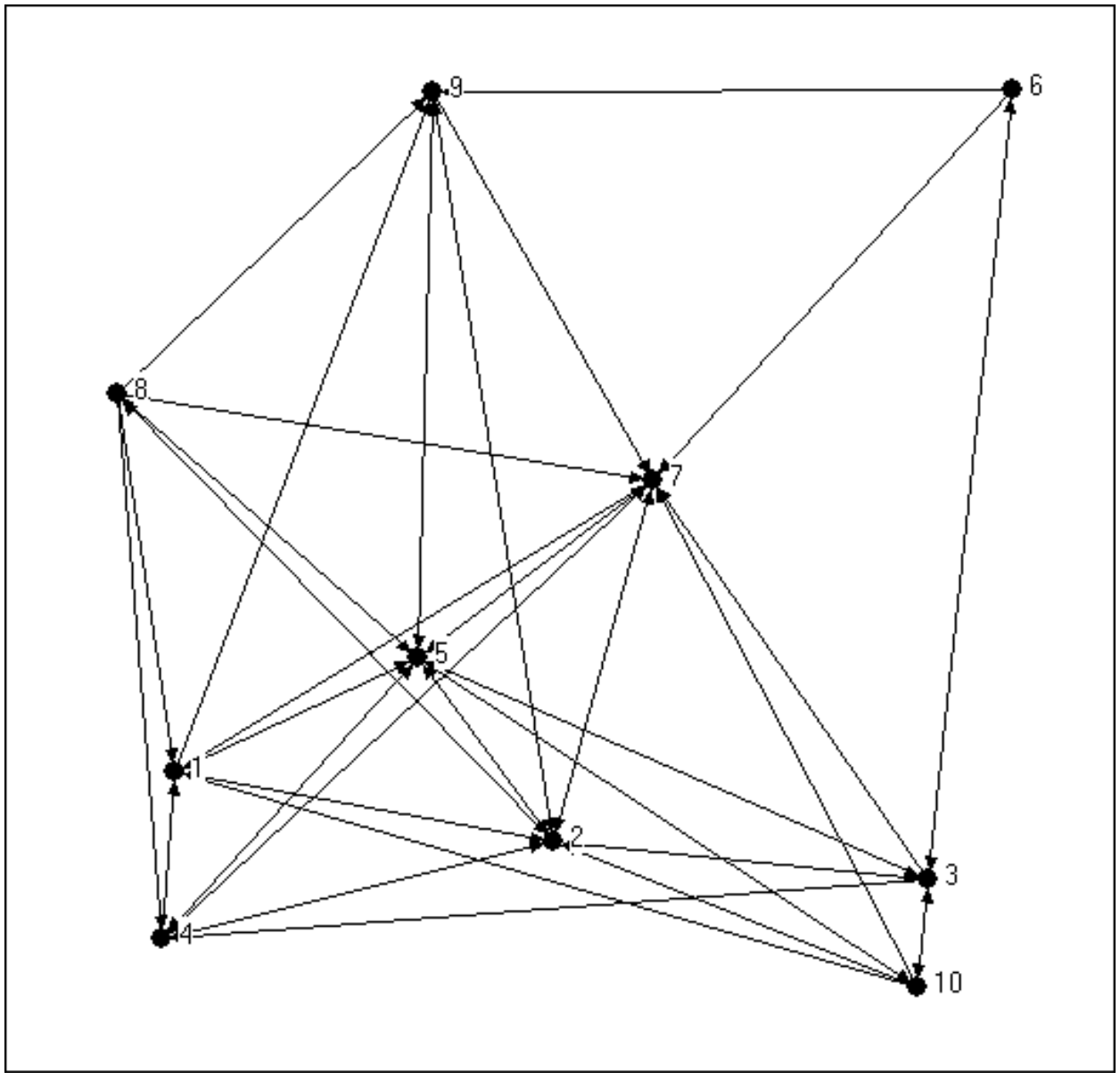
Different types of data can represent ties. The simplest type is an unweighted binary tie (the tie exists or does not exist). In contrast, a weighted tie includes values associated with each tie that indicates the strength or frequency of a relation (interval data) (Hansen, et al., 2011). Valued data (such as frequency of communication) gives information on the strength of an existing tie. For example, if A sent 10 emails to B last week and only 1 to C, it is possible to conclude that last week A was more strongly connected to B than C. Hanneman and Riddle claim, "even though it is a good idea to measure relationship intensity at the most refined level possible, most network analysis does not operate at this level. The most powerful insights of network analysis, and many of the mathematical and graphical tools used by network analysts were developed for simple graphs (i.e. binary, undirected)" (2005, Chp 1).

Ultimately, social network analysis involves the examination and comparison of ties at many levels: between two nodes (also called a dyad), among and between clusters of nodes (also called cliques), and among all nodes included in the network as shown in Figure 2.2. The structure of a network can influence outcomes for individual actors because the position of a node in the network can provide both opportunities and constraints (Burt, 1992). Moreover,

changes in the pattern of relationships among actors can impact the structure of the whole network (Frank & Fahrbach, 1999; Frank, 1996).

Figure 2.2

Illustration of a Whole Network



Note. Arrows indicate the direction of the tie. Adapted from Hanneman, Robert A. and Mark Riddle. 2005. *Introduction to social network methods.* Riverside, CA: University of California, Riverside (published in digital form at http://faculty.ucr.edu/~hanneman/)

Some social network analyses use matrix algebra to describe relationships when the data are too complex to portray patterns in a sociogram. Networks can be represented in this mathematical format and calculations performed to summarize the information on the sociogram. Figure 2.3 is the mathematical representation of Figure 2.2.

Figure 2.3

Example of a Network Matrix

	1	2	3	4	5	6	7	8	9	10
1	0	1	0	0	1	0	1	0	1	0
2	1	0	1	1	1	0	1	1	1	0
3	0	1	0	1	1	1	1	0	0	1
4	1	1	0	0	1	0	1	0	0	0
5	1	1	1	1	0	0	1	1	1	1
6	0	0	1	0	0	0	1	0	1	0
7	0	1	0	1	1	0	0	0	0	0
8	1	1	0	1	1	0	1	0	1	0
9	0	1	0	0	1	0	1	0	0	0
10	1	1	1	0	1	0	1	0	0	0

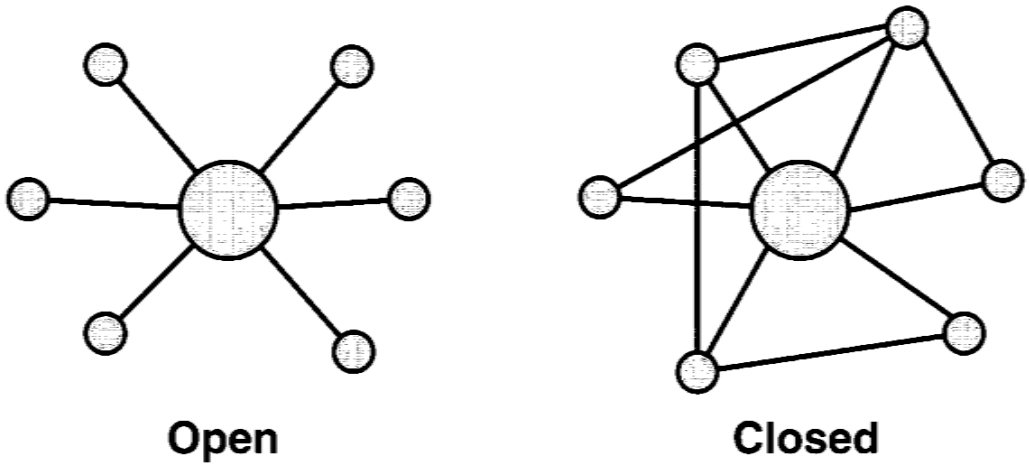
Note. This matrix represents a binary network – either a tie exists (value = 1) or not (value = 0). Adapted from Hanneman, Robert A. and Mark Riddle. 2005. *Introduction to social network methods.* Riverside, CA: University of California, Riverside (published in digital form at http://faculty.ucr.edu/~hanneman/)

Types of networks.

Two important dimensions define the type of network. The first is whole versus ego networks. The second is one-mode versus two-mode networks. Whole networks examine the social structure by focusing on all actors and frequently analyze multiple relations within the network (see, Figure 2.2). Alternatively, ego networks focus on one actor (the ego) and the relations with the ego (the alter) (Marin & Wellman, 2010). Ego networks can be extracted from whole networks by selecting a focal actor and examining the alters connected to the focal actor (Burt, 1992, 2004, 2005) (see, Figure 2.4).

Figure 2.4

Illustrations of Ego-centric Networks



Note. Two illustrative ego networks. The one on the left contains many structural holes; the one on the right contains few. Adapted from Borgatti, S.P., Mehra, A., Brass, D. and Labianca, G. (2009). "Network Analysis in the Social Sciences." *Science*. Vol. 323. no. 5916, Feb 13, pp. 892 – 895.

In one-mode networks everyone could potentially be connected. Researchers studying whole networks most frequently collect data on a single type of node and analyze one-mode networks. Alternatively two-mode networks examine multiple types of nodes. For example, in these affiliation networks researchers examine events and attendees or organizations and membership (Marin & Wellman, 2010).

Levels of analysis.

Two distinct approaches to social network analysis exist (Hanneman & Riddle, 2005; Marin & Wellman, 2010). As explained these scholars, the mathematical approaches to network analysis tend to treat the data as deterministic. That is, they tend to regard the measured relationships and relationship strengths as accurately reflecting the actual status of the network. Mathematical approaches also tend to assume that the observations are not a random sample of

some larger population and do not have inferential statistical qualities; rather, the observations are usually regarded as the population of interest.

In contrast statistical analysts tend to regard the particular scores on relationship strengths as stochastic. Statistical analysts also tend to view a particular set of network data as a sample of a larger population of such networks with the potential to make generalizations and conduct hypothesis testing. However, this approach is limited when there is no plausible way of identifying populations and drawing independent random samples by probability methods.

These distinctions are more than of academic interest. The choice of approach affects both the design and analysis of social network studies. Most common is the use of mathematical approaches to social network data with a focus on descriptive statistics. The application of inferential statistics to social network data is more recent and is a growing in its application (Wasserman & Faust, 1994).

In the mathematical approach scholars use a variety of network metrics to measure properties of the network as a whole as well as calculate measures for each actor in the network. Several metrics describe networks as a whole (Marsden, 1990; Wasserman & Faust, 1994). Scholars often examine the density of the network. It is a quantitative way to measure the interconnectedness of all the actors and assess concepts such as cohesion and membership (Hansen, et al., 2011). By using a set of centrality measures, scholars can describe a variety of ways an individual actor is or is not central to a whole network (Freeman, 1979). Other metrics integrate attribute data with network data to examine homogeneity and composition of the network (Marin & Wellman, 2009).

Individual actor metrics often identify the individuals' position in the network (Marin & Wellman, 2009). Commonly these measures include degree centrality, betweenness centralities,

closeness centrality, and eigenvector centrality (Freeman, 1979; Wasserman & Faust, 1994). Degree centrality is a count of the total number of connections linked to an actor. As a measure it does not differentiate between quantity and quality. For directed networks an in-degree and out-degree centrality measure is calculated for each actor. Betweenness centralities is a measure of how often an actor lies on the shortest path between other actors. Scholars often reference this as a bridge score for boundary spanners. As a measure it provides insight into how removing an actor from a network would disrupt connections between other actors in the network. Additionally, this measure can identify structural holes in a network where two or more actors fail to connect. Closeness centrality captures the shortest-path length between an actor and every other actor in the network. A high closeness centrality score means that an actor is directly or closely connected to another actor. A low closeness centrality score often indicates actors in peripheral network locations who require many connections to reach other actors in the network. The eigenvector centrality measure is a more sophisticated view of centrality. The measure allows scholars to assess an actor with a few highly connected relations.

Network representation.

Contemporary social network research represents a move from vague network metaphors to sophisticated representations of central elements of social structure (Breiger, 2004). A notable indication of this change is the development of several software applications to analyze as well as visually represent social network data. As stated by Butts, "modern social network analysis is a computationally intensive affair" (2008, p. 1).

Huisman & van Duijin (2005) reviewed twenty-seven software programs used for the analysis of social networks. They found the most frequent applications included data manipulation, data visualization techniques, and data analysis focused on descriptive network

statistics, procedure-based network analysis, and statistical modeling of networks. Freeman (2000) illustrates some of the newest procedures for producing web-based pictures that allow viewers to interact with the network data, using visual input to explore a variety of analytical models of their structural properties. Regardless of the technique "the tools for analyzing and visualizing networks have demanded significant technical skill and often mastery of programming languages" (Hansen et al., 2011, p. 47).

For my study I selected to use the UCINET program. Similar to many social network analysis software programs, UCINET is a free, open-source application. A team of social network scholars (Freeman, Borgatti, & Everett) developed the software. This program was meant to be accessible while at the same time providing rich analysis and visualization (Hanneman & Riddle, 2005). My rationale for selecting UCINET was two fold. The software is compatible with SPSS Statistics, which made it possible to combine social network analysis with other data manipulations. In addition UCINET is one of the few software packages to combine statistical analysis with graphical tools.

In summary, social network analysis is a means to study relationships and interactions. As a grounded analytical tool, social network analysis is used in a variety of disciplines. The various analytical approaches share a common terminology and language. Social network scholarship either focuses on examining whole or ego-centric networks. Network metrics allow for scholars to describe individual actors within networks as well as networks as a whole. Analysis is supported by many software applications.

Relevant Studies of Social Networks

Since 1970 there has been an exponential growth of social network research and

publications (Borgatti & Foster, 2003). In the field of higher education social network scholarship has focused on faculty networks with an emphasis on understanding academic success and research productivity (Finkelstein, 1982; Fries-Britt, 2000; Gerstick, Bartunek, & Dutton, 2000; Hitchcock, Bland, Hekelman, & Blumenthal, 1995; Leahey, 2007; McDowell & Smith, 1992; O'Leary & Mitchell, 1990; Rawlings & McFarland, 2010). With the exception of Pusser's, Slaughter's, & Thomas' (2006) study of public higher education governing board members interlocks with corporate governing boards, no research exists that applies social network analysis or theory directly to post-secondary governing boards. Three theoretical constructs may be relevant to the study of governing board social networks: social capitol, organizational research, and board interlocks.

Social capital research.

As detailed in reviews by Alder & Kwon (2002), Lin (2001), and Burt (2005), much research focuses on the concept of social capital. In the most general terms, the concept is about the value of connections. As stated by Alejandro Portes "[t]he consensus is growing in the literature that social capital stands for the ability of actors to secure benefits by virtue of membership in social networks or other social structures" (1998, p. 7).

Three major theories conceptualize social capital: weak-tie theory (Granovetter, 1973), structural hole theory (Burt, 1992), and social-resource theory (Lin, Ensel & Vaughn, 1981). Weak-tie theory focuses on the characteristics of the tie between actors. Structural hole theory emphasizes the bridging properties between clusters of actors. Social-resource theory focuses on the characteristics of the actors within the network not the nature of the tie or the pattern of ties among actors.

Burt's (1992) book on structural holes directed attention to the structure of an actor's ego network. Burt equates social capital with the lack of ties among an actor's alters, a condition he names structural holes. He argues that the spanning of structural holes provides the mechanism relating weak ties to positive outcomes in Granovetter's (1973) strength of weak ties theory. Burt's view contrasts with Coleman's (1990) view of social capital, which calls for a dense ego-network in which ego's alters are able to coordinate with each other to help the ego. Coleman's view is similar to that of Putnam (2000) and others who define a group's social capital in terms of broad cross-cutting interconnections among all group members. Consequently, views about optimal network structures vary by theoretical perspective about social capital.

Regardless of the theory employed, social capital research often focuses on relating an individual's network to significant outcomes such as power (Brass & Burkhardt, 1993a,b), leadership (Pastor, Meindl & Mayo, 2002), mobility (Seibert, Kraimer & Liden, 2001; Seidel, Polzer & Stewart, 2000), employment (Crowell, 2004; Fernandez, Castilla & Moore, 2000; Krackhardt & Porter, 1985), individual and team performance (Sparrowe, Liden, Wayne & Kraimer, 2001; Tsai, 2001), and entrepreneurship (Renzulli, Aldrich & Moody, 2000).

A related line of scholarship reverses the usual logic of social capital and examines the negative consequences of social capital. This scholarship discusses the "dark side" of social ties that trap actors into maladaptive situations or facilitate undesirable behavior (Gargiulo & Benassi, 1999; Gulati & Westphal, 1999; Portes & Landolt, 1996).

Organizational research.

Some research uses social networks to examine organizations (Brass & Burkhardt, 1993b). As discussed by Frank (1996), the structure of interactions and the pattern of influence

in an organization can be characterized by a map of interactions within and between members. Organizational network studies focus on either selection or influence occurring within the network. Selection studies examine how actors choose others with whom they interact. Influence studies examine how actor's interactions affect their beliefs and behaviors. Both dynamics have been shown to affect organizational behavior.

In studies of organization learning social network scholars have designed models to measure knowledge held by individuals and groups (Borgatti & Carboni, 2007) as well as models of information seeking (Borgatti & Cross, 2003). Frank advocates for understanding the social context of learning: "[b]y studying the relations among the participants in schooling, we can begin to understand the processes through which individuals are affected by, and partially construct, schools as organizations and institutions" (1998, p. 201). Frank (1996, 2005) also showed that teacher networks directly affect the educational process and are a key element of schools as social organizations.

The study of informal networks and their impact on organizational performance is another important line of inquiry (Cross, Parker, & Borgatti, 2002). Hatala (2006) argues that social network analysis can advance the field of human resources by enabling researchers to analyze the interactions between individuals and their environment. Social network studies also examine organizational culture. White (1992) considered discursive "narratives" and "stories" to be fundamental to structural pursuits, writing that "stories describe the ties in networks" and that "a social network is a network of meanings" (pp. 65, 67). Frank and Fahrbach (1999) discussed the role each individual plays in generating organizational culture. Their work combines "balance theory and information theory to specify models of influence (changes in actors' sentiments as a function of interactions) and selection (changes in the pattern of interaction as a

function of actors' sentiments)" (1999, p. 252). These authors claim that social networks form the basis for organizational culture.

Social networks have been shown to influence organizational adaption and change. Kraatz (1998) examined the role of inter-organizational networks in shaping adaptive change at colleges. Frank, Krause, & Penuel (2010) studied how the distribution and flow of knowledge through intra-organizational networks affects organizational change. Frank and colleagues found that successful organizational change depends in part on information flows from subgroups whose members possess high quality knowledge. In a study of teachers, Darling-Hammond & McLaughlin (1995) concluded that teachers are more likely to innovate when they interact with other innovators. Rogers (1995) described successful "diffusion of innovations" as dependent on the patterns of connections in a social network.

Corporate board interlocks.

Another development in social network literature has been the empirical research on corporate board interlocks. Mizruchi (1996) provides an excellent review of this scholarship dedicated to exploring the ties among organizations created by having a member of one corporate board member sitting on the board of another. Early corporate board interlock research focused on resource dependence and class perspectives which viewed interlocks as a means to (a) manage organizational dependencies (Pfeffer & Salancik, 1978) and (b) maintain power and control for social elites (Useem, 1984). Although the primary objective in both research streams was identifying the causes of interlock ties, some of this early research used interlocks to predict organizational behaviors (Mizruchi, 1996).

In recent years, the focus of this research has shifted toward viewing corporate board

interlocks as a means by which organizations reduce uncertainties and share information about acceptable and effective corporate practices. Scholars have used board interlocks to explain corporate acquisition behavior, the adoption of organizational structures, CEO pay premiums, and joint venture formation (Borgatti & Foster, 2003). Several studies highlighted the benefits of interlocks in reducing uncertainty (Borgatti & Foster, 2003). One development in this literature, paralleling developments in the social capital literature, is that researchers are beginning to study the negative effects of certain types of interlocks (Davis & Greve, 1997; Gulati & Westphal, 1999; Haunschild & Beckman, 1998).

Pusser, Slaughter, and Thomas (2006) conducted one of the few applications of board interlocks to higher education governance in their study of trustee networks. They examined trustee interlocks (individuals who simultaneously sit on multiple governing boards) at prominent research universities and explored the implications of these relations with university-business relationships. The study concluded that private institutions governing board members are more likely to be connected to powerful publicly held corporations than public institution governing board members. Moreover, private governing board members interlocks were with a wider variety of industry sectors. Finally, governing board members from a variety of private institutions often were members of corporate boards thereby creating opportunities for conflicts of interest. This pattern was not evident with public governing board members. The authors acknowledge that the study did not explain how interlocks impact organizational performance nor address what flows through the network. However, this study made an important contribution in identifying governing board interlocks and advocating for an agenda of research exploring "the broader institutional and political-economic dynamics that set the context in which networks of trustees shape institutional policies" (Pusser et al., 2006, p. 770).

Summary of Literature Review

The current financial crisis as well as the cumulative effects of decades of declining public investment in higher education substantially affects public and private higher education institutions. Even with a widespread commitment to shared governance, higher education institutions have substantial variation in structures and in institutional responses to the current fiscal conditions. Studies of higher education governing boards typically focus on structure and performance. Research has yet to explore in any depth the impact of higher education governing board members as social actors. The application of social network analysis as a framework to study higher education governing boards is one way to combine calls to explore the human relationships in governance in the context of existing governance structures. Next I present the research design, sampling plan, instrumentation, process to collect and analyze data, and limitations of my study.

CHAPTER 3

Study Design

This chapter describes how I conducted the study. After reintroducing the purpose of the current study, I discuss my research design, sampling framework and steps, and data collection approach. Then, I explain the instrumentation and data analysis procedures. I conclude by detailing the limitations of my study.

The purpose of the current study was to identify the social network patterns of governing board members at public institutions and explore the broad range of interactions that can influence governing boards' networks. I sought to determine whether identifiable social networks for public higher education governing board members exist, to develop an overall picture of public higher education governing board networks, and to understand the internal and external factors impacting governing boards' social networks during times of fiscal crisis.

Research Design

My study focused on the role of social networks in public higher education governing boards. During the current fiscal crisis I assumed that institutional policy decisions are crucial to institutional survival and functioning, and that the context makes it easier for governing board members to reflect on the diversity of actors whom they call upon to inform their role as an institutional leader. The premise was that an understanding of these social networks would better enable researchers to understand governing boards.

Since governing boards are not well understood in general and have not been examined through the lens of social network analysis, the study would be exploratory for the population (Tierney, 2004b). However, the technique of social network analysis is a well-developed

approach and sophisticated analytical tool (Marin & Wellman, 2010; Scott, 2000).

Sampling Framework

The sampling framework was driven by two significant considerations. First was to capture potentially important institutional variations in public governing boards through the selection of distinct types of institutions from states transferring fiscal burdens onto post-secondary education. As such, I limited the universe to states with individual institution level boards because I wanted to associate governing board social networks with actions related to that institution. I also wanted to focus on states with the greatest likelihood of the financial crisis affecting the operation of public higher education institutions in that state. Recall that I used this criterion because of the possibility that it would make the identification of board social networks more obvious than in less turbulent times. Finally, I wanted to look at institutional variation by studying a teaching-oriented public institution and a research-oriented public university in the same state to see whether or not institutional type differences were related to board social networks.

The second consideration was to meet the methodological requirements of social network analysis. Critical to whole network analysis is high participation rates (Marsden, 1990, 1993). High participation allows for a complete mapping of the network. The assumption is often asserted that network analysis is intolerant of missing data. However, scholars have tested this assumption and identified conditions under which network measures were likely to be reliable (Borgatti, Carley, & Krackhardt, 2006; Marsden, 1990 & 1993). Borgatti, Carley, & Krackhardt examined this important practical question: "is it reasonable to compute centrality indices when we know that the data contain errors?" (2006, 134). The scholars concluded that measures of

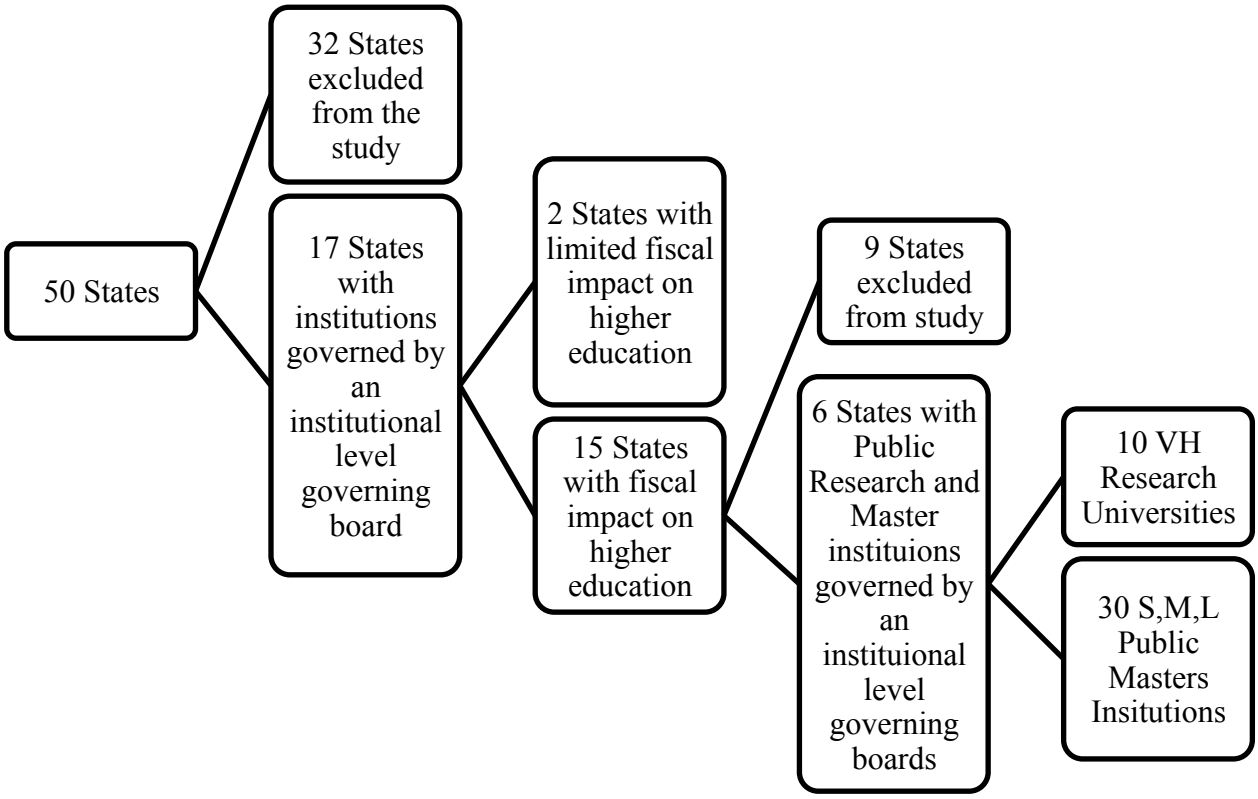
centrality tested were quite robust under small amounts of error (such as 10% and under). More importantly the authors note "accuracy not only declines with increasing error, but does so predictably and monotonically" (2006, 134). The implication of this finding is that knowing the rate and type of error in the data collection process can allow for the creation of error bounds on the metrics constructed from the observed data.

I wish to note here that I decided to exclude any institution with publicly-elected governing board members from the study. In particular, publicly-elected governing boards (e.g. election year cycle) could potentially influence the mapping of the networks in a manner that distorts the more typical social network relationships of board members.

To take into account these sampling considerations, I used a blend of criterion sampling and judgment/purposeful sampling (Miles & Huberman, 1994; Patton, 2002). Patton defines criterion sampling as a technique that "involves selecting cases that meet some predetermined criterion of importance" (2001, p. 238). A judgment/purposeful sample depends on the researcher's practical knowledge of the research area along with relevant knowledge of the population. My goal was to have a total sample size of at least four complete public governing boards from two types of institutions: research-oriented and teaching-oriented.

Figure 3.1

Sampling Framework Flow Chart



In this study, the first step was to select a sample of states. Drawing on McGuiness' (2003) categorization of state higher education governance structures (see, Table 3.1) and conversations with experts in the field of higher education governance and policy, I identified states with public post secondary institutions governed locally by an institutional board. This generated a possible universe of 17 states.

Table 3.1

States with Institutional Level Governing Boards for 4-year Institutions

Higher Education Governance Structure Category	State
State Coordinating / Institutional Board	
▪ Single statewide coordinating board. Institutional level governing boards for several colleges and universities. Individual governing boards for community/technical colleges. Multi-campus governing board for universities and 2-year campuses.	AR, NM, OH, OK, WV
▪ Single statewide coordinating board. Institutional level governing boards for several colleges and universities. Individual governing boards for community/technical colleges. Multi-campus governing board for universities.	MD, MO, NJ
▪ Single statewide coordinating board. State level governing boards for multi-campus systems, state level governing or coordinating boards for community/technical colleges, and institutional level governing boards for some universities.	AL, CO, IL, IN, SC, TX
State Coordinating / Mixed Institutional Boards	
▪ Single statewide coordinating board. Each public university is locally governed by a governing board. State governing boards for community colleges either govern the colleges or coordinate locally governed community colleges.	KY, VA, WA

Although financial issues confront all states, the current study focused on states that transferred a larger portion of the financial burden onto public higher education institutions. The rationale for focusing on states that have transferred financial burdens from the state to its public colleges and universities is the potential for such a shift to increase the engagement of governing board members and possibly make board members more aware of the social networks they rely upon as institutional leaders. I assessed the impact of the recent fiscal crisis on these 17 states and determined how identifiable shortfalls in state fiscal support influenced higher education funding (see, Table 3.2). Using the *Fiscal Survey of the States* report by the National Governors Association, I determined that of the 17 states with locally governed institutional boards all but

three states (Arkansas, Ohio, and Washington) reported mid-year cuts to higher education in fiscal year 2010. Arkansas and Washington reported mid-year budget cuts for fiscal year 2010 but those cuts were not transferred to higher education budgets. Accordingly, I removed Arkansas and Washington from the sampling framework. Ohio did not report any mid-year budget cuts for fiscal year 2010. However, the state did have a $1,180.7 million budget gap in fiscal year 2009 (NCSL, 2009) and fiscal year 2009 required the use of the state's stabilization (rainy day) fund (NGA Fiscal Survey of States, 2009). At the end of the year the balance of the fund was exhausted. I selected to keep Ohio in the study since the state does appear to have been adversely affected by the recent fiscal crisis. Moreover, the fiscal impacts to the state potentially may have an impact on state funding of higher education.

Table 3.2

Percentage of Mid-Year Higher Education Cuts for States in Sampling Framework

State Higher Education Governance Structure Category	% of Higher Education Cuts	
	Mid-Year 2010	Mid-Year 2011
State Coordinating / Institutional Board		
Arkansas	0.00%	
New Mexico	9.57%	16.10%
Ohio		
Oklahoma	13.25%	
West Virginia	10.31%	
Maryland	11.68%	
Missouri	3.62%	26.27%
New Jersey	3.39%	
Alabama	19.18%	
Colorado	47.36%	0.00%
Illinois	1.78%	
Indiana	31.00%	2.50%
South Carolina	9.36%	
Texas	28.22%	48.59%
State Coordinating / Mixed Institutional Boards		
Kentucky	9.91%	
Virginia	20.51%	
Washington	0.00%	1.63%

I further narrowed the potential pool of states for the study by including only those states that had public research universities and public masters level institutions governed by autonomous institutional governing boards. The result was a sampling framework of six states: New Mexico, Ohio, West Virginia, New Jersey, Kentucky, and Virginia. The remaining nine states were excluded from the study because in the state higher education governance structure a multi-campus system governing board not an institutional board governed the research universities.

The second step in the study's sampling framework was to select institutions within each of these six states. Utilizing the 'Basic Classification Descriptions' of the *Carnegie Classification of Institutions of Higher Education* I identified public research universities (very high research activity) and public masters institutions (small, medium, and large programs) that existed in each state. The first represents a strong research-oriented institution, the latter a more teaching-oriented institution. As shown in Table 3.3, a total of 10 very high research activity public universities and 30 small, medium, and large program public masters level institutions existed in the 6 states.

Table 3.3

Number of Public Research and Masters Level Institutions in Sample States

State	Public Research (VH)	Public Masters (S, M, L)
Kentucky	2	5
New Jersey	1	10
New Mexico	1	4
Ohio	2	1
Virginia	3	7
West Virginia	1*	3
Total	**10**	**30**

Note: * A Very High Research Activity University does not exist in West Virginia. As such the High Research Activity University in the state was selected.

The next step was to determine access to and cooperation by governing board members in potential participating institutions. The board secretaries[1] at the Association of Governing Boards National Conference on Trusteeship (March 2010) recommended a strategy of going through the board secretary to gain access to board members. The board secretary's assessment of institutional interest and board members participation was critical for data collection and obtaining high response rates. I found that board secretaries could indicate the likelihood of participation of each board member as well as the best way to collect data from each board member (e.g., e-survey, telephone interview). An important criterion in sample selection was the support by a board secretary in assisting with board member participation in the study.

Sampling Steps

This section details the steps I took to select the governing boards for the study. Figure 3.2 illustrates the overall scheme of governing board selection and participation.

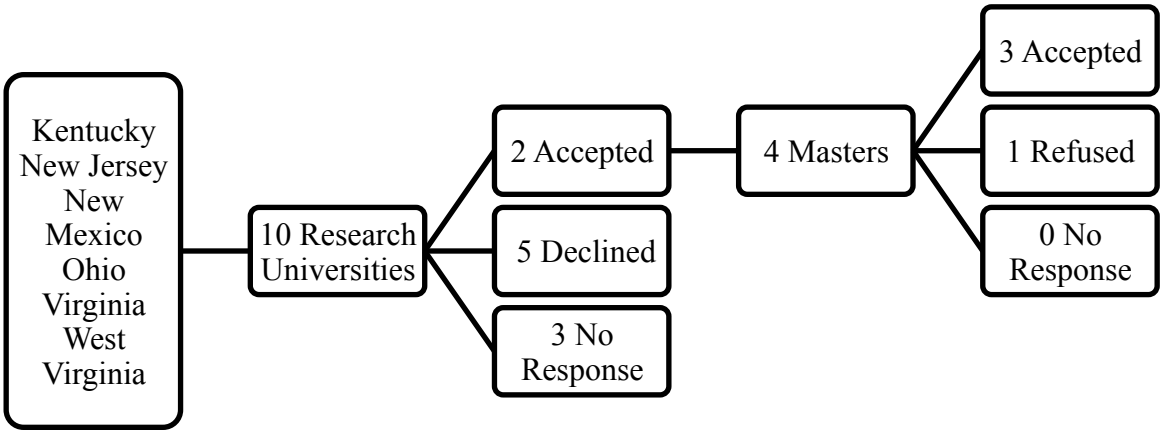
With the goal of including a governing board from at least one public research institution and one public masters institution from the same state, I elected to first contact the ten public research universities within the six states about participation in the study. Only after a public research university board agreed to participate did I approach the board secretary's at public masters institutions within the state.

Initially the board secretary at four public research universities in four states indicated a strong likelihood of participation by the governing board. The remaining public research institutions declined to participate or never responded to the invitation. Of the four interested

[1] Throughout this paper I use the title board secretary or secretary to represent the institutional employee who works directly with the governing board. Note that some institutions use the term board professional.

Figure 3.2

Flow of Governing Board Participation in Study



Note: As a result of the "Declined" and "No Response" by 8 public research universities, 26 masters level institutions were excluded from sample selection and were not contacted for participation.

research institutions, one elected not to participate after the board secretary consulted with board members. A second institution dropped out because the board members never followed up on the initial interest expressed by the board secretary. So I ended up with two public research universities from two states (State A and State B).

Once I identified the two public research universities I sought a public masters institution from each of the two states in which the research universities were located. I contacted four public masters institutions, three from State B and one from State A. With the support of the AGB and state higher education executive officers ("SHEEO") three of these institutions agreed to participate. Only two are included in the study's results since the participation rate for one

public masters was extraordinarily low. I detail the data collection process for participating institutions below.

Data Collection

To ensure gathering high quality data I employed a variety of strategies. Essential to my study was my initial contact with the board secretary at each institution. A successful interaction enabled me to begin to determine the interest by the institution. The support for my study by the AGB gave me credibility and was a significant factor that advanced these initial inquiries.

Based on a small group discussion with board secretaries (March 2010) I received counsel on how best to invite institutions to participate. From these dialogues I learned it was critical for the board secretaries to understand the intention and scope of my study. I prepared and sent a statement that communicated AGB's endorsement, the intention of the study, and what I expected from the board in terms of participation in data collection the board's commitment to provide data. Once the board secretary received the information about the study, she or he discussed possible participation with the President and Board Chair. If the institution was receptive to participate in the study, I worked with the board secretary to learn how to best to collect data from individual board members. I submitted data collection forms to the board secretary for distribution to board members. I also worked with the board secretary to send follow-up reminders.

Another critical tactic was the design of the survey instrument. The aim of the survey was to capture governing boards' social networks and factors influencing governing boards' networks, learn about governing board decision making processes, and understand how the governing board functions in the context of the current fiscal crisis. Previous experience with

collecting data from similar role groups showed the need for the instrument to be concise and relevant (Alberbach & Rockman, 2002; Berry, 2002; Goldstein, 2002; Stephens, 2007).

After developing the draft instrument (see the following section for details) I conducted pilot investigations. I asked a board secretary from a public research institution not included in the study's sample and an AGB research staff member to review the draft survey instrument for both meaning and conciseness. I also consulted social network scholars to verify the fit between questions asked and the type of data required for social network analysis. In addition, at the AGB National Meeting I conducted pilot-tests of the draft survey with governing board members followed by debriefing sessions with board secretaries to discuss both the content and how best to distribute surveys to board members. In the end I developed a survey with 15 items that took 10-15 minutes to complete. I also developed guidelines to assist board members with definitions of key terms. Based on the recommendations of the AGB and board secretaries I either distributed the instrument electronically or gave it to board members in person at a board meeting. I also provided the option for board members to speak with me directly about the study and offered to collect responses to the survey instrument through a structured interview.

Lastly, I took into account ethical considerations related to social network research (Borgatti & Molina, 2005; Kadushin, 2005; Klovdahl, 2005). Social network analysis is predicated on obtaining the identities of the participants and the identities of those individuals nominated as ties to develop the sociogram: "the collection of names of either individuals or social units is not incidental to the research but its very point" (Kadushin, 2005, p.141). Anonymity, a common strategy used in social research, was not possible since participant names were necessary to gather network data. Accordingly I promised the institutional leaders and governing board members that I would use pseudonyms in my dissertation to protect

confidentiality. This approach is consistent with recommendations made by Klovdahl (2005), Borgatti & Molina (2003), and Kadushin (2005).

My initial strategy relied on the board secretary to disseminate surveys along with letters of support from AGB, the university president, and the board chair. This strategy was ineffective. It became clear that board members paid little attention to board issues when not in their formal board role at meetings. Accordingly I changed data collection strategies. At board meetings either the board secretary or myself distributed surveys, waited for board members to fill them out, and gathered completed surveys. This process extended my data collection process since public governing board meetings are held on average seven times a year (AGB Report on Public Governance, 2010). These meetings have full agendas, which required negotiation with the board secretary to find space for my research on the agenda. In general the most effective data collection strategy started with my introduction to the board (either by the board secretary or myself), the distribution of hard-copy surveys, and often the collection of data on the spot. In some cases the board members took the forms home and mailed responses back in a self-addressed stamped envelope. This strategy worked because either the board secretary on my behalf or I was able to address board members in their formal board roles. This strategy substantially increased response rates. Follow-up was essential to attempt to get data from complete boards (or at least a large majority of members). In some cases I was permitted to contact board members directly. In other cases the board secretary transmitted the follow-up request. Table 3.4 describes the response rate by institutions.

Table 3.4

Governing Board Response Rates by Institution

Institution	Number of Board Members	Number of Respondents	Participation Rate
Masters I (M-I)	11	11	100%
Masters II (M-II)	12	8	66.6%
Research I (R-I)	17	15	88.2%
Research II (R-II)	18	8	44.4%

Instrumentation

The aim of the survey was threefold: 1) to capture information about governing boards' social networks; 2) to learn about factors influencing the governing board social networks; and 3) gain insight into how the governing board functions in the context of the current fiscal crisis. I used previous social network surveys (Frank, Zhao & Borman, 2004) and assessments of board performance (Chait et al., 1996) to develop a series of survey items about governing board networks and factors influencing decision-making during the current financial crisis. Social network analysis requires collection of a standard set of questions about the relations between group members. The items I collected are relatively standard and widely applied. To help me develop the study's social network questions I used Frank et al.'s (2004) technology practices survey as a model. In addition, I consulted the numerous handouts, presentations, and tutorials on network data collection, with an emphasis on surveys from Borgatti's website. In a similar vein Chait et al. (1996) developed a self-assessment instrument based on six dimensions of board effectiveness. Using a behavioral focus the series of questions measure the board's performance on specific behaviors association with effective trusteeship, pinpoints areas that a board needs to strengthen, and offers suggestions to remedy areas of relative weakness. As a tool it provides

boards the information to move from self-evaluation to self-improvement. Chait et al.'s work provided a complementary guide for the survey questions about governing board functions. These standard sources—for social networks and for board functions—served as the basis for the core content of the draft survey instrument.

For the social network analysis I asked board members to identify sources of knowledge they draw upon in their role as a governing board member. The goal was to capture knowledge sources both in the form of human relationships and information materials. I asked board members to identify individuals and their role function with whom board members most frequently discussed institutional policies and strategies. I asked board members to consider individuals both internal and external to the institution. I provided a list of role options to help generate thinking about personal networks as recommended by Marsden: "Self-reports of the presence or absence of social ties are the most common method used to gather network data. Most often such data are obtained with single-item questions that ask a respondent to enumerate those individuals with whom he or she … has direct ties of a specified kind" (Marsden, 1990). It is important to note when a board member indicated the board (not a specific board member) as a tie, I included every board member individually in the matrix.

I asked board members to identify information sources (e.g. governing board meeting materials) they consult when considering institutional policies. To gather data relevant for subsequent statistical comparisons I included items about the backgrounds of the board members. These items included demographic information, years of service on the board, committee assignments and leadership roles on the board, professional history and current professional position, and frequency of on-campus activities outside of formal board meetings. The items also included prior experience in governance and professional affiliation/expertise

because past studies (Chait et al., 1991, 1996) found them related to overall board performance.

Another section of the survey focused on capturing board members perceptions of how the governing board reaches decisions. I asked board members to select between 1) board members are uncommitted to a particular institutional policy decision and adopt the recommendation of the administration and 2) board members have established opinions on institutional policies and during the board meetings interests are negotiated. I followed that item with a question about variation in decision-making processes. I asked board members to rate on a five-point Likert scale a series of statements about the relative importance of stakeholders, governance structures, and governing board members professional affiliations and relationships in the governing board decision making process.

Lastly, the survey addressed governance during a financial crisis. I asked board members whether or not the governing board took more deliberate actions and engaged more actively in decisions because of the implications of the financial crisis for the future of the institution. I asked board members using a five-point Likert scale to rate the effects of the financial crisis on board strategies and openness to innovation, access to knowledge, and alignment with state higher education policies and recommendations. Appendix B shows the complete survey instrument.

Data Analysis

In my study the unit of analysis is the individual governing board. My goal was to determine whether identifiable social networks for public higher education governing boards exist. If so, my next goal was to describe the nature of these networks and assess the factors affecting how the governing boards function during a time of fiscal crisis.

To preserve the confidentiality of the board members and the institution, I present data on the institutions and characteristics of the individual board members collectively across all four participating governing boards. Using SPSS I calculated mean scores for descriptive information such as the number of board members, appointment terms and mechanisms, gender and ethic composition of the board, average years of service, range of occupations represented, and frequency of participation in board meetings as well as on-campus engagements.

The data on governing board members' perceptions of board functioning are presented both collectively and by individual institution. Across institutions I calculated mean scores for how governing boards approached decisions during this time of fiscal crisis and the sources of information governing board members drew upon to inform their roles as institutional leaders. In addition I present board members' perceptions of how the governing board functions for each institution. Governing board members attitudes were captured on a 5-point Likert scale. From my initial assessment of the data distribution, I elected to convert the scale into a 3-point scale with 1 representing an agreed attitude, 0 representing a neutral attitude, and -1 representing a disagree attitude.

Finally, I present a social network analysis for each institution. Social networks can be analyzed at multiple levels. To begin I present a sociogram[2] as well as calculate the density and geodesic distance of the whole network. The density of a binary network is simply the proportion of all possible ties that are actually present. The density of a network offers insights into such phenomena as the speed at which information diffuses among the actors and the extent to which

[2] The sociogram is created from a network matrix. In the matrix the rows represent the source and the columns represent the receiver. Appendix C lists the numerical coding used for the development of each matrix. Note that when the respondent listed the role function "governing board" on the survey I in turn coded each individual board member as tie to that respondent.

actors have high levels of social capital and/or social constraint. The geodesic distance is the number of relations in the shortest possible path from one actor to another (Burt, 1976; Doriean, 1974).

Next, I describe the connectedness and distance of the whole network based on individual actors. These basic properties of social networks have important consequences for this study. More connections often mean that individuals are exposed to a greater volume and more diverse sources of information. Highly connected individuals may be more influential, and may be more influenced by others. Differences among whole networks can be consequential as well. More cohesive networks may be better able to mobilize their resources, and may be better able to bring multiple and diverse perspectives to bear to solve problems. As stated by Hanneman & Riddle, "[t]he extent to which individuals are connected to others, and the extent to which the network as a whole is integrated are two sides of the same coin" (2005, Chapter 7).

For example, in any network there are (k * k-1) unique ordered pairs of actors (that is AB is different from BA, and leaving aside self-ties), where k is the number of actors. Moreover, the number of actors places an upper limit on the number of connections that each individual can have (k-1). As a result the number of logically possible relationships grows exponentially as the number of actors increases. Examining the distribution of connected individual actors provides insight into the social structure of the network. In this study the data is asymmetric (directed ties). As such results can be distinguished between ties being sent and ties being received. Looking at the density for each row (source) and for each column (receiver) can explain how actors are embedded in the overall density of the network.

After describing the whole network, I then examine the centrality of each individual actor in the network. There are many measures of centrality of a node in a sociogram. Degree,

closeness, and betweenness measures are foundational in the field of network analysis. Their prominence within the field stems from the fact that they all have strong yet distinct theoretical underpinnings and that they are frequently used for empirical analysis of social systems (Marin & Wellman, 2010; Wasserman & Faust, 1994).

Using the Freeman Degree Centrality calculation I report in-degree and out-degree centrality measures. Another means to determine an actor's centrality is to calculate a closeness score. Using a reach calculation I determined how close actors are to one another. Some actors may be able to reach most other members of the network with little effort. Other actors may have difficulty being heard since they are not well connected. Lastly, calculating the betweenness measure determines the number of times an actor occurs on a geodesic and can offer insight into information control.

I depended on the geodesic scores as evidence of social networks among the whole governing board. This score indicates the number of ties necessary to connect a governing board member to any actor in the network. A low number indicates a tightly connected network. A high number is in indication of a loosely connected or potentially non-existent network. Further evidence of social networks was determined by examining the range of variance in individual actor centrality measures. Small variance and standard deviations indicate that the network frequently nominated the same actor. Alternatively, actors with sizable variance and stand deviations associated to centrality scores are evidence against the existence of central actors and an identifiable social network.

Ultimately, this analysis focuses on the descriptive and relational data about governing boards' social networks. The primary focus is on the composition of the network and how the networks vary by institution. I also make comparisons across networks of differing size using

normalized scores.

Limitations

Although careful steps were taken to ensure that the data I collected and subsequently analyzed were reflective of complete/whole governing boards networks and their perceptions of how the governing board functions during financial crisis, there are several limitations that are important to note.

In a study of higher education governing boards, two significant limitations emerge. First is access to governing board members. While the sunshine laws make all public governing board meetings open, the result is that board activity is largely ceremonial and does not offer insight into the inner workings of boards (Kezar, 2006). Access to governing board members directly is often constrained as a result of crowded agendas during board meetings and retreats, political reasons advanced by institutional leadership, and board members holding professional positions that make them frequently inaccessible. Scholars often note the challenge in directly investigating board members (Chait, et al., 1993; Kezar, 2006, Tierney, 2004b). As such empirical studies of governing boards is limited (Teirney, 2004b).

A second potential limitation of the study is the trustworthiness of individual responses. Qualitative studies of elites, which may include governing boards, are frequently used in political science (Alberbach & Rockman, 2002; Berry, 2002; Goldstein, 2002; Stephens, 2007). This methodology uses interviews with experts in the field who have in-depth knowledge and experience. One significant limitation of this technique is the potential lack of honesty and candor of the responses. Moreover, the study is based on the perceptions of individual governing board members. Applied to this study, governing board members may be guarded in their

responses and the study is susceptible to individual bias.

Social network analysis also has limitations. Social network studies require high response rates to map a network accurately (Marsden, 1990). In a study of public governing boards that on average consist of nine members (AGB Board Composition Report, 2004) obtaining high responses requires orchestration at some level. My sample selection and data collection process (engagement of AGB in institution selection, using board secretaries to access board members and determine how best to gain board members participation, conforming data collection (survey or interview) to obtain high response rates, and using a short survey instrument) addressed this potential limitation. Network mapping can also be impaired if participants primarily indicate role functions instead of individuals in their network. In this study I had to restrict the network mapping to role groups. Overall the findings are limited to the institutions included in the study. Whether or not the findings/results are generalizable across higher education governance boards, systems, or states is unknown. To increase the ability to generalize my conclusions, my sample included two complete governing boards within each category of my sampling matrix. Ultimately the goal of the study is to learn if social networks have an impact on higher education governance and begin to understand the complexity of these networks.

In Chapter Four I present an analysis for each institution in this study. In the analysis I provide a description of the institutions and the board members, a summary of governing board members attitudes about how the board functions, and a whole network social network analysis.

CHAPTER 4

Results

This chapter details the results of the study. To preserve the confidentiality of the board members and their institutions, I report results for all four participating institutional governing boards in aggregate form. However, I discuss the governing board members' perceptions about how the board functions and the social network analysis by institution.

Out of 58 possible respondents (total number of board members for all four institutions), 42 responded to the survey. The overall response rate was 72.4% percent. However, the response rates for each individual governing board ranged from 44.4% to 100%. This response rate pattern has implications for the analysis and interpretations of the social networks. It is important to note that voting students, staff, and faculty representatives are included in the data.

Institution and Governing Board Characteristics

The Research I and Research II are large research-intensive institutions for their respective states. Masters I and Masters II are both comprehensive institutions. Masters I is set in an urban area with a strong research focus; Masters II is located in a rural location offering a wide range of baccalaureate degrees and a few graduate programs. The average board membership is 11.5 with a variance of 3.32. (Mean = 11.5, SD = 3.32). The governance across all four boards is primarily vested in lay citizen members ranging from a low of 9 to a high of 16 in individual boards. The Governor appoints the lay members for all four boards; however, Masters II and Research I also require the consent of the state Senate. All four institutions include student representation on the board. For two institutions board membership also includes

faculty and staff who are selected by the governing structures of their respective constituency. The average board member term is 5.7 years (SD 3.00). The lay citizen members serve terms on average for 6.7 years (SD 2.5) while faculty, student, staff, and other members serve terms on average of 1.8 years (SD 0.38).

Based on survey responses, the current composition of all four boards is 80% male and 20% female. A majority of the board members are Caucasian (85%) with the remainder of the board members self-identifying as Black/African American (10%) and Asian/Pacific Islander (3%). One board member declined to respond to the item about race/ethnicity. The professional occupations of the board cut across a variety of disciplines as indicated in Table 4.1. Two professional backgrounds predominate. Many board members come from the education profession, not surprising because of inclusion of students, academic staff, and faculty appointments to the boards. Board members are also frequently in senior level executive positions (48.7%) within the private sector or retired (17.1%).

The experience of the board members (as determined by number of years of service) across the four institutions ranges from one year to more than six years with an average of 2.8 years (SD 1.79). More than half of the board members (56.1%) are on campus at least once a week for meetings, events, ceremonies, or athletics. Board members indicated attending on average seven (SD 2.74) board meetings a year.

Governing Board Members Perceptions

This section presents governing board members perceptions about how the board functions and about how governing board members in their institutional leadership role identify sources of information.

Table 4.1

Governing Board Members' Occupations

Occupation	Frequency	Percent
Accounting	1	2.4
Construction / Home Improvement	1	2.4
Consulting	2	4.9
Education	9	22.0
Engineering / Architecture	1	2.4
Finance / Banking / Insurance	2	4.9
Food Service	1	2.4
Government / Military	2	4.9
Healthcare / Medical	2	4.9
Legal	7	17.1
Media / Printing / Publishing	1	2.4
Mining	1	2.4
Non-profit	1	2.4
Pharmaceutical / Chemical	1	2.4
Research / Science	1	2.4
Real Estate	1	2.4
Retail	2	4.9
Business / Professional Services	1	2.4
Other	4	9.8
Total	41	100.0

The governing board members indicated that the recent global fiscal crisis represented a unique historical period where board decisions were more likely to significantly affect the future of the institution. Almost unanimously the board members across all four institutions indicated that during this time of financial crisis the governing board was taking more deliberate actions and engaging more actively in decisions than in previous years (see, Table 4.2).

Table 4.2

Engagement by Governing Board Members during Financial Crisis

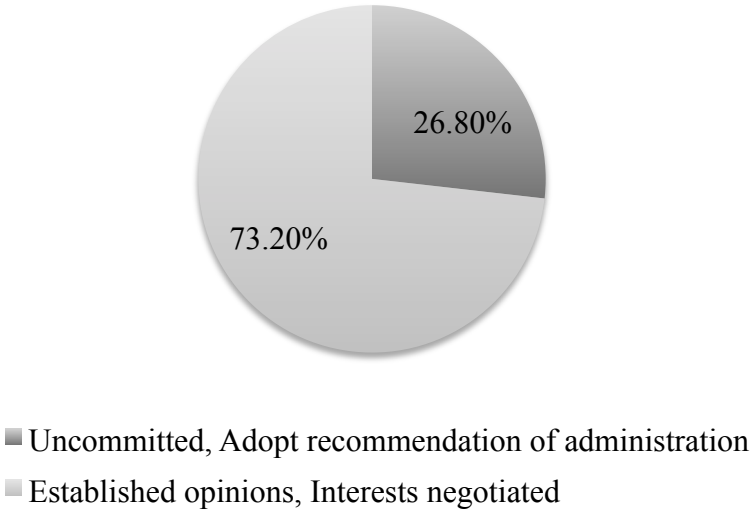
	Governing board are taking more deliberate actions and engaged more actively in decisions during the financial crisis				
Institution	**Frequency**		**Mean**	**SD**	**N**
	Yes	**No**			
Masters I	11	0	1.000	.0000	11
Masters II	8	0	1.000	.0000	8
Research I	14	1	.9333	.25820	15
Research II	8	0	1.000	.0000	8

Another commonality across all four institutions was that a majority of respondents (73.2%) indicated that board members bring to board meetings their own opinions on institutional policies. These policy positions serve as the basis for negotiations during board meetings (see Figure 4.1). This finding is contrary to the common assumption that governing board members adopt the recommendations of the administration and are uncommitted to particular institutional policies. However, board members indicated that this process varied by issue (see Table 4.3). The most intensive negotiations center on issues with legal, financial, or employment implications[3]. As indicated by one board member, "[t]he less dollars involved, the less the negotiation". One way to interpret this statement is that policy decisions with significant monetary implications either on revenues or expenditures are deliberated on more intensely by governing boards.

[3] Items listed by governing board members included tuition, budgeting and finance, labor contracts, collective bargaining, competitive bidding, conflict resolution, research, athletics, curriculum, and student issues.

Figure 4.1

Governing Board Members' Policy Position



Note. N=41, Mean = .7317, SD = .44857.

Table 4.3

Variance in Governing Board Members' Policy Position

	Does the issue affect governing board members' policy position?				
Institution	**Frequency**		**Mean**	**SD**	**N**
	Yes	**No**			
Masters I	10	1	.9091	.30151	11
Masters II	8	0	1.000	.0000	8
Research I	10	4	.7143	.46881	14
Research II	4	3	.5714	.53452	7

Table 4.4 identifies the information sources the governing board members draw upon when considering institutional policies. The mean scores represent the percentage of board members indicating that a particular source is consulted. Across all four institutions the predominate source of information is correspondence with the President. Beyond the President, the board members indicated that the Chief Financial Officer (Mean = .8333) of the institution

and the governing board meeting materials (Mean = .8810) are important information sources. However, direct correspondence with the Provost (Mean = .7619) of the institution and Chancellor (Mean = .7619) of the state higher education system also appear to be important sources of knowledge.

Table 4.4

Governing Board Information Sources: Percentage Indicating "Yes"

Information Sources	Mean	SD
Correspondence from Secretary of the Board	.5952	.49680
Correspondence from President	1.0000	.00000
Correspondence from the Provost	.7619	.43108
Correspondence from the Chief Financial Officer	.8333	.37720
Correspondence from Faculty Senate	.3333	.47712
Correspondence from State Higher Education Chancellor	.7619	.43108
Correspondence from State Higher Education Commissions/Councils	.2143	.41530
Board Meeting Materials	.8810	.32777
Reports from State Government Offices	.2381	.43108
National Higher Education Association Reports	.2619	.44500
National Media on Higher Education	.5238	.50549
Local Newspapers	.3810	.49151
Others	.1429	.35417

Note. N=42

Table 4.5 details the governing board members' perceptions of how the board functions by each institution. A positive mean score indicates an affirmative response to the item. Conversely a negative mean score indicates disagreement with the item.

Across all four institutions there appears to be strong agreement that the professional backgrounds of governing board members impact decisions of the board. In addition, differences of opinion in board decisions are more often settled by discussion than by vote. This finding is consistent with board members' viewing board meetings as negotiating sessions. All four governing boards indicated that the multiple layers of governance impact institutional

policy. Nevertheless, during this financial crisis board members found that institutional policies were not strongly aligned with recommendations from the state higher education systems.

Although respondents thought the fiscal crisis was a unique period of institutional decision-making there was little consensus about the importance of different sources of knowledge. Moreover, board members did not indicate a greater likelihood of using creative institutional practices or policies to address continuing declining resources.

Table 4.5

Governing Board Members' Perceptions

Variable	Institution	Mean	SD	N
Governing board stakeholders have an effect on governing board's decisions.	M-I	.8182	.40452	11
	M-II	.8750	.35355	8
	R-I	.5000	.51887	14
	R-II	.8571	.37796	7
Multiple layers of governance impact institutional policies.	M-I	.8000	.42164	10
	M-II	1.000	.00000	8
	R-I	.8667	.35187	15
	R-II	.8571	.37796	7
Governing board members' professional backgrounds impact their decisions on the board.	M-I	1.000	.00000	11
	M-II	.6250	.74402	8
	R-I	1.000	.00000	15
	R-II	1.000	.00000	7
Governing board members' relationships inform and influence their decisions on the board.	M-I	.5455	.68755	11
	M-II	.7500	.70711	8
	R-I	.9333	.25820	15
	R-II	.8571	.37796	7
Differences of opinion in board decisions are more often settled by discussion than by vote.	M-I	1.000	.0000	11
	M-II	.7500	.46291	8
	R-I	1.000	.0000	15
	R-II	.8750	.35355	8
To address the financial crisis the governing board is encouraging the development of specific institutional policies.	M-I	.9091	.30151	11
	M-II	.5000	.75593	8
	R-I	.4000	.63246	15
	R-II	.7500	.70711	8

Table 4.5 (cont'd)				
Our board has adequate sources of knowledge to address institutional dilemmas presented by the financial crisis	M-I	.4545	.52223	11
	M-II	.7500	.70711	8
	R-I	.8000	.41404	15
	R-II	.6250	.51755	8
When considering continued declining state appropriations, the board often tries to generate creative approaches or solutions to close budget gaps or manage costs.	M-I	.9091	.30151	11
	M-II	1.000	.0000	8
	R-I	.4667	.63994	15
	R-II	.8750	.35355	8
The board consults the faculty when considering cost saving strategies that affect the academic curriculum and degree programs.	M-I	.3636	.50452	11
	M-II	.5000	.53452	8
	R-I	.6667	.48795	15
	R-II	-.3750	.74402	8
When considering institutional policies to address the financial crisis the board is alignment with recommendation from the State Higher Education Commission, Council, or Coordinating System.	M-I	.4545	.68755	11
	M-II	.5000	.53452	8
	R-I	.6667	.48795	15
	R-II	.5000	.53452	8

In sum, public higher education governance is primarily vested in lay citizens. The composition frequently is white males who have professional backgrounds in the private sector as senior level executives although many also have training in educational professions. Board members bring policy positions to their role as institutional leaders and at board meetings policy positions are negotiated primarily through discussion. Moreover, professional backgrounds influence board member's decisions. Board members across all four institutions indicated that the recent global fiscal crisis represented a unique historical period where board decisions were more likely to affect the future of the institution. Almost unanimously the board members across all four institutions indicated that during this time of financial crisis the governing board was taking more deliberate actions and engaging more actively in decisions than in previous years. However, there was little consensus about the importance of sources of knowledge in informing the boards' actions. Communication from the President of the institution emerged as the only

main source of knowledge depended upon by all four boards.

Social Network Analysis of Governing Boards

The following section provides a social network analysis for each governing board. I present the results by type of institution, starting with the two masters-level institutions and then with the two research universities.

Using a variety of metrics I calculated the connectedness of the whole network as well as individual actor centrality. In a directed network, statistics on the rows explain the role that each actor plays as a source of ties. The sum of the connections from the actor to others is called the out-degree of the point. The statistics for in-degree (column data of network matrix) makes it possible to identify the actors as receivers of information or as ties to the actors in the network (Hanneman & Riddle, 2005; Marin & Wellman, 2010).

Of greatest interest is the in-degree data. Across all four governing boards these measures frequently pointed to the centrality of the same actors and had small variance and standard deviations. Examining the Freeman graph centralization measure for the networks as a whole expresses the degree of variance in a network as a percentage of a perfectly connected network of the same size. In directed networks, the measure is calculated for both directions. Table 4.6 clearly demonstrates that all four governing board networks are more homogenous with regard to in-degree than with out-degree network ties. This essentially says that each governing board members consults a variety of individuals as sources of knowledge (out-degree); however, a selection of network actors are frequently nominated by governing board members (in-degree). These actors' in-degree metric measures demonstrate how central they are to the network.

Table 4.6

Freeman Graph Centralization Measures for Governing Boards

	Out-Degree	In-Degree
Masters I	58.790%	17.958%
Masters II	60.124%	17.355%
Research I	51.222%	20.222%
Research II	70.273%	13.199%

Masters Institutions

Masters I.

The concepts of density and centralization refer to differing aspects of the overall compactness of the graph. Density describes the general level of cohesion in a graph; centralization describes the extent to which this cohesion is organized around particular focal actors. They are complementary measures. Masters I governing board has an overall network matrix density of 0.1322 (SD 0.3388). Only 13% of all possible ties (73) are present. However, for each pair of actors the number of edges on the shortest path between them is 1.559 (average geodesic distance). This finding indicates that most governing board members are connected to the whole network either directly or through a mutual actor.

The overall Freeman graph centralization measure for the network as a whole indicates an out-degree graph centralization of 58.790% with the in-degree graph centralization of 17.958%. These measures describe the population as a whole and express the variance in the observed network as a percentage of a perfect star network[4] of the same size. In the current case, there is a substantial amount of variation among the board members (out-degree data). That is,

[4] In a star network, all the actors but one have degree of one, and the "star" has a degree of the number of actors, less one.

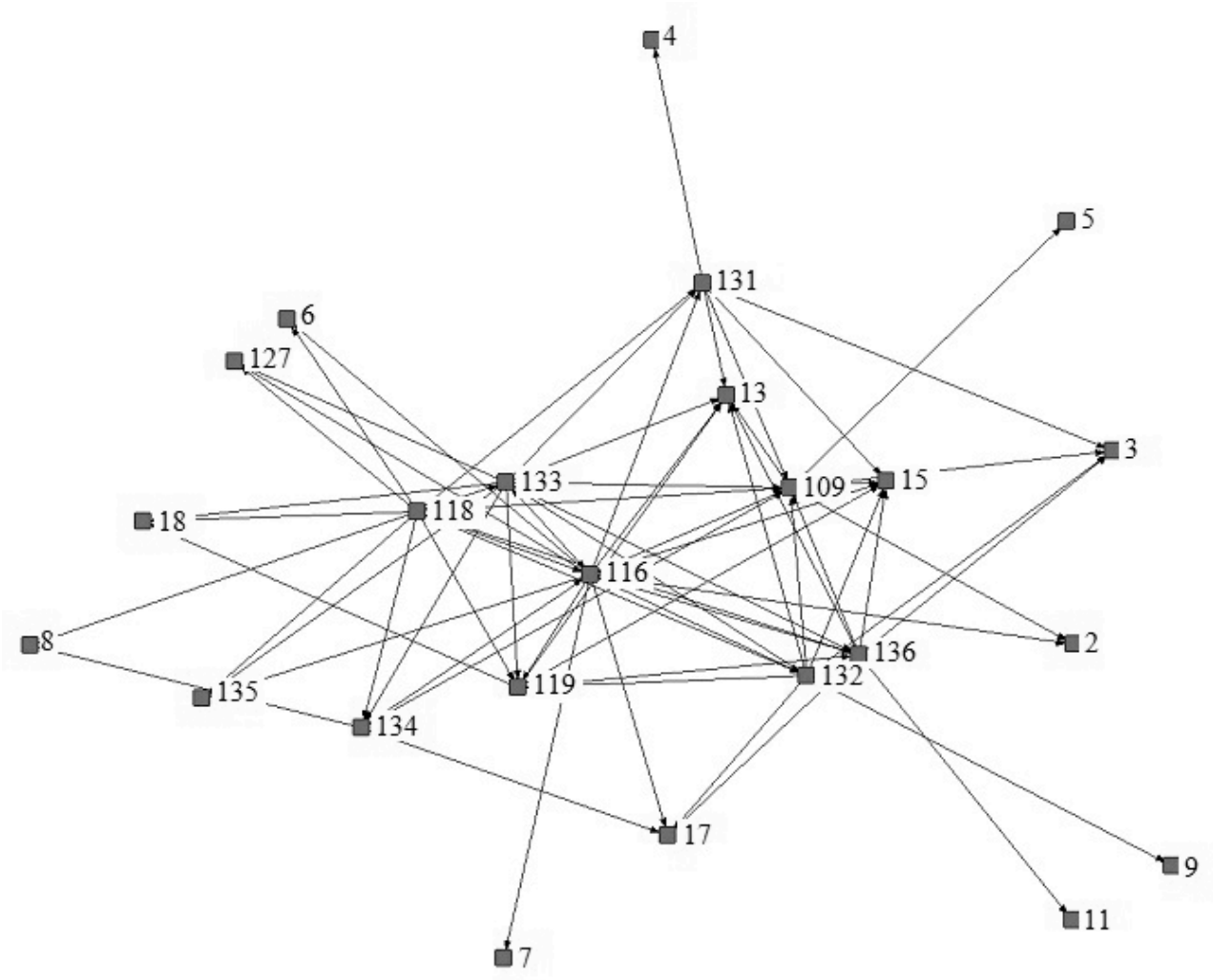
the power of individual board members varies rather substantially, which means that positional advantages are unequally distributed in this network. By contrast the in-degree graph centralization indicates far greater cohesion around a select group of actors. Ultimately these actors have positional advantages within the network.

The sociogram for Masters I (Figure 4.2) depicts the location of the actors in the governing board network. The network graph illustrates the centrality of actors and provides an initial visual representation of the various roles and clustering in a network such as the core individuals in the network and which actors act as boundary spanners. Actors on the periphery of the network can also be important. Peripheral actors are connected to networks that are not currently mapped. As a result these actors can be important sources of new information not available inside the network. Examining Masters I it is evident that actors 4 (Deans), 5 (Executive Assistant to President), 7 (Faculty Senate), 9 (General Counsel), and 11 (Legislative Office) are on the outskirts of network. However, each is directly connected to a board member that appears to be at the core of the network.

Examining the connectedness of Masters I governing board, Table 4.7 depicts that actors 116, 118, and 133 are tied to many other actors and actors 132, 136, 109, 131, 119, and 134 are connected to a smaller portion of the network. It appears that the remaining actors in Masters I governing board network are not sources of relationships or information. However, this interpretation would be inaccurate. Since only the governing board members were surveyed the out-degree data for non-board members is unknown. Actors 116, 118, and 133 have a higher potential to be influential. The remaining actors, however, will be influential if they are connected to the "right" other actors. As such there is variation in the roles that these actors play as sources of information.

Figure 4.2

Masters I Sociogram



As demonstrated by the in-degree network statistics for Masters I, there is less variation in information receiving. Of interest is that actors 109 (Chair), 13 (President), 15 (Provost) are very high receivers of information in the network (see, Table 4.8).

Table 4.7

Out-degree Statistics for Masters I Governing Board Members

Actor	Mean	SD	Sum	Variance	Min	Max	N	N Miss
116	0.6960	0.4600	16.0000	0.2120	0	1	23	0
118	0.5650	0.4960	13.0000	0.2460	0	1	23	0
133	0.5220	0.5000	12.0000	0.2500	0	1	23	0
132	0.3480	0.4760	8.0000	0.2270	0	1	23	0
136	0.2610	0.4390	6.0000	0.1930	0	1	23	0
109	0.2170	0.4120	5.0000	0.1700	0	1	23	0
131	0.2170	0.4120	5.0000	0.1700	0	1	23	0
119	0.1740	0.3790	4.0000	0.1440	0	1	23	0
134	0.1740	0.3790	4.0000	0.1440	0	1	23	0
13	0.0000	0.0000	0.0000	0.0000	0	0	23	0
18	0.0000	0.0000	0.0000	0.0000	0	0	23	0
135	0.0000	0.0000	0.0000	0.0000	0	0	23	0
127	0.0000	0.0000	0.0000	0.0000	0	0	23	0
3	0.0000	0.0000	0.0000	0.0000	0	0	23	0
15	0.0000	0.0000	0.0000	0.0000	0	0	23	0
4	0.0000	0.0000	0.0000	0.0000	0	0	23	0
9	0.0000	0.0000	0.0000	0.0000	0	0	23	0
17	0.0000	0.0000	0.0000	0.0000	0	0	23	0
8	0.0000	0.0000	0.0000	0.0000	0	0	23	0
6	0.0000	0.0000	0.0000	0.0000	0	0	23	0
2	0.0000	0.0000	0.0000	0.0000	0	0	23	0
5	0.0000	0.0000	0.0000	0.0000	0	0	23	0
7	0.0000	0.0000	0.0000	0.0000	0	0	23	0
11	0.0000	0.0000	0.0000	0.0000	0	0	23	0

Table 4.8

In-degree Statistics for Masters I Governing Board Members

Actor	133	109	13	18	135	131	119	132	118	134	116	127
Mean	0.087	0.304	0.304	0.13	0.13	0.13	0.174	0.13	0.13	0.13	0.13	0.13
SD	0.282	0.46	0.46	0.337	0.337	0.337	0.379	0.337	0.337	0.337	0.337	0.337
Sum	2	7	7	3	3	3	4	3	3	3	3	3
Variance	0.079	0.212	0.212	0.113	0.113	0.113	0.144	0.113	0.113	0.113	0.113	0.113
Min.	0	0	0	0	0	0	0	0	0	0	0	0
Max.	1	1	1	1	1	1	1	1	1	1	1	1
N	23	23	23	23	23	23	23	23	23	23	23	23

Actor	136	3	15	4	9	17	8	6	2	5	7	11
Mean	0.174	0.174	0.261	0.043	0.043	0.174	0.087	0.087	0.087	0.043	0.043	0.043
SD	0.379	0.379	0.439	0.204	0.204	0.379	0.282	0.282	0.282	0.204	0.204	0.204
Sum	4	4	6	1	1	4	2	2	2	1	1	1
Variance	0.144	0.144	0.193	0.042	0.042	0.144	0.079	0.079	0.079	0.042	0.042	0.042
Min.	0	0	0	0	0	0	0	0	0	0	0	0
Max.	1	1	1	1	1	1	1	1	1	1	1	1
N	23	23	23	23	23	23	23	23	23	23	23	23

Centrality can be measured by three approaches -- degree, closeness, and betweenness. Each approach describes the locations of individual actors in the network based on different definitions of what it means to be central. The degree centrality measures for Masters I (see, Table 4.9) show that on average the actors have a degree of 3.042. This indicates that the number of direct connections an actor has in the network is on average to three other actors. Actors 116, 118, and 133 have the greatest out-degrees, and might be regarded as the most influential (although this measure does not take into account to whom they are sending information). Actors 109 (Chair), 13 (President), and 15 (Provost) have the greatest in-degrees. That a majority of the network shares ties with these three would potentially indicate their importance as a resource.

The range of out-degree relationships is larger (minimum and maximum) than that of in-degree. There is substantially more variability across the actors in out-degree than in-degree (standard deviations and variances). It appears that the Masters I governing board network is more homogeneous with regard to in-degree (prominence) than with regard to out-degree (influence).

Table 4.9

Masters I: Freeman's Degree Centrality Measures for each Actor and Overall Descriptive Statistics

Actor	OutDegree	InDegree	NrmOutDeg	NrmInDeg
116	16	3	69.565	13.043
118	13	3	56.522	13.043
133	12	2	52.174	8.696
132	8	3	34.783	13.043
136	6	4	26.087	17.391
131	5	3	21.739	13.043
109	5	7	21.739	30.435
134	4	3	17.391	13.043
119	4	4	17.391	17.391

Table 4.9 (cont'd)

13	0	7	0.000	30.435
135	0	3	0.000	13.043
127	0	3	0.000	13.043
18	0	3	0.000	13.043
3	0	4	0.000	17.391
15	0	6	0.000	26.087
4	0	1	0.000	4.348
9	0	1	0.000	4.348
17	0	4	0.000	17.391
8	0	2	0.000	8.696
6	0	2	0.000	8.696
2	0	2	0.000	8.696
5	0	1	0.000	4.348
7	0	1	0.000	4.348
11	0	1	0.000	4.348
Mean	3.042	3.042	13.225	13.225
SD	4.695	1.695	20.412	7.37
Sum	73	73	317.391	317.391
Variance	22.04	2.873	416.634	54.315
Min.	0	1	0	4.348
Max.	16	7	69.565	30.435
N	24	24	24	24

Degree centrality measures are limited because they only take into account an actor's immediate ties rather than indirect ties to all others. Closeness centrality measures emphasize the distance of an actor to all others in the network by focusing on the distance from each actor to all others. Researchers have shown that networks have horizons over which we cannot see nor influence (Burt, 1992; Freidkin, 1983). These scholars propose that key connections in networks are one and two steps away; on rare occasions even three steps away. As such it is important to know the actors in the network neighborhood and who one can reach.

Examining the reach centrality (one measure of closeness) I calculate how close each actor is to all others in the network. For Masters I, the out and in-reach centrality measures are in alignment with that of the degree centrality measures (see, Table 4.10). In other words, governing board members 116, 118, and 133 have the greatest outward reach and actors 109

(Chair), 13 (President), and 15 (Provost) are reached out to the most by the network. However, actors 3 (Chief Financial Officer) and 119 (governing board member) join actors 109 (Chair), 13 (President), and 15 (Provost) with high in-reach centrality measures. It appears that the Masters I governing board commonly depends upon the Board Chair, President, Provost, and Chief Financial Officer as sources of information.

Table 4.10

Masters I: Reach Centrality Measures

Actor	OutdwReach	IndwReach	nOutdwReach	nIndwReach
116	20.500	4.500	0.854	0.188
118	19.000	4.500	0.792	0.188
133	18.500	4.000	0.771	0.167
132	16.000	4.500	0.667	0.188
136	13.833	4.500	0.576	0.188
131	8.000	6.000	0.333	0.250
109	7.667	5.500	0.319	0.229
134	7.000	5.000	0.292	0.208
119	6.000	8.500	0.250	0.354
13	1.000	9.000	0.042	0.375
135	1.000	5.000	0.042	0.208
127	1.000	5.000	0.042	0.208
18	1.000	5.333	0.042	0.222
3	1.000	7.500	0.042	0.313
15	1.000	8.500	0.042	0.354
4	1.000	4.167	0.042	0.174
9	1.000	3.833	0.042	0.160
17	1.000	6.500	0.042	0.271
8	1.000	4.500	0.042	0.188
6	1.000	4.500	0.042	0.188
2	1.000	6.333	0.042	0.264
5	1.000	5.833	0.042	0.243
7	1.000	3.833	0.042	0.160
11	1.000	4.667	0.042	0.194
Mean	5.48	5.48	0.23	0.23
SD	6.69	1.49	0.28	0.06
Sum	131.50	131.50	5.48	5.48
Variance	44.71	2.22	0.08	0.00
Min.	1.00	3.83	0.04	0.16
Max.	20.50	9.00	0.85	0.38
N	24.0	24.0	24.0	24.0

Betweenness centrality views an actor as being in a favored position to the extent that the actor falls on the geodesic paths between other pairs of actors in the network. Adding up, for each actor, the proportion of times that they are "between" other actors in the network I obtained another measure of actor centrality. This measure can be expressed as a percentage of the maximum possible betweenness of an actor. The results for Masters I governing board network are shown in Table 4.11.

In the Masters I governing board network there is much variation in actor betweenness (from zero to 20.976). There is also variation (SD = 6.043) relative to a mean betweenness of 3.375. The overall network centralization is relatively low (3.63%). This finding makes sense because previous results show that a majority of all connections can be made in this network without the aid of any intermediary. As a result there cannot be a high level of "betweenness." Of interest in the betweenness measure is that both actor 109 (Chair) and 136 join actors 116 and 118 as being more structurally central to the network whereas actor 133 becomes far less central.

Table 4.11

Masters I: Freeman Betweenness Centrality Measures

Actor	Betweenness	nBetweenness
116	20.976	4.145
109	16.726	3.306
118	13.667	2.701
136	12.726	2.515
131	6.226	1.23
132	5.726	1.132
119	2.643	0.522
134	1.5	0.296
133	0.81	0.16
13	0	0
135	0	0
127	0	0
18	0	0
3	0	0

Table 4.11 (cont'd)

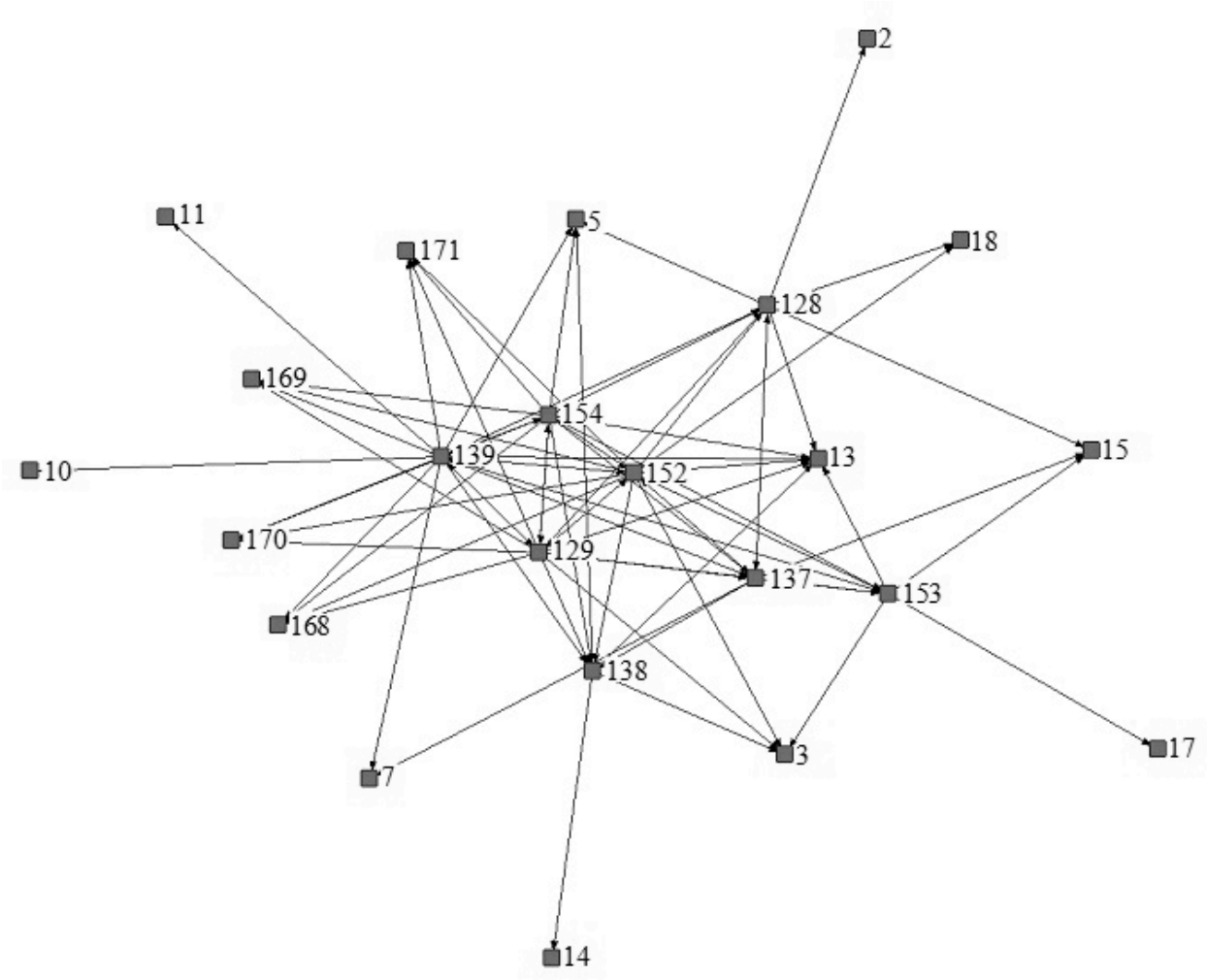
15	0	0
4	0	0
9	0	0
17	0	0
8	0	0
6	0	0
2	0	0
5	0	0
7	0	0
11	0	0
Mean	3.375	0.667
SD	6.043	1.194
Sum	81.000	16.008
Variance	36.524	1.427
Min	0.000	0.000
Max	20.976	4.145
N	24.000	24.000

Masters II

The network analysis for Masters II governing board is based on a response rate of 66.6%. This response rate is slightly below the response rate indicated by scholars to have genuine representation of the network and results must be interpreted somewhat cautiously. The board has an overall network matrix density of 0.1522 (SD 0.3592) and represents 15% of all possible ties (77). Similar to Masters I, most governing board members are connected to the whole network directly or through a mutual actor (average geodesic distance = 1.529). The Freeman graph centralization measure for the network as a whole indicates an out-degree centralization of 60.124% and an in-degree centralization of 17.355%. As with Masters I these results indicate the strong cohesion around a focal set of in-degree actors. Additionally, the sociogram (Figure 4.3) shows that many board members are structural cores of the network along with actor 13, the President of the institution. The peripheral actors in the network are actors 2 (board secretary), 11 (legislative office), 17 (State Higher Education System Chancellor), 10 (Governor), and 14 (professional colleagues).

Figure 4.3

Masters II Sociogram



Four governing board members (139, 152, 154, 129) have the largest out-degree connections. These board members indicated the greatest number of other actors as sources of information. The President (13) has the greatest in-degree measure among the network and appears to be a central receiver of relationships. See Table 4.12 for Out-Degree Statistics and Table 4.13 for In-Degree Statistics for Masters II. This finding is supported by the degree centrality measures (see, Table 4.14). The range of out-degree is greater than in-degree, and

there is less variability across the actor's in-degree measure.

Table 4.12

Out-degree Statistics for Masters II Governing Board Members

Actor	Mean	SD	Sum	Variance	Min.	Max.	N	N Miss
128	0.273	0.445	6	0.198	0	1	22	0
13	0	0	0	0	0	0	22	0
5	0	0	0	0	0	0	22	0
137	0.318	0.466	7	0.217	0	1	22	0
15	0	0	0	0	0	0	22	0
18	0	0	0	0	0	0	22	0
2	0	0	0	0	0	0	22	0
129	0.591	0.492	13	0.242	0	1	22	0
153	0.182	0.386	4	0.149	0	1	22	0
3	0	0	0	0	0	0	22	0
138	0.182	0.386	4	0.149	0	1	22	0
152	0.636	0.481	14	0.231	0	1	22	0
168	0	0	0	0	0	0	22	0
154	0.591	0.492	13	0.242	0	1	22	0
139	0.727	0.445	16	0.198	0	1	22	0
169	0	0	0	0	0	0	22	0
170	0	0	0	0	0	0	22	0
171	0	0	0	0	0	0	22	0
7	0	0	0	0	0	0	22	0
14	0	0	0	0	0	0	22	0
10	0	0	0	0	0	0	22	0
11	0	0	0	0	0	0	22	0
17	0	0	0	0	0	0	22	0

Table 4.13

In-degree Statistics for Masters II Governing Board Members

Actor	128	13	5	137	15	18	2	129	153	3	138	152
Mean	0.227	0.318	0.182	0.227	0.136	0.091	0.045	0.136	0.227	0.182	0.227	0.182
SD	0.419	0.466	0.386	0.419	0.343	0.287	0.208	0.343	0.419	0.386	0.419	0.386
Sum	5	7	4	5	3	2	1	3	5	4	5	4
Variance	0.176	0.217	0.149	0.176	0.118	0.083	0.043	0.118	0.176	0.149	0.176	0.149
Min.	0	0	0	0	0	0	0	0	0	0	0	0
Max.	1	1	1	1	1	1	1	1	1	1	1	1
N	22	22	22	22	22	22	22	22	22	22	22	22

Actor	168	154	139	169	170	171	7	14	10	11	17
Mean	0.182	0.136	0.182	0.182	0.182	0.182	0.091	0.045	0.045	0.045	0.045
SD	0.386	0.343	0.386	0.386	0.386	0.386	0.287	0.208	0.208	0.208	0.208
Sum	4	3	4	4	4	4	2	1	1	1	1
Variance	0.149	0.118	0.149	0.149	0.149	0.149	0.083	0.043	0.043	0.043	0.043
Min.	0	0	0	0	0	0	0	0	0	0	0
Max.	1	1	1	1	1	1	1	1	1	1	1
N	22	22	22	22	22	22	22	22	22	22	22

Table 4.14

Masters II: Freeman's Degree Centrality Measures for each Actor and Overall Descriptive Statistics

Actor	OutDegree	InDegree	NrmOutDeg	NrmInDeg
139	16	4	72.727	18.182
152	14	4	63.636	18.182
154	13	3	59.091	13.636
129	13	3	59.091	13.636
137	7	5	31.818	22.727
128	6	5	27.273	22.727
153	4	5	18.182	22.727
138	4	5	18.182	22.727
13	0	7	0	31.818
15	0	3	0	13.636
18	0	2	0	9.091
2	0	1	0	4.545
168	0	4	0	18.182
5	0	4	0	18.182
3	0	4	0	18.182
169	0	4	0	18.182
170	0	4	0	18.182
171	0	4	0	18.182
7	0	2	0	9.091
14	0	1	0	4.545
10	0	1	0	4.545
11	0	1	0	4.545
17	0	1	0	4.545
Mean	3.348	3.348	15.217	15.217
SD	5.313	1.605	24.15	7.294
Sum	77	77	350	350
Variance	28.227	2.575	583.199	53.196
Min.	0	1	0	4.545
Max.	16	7	72.727	31.818
N	23	23	23	23

The reach centrality (see, Table 4.15) for Masters II indicates the distance each actor is to all other actors in the network. Both the out and in-reach centrality measures reinforce the degree centrality measures; no additional insights are evident. Inward degree and reach measures indicate at this institution that the President (13) is central to the network.

Table 4.15

Masters II: Reach Centrality Measures

Actor	OutdwReach	IndwReach	nOutdwReach	nIndwReach
139	20	5.5	0.87	0.239
152	19	5.5	0.826	0.239
154	18.5	4.833	0.804	0.21
129	18.5	4.833	0.804	0.21
137	15.5	6	0.674	0.261
128	13.167	6	0.572	0.261
153	5	6.5	0.217	0.283
138	5	6.5	0.217	0.283
13	1	8.5	0.043	0.37
15	1	6	0.043	0.261
18	1	5	0.043	0.217
2	1	4.5	0.043	0.196
168	1	5.833	0.043	0.254
5	1	6.5	0.043	0.283
3	1	6.833	0.043	0.297
169	1	5.833	0.043	0.254
170	1	5.833	0.043	0.254
171	1	5.833	0.043	0.254
7	1	5	0.043	0.217
14	1	4.833	0.043	0.21
10	1	4.333	0.043	0.188
11	1	4.333	0.043	0.188
17	1	4.833	0.043	0.21
Mean	5.64	5.64	0.25	0.25
SD	7.2	0.94	0.31	0.04
Sum	129.67	129.67	5.64	5.64
Variance	51.87	0.89	0.1	0
Min.	1	4.33	0.04	0.19
Max.	20	8.5	0.87	0.37
N	23	23	23	23

The overall network centralization is 3.53% and reflects a connected network of actors. The betweenness centrality measures provide some new information about the network (Table 4.16). In the other centrality measures actor 137 (Chair) has moderate out and in-degree measures. Moreover, the Chair's reach measure was not as strong as other actors in the network. However, the betweenness score (18.833) indicates that the Chair of Masters II governing board

has a greater degree of centrality—the Chair falls on the greatest number of paths between other pairs of actors in the network. Actors 154 and 129 (board members), considered central to the network using the previous measures, have the lowest betweenness scores.

Table 4.16

Masters II: Freeman Betweenness Centrality Measures

Actor	Betweenness	nBetweeness
137	18.833	4.076
139	18.533	4.012
128	9.367	2.027
152	9.367	2.027
153	8.7	1.883
138	8.2	1.775
154	0.5	0.108
129	0.5	0.108
13	0	0
15	0	0
18	0	0
2	0	0
168	0	0
5	0	0
3	0	0
169	0	0
170	0	0
171	0	0
7	0	0
14	0	0
10	0	0
11	0	0
17	0	0
Mean	3.217	0.696
Std Dev	5.82	1.26
Sum	74	16.017
Variance	33.869	1.587
Min.	0	0
Max.	18.833	4.076
N	23	23

Research Institutions

Research I.

88.2% of board members responded, more than adequate for social network analyses. The overall network matrix density is 0.170 (SD = 0.3765). The total possible ties in this network are 159 and the average geodesic distance is 1.460. Similar to the two masters level institutional boards, Research I's governing board is strongly connected. Figure 4.4 provides a sociogram of the network. Among the peripheral actors of great interest is the inclusion of actor 10 (Governor). Ultimately the Governor of State B is a source of information for both Masters II and Research I governing board networks.

A significant number of the Research I governing board members indicated the collective board in their networks. As a result, the sociogram reflects many relationships among the board members and the out-degree statistics for seven board members (113, 146, 155, 147, 145, 120, 123) is large (see, Table 4.17).

The in-degree measures tell a similar story to that of the other governing boards. Different actors are high receivers of information. As is true for Masters I and Masters II, the President (13) is a central in-degree actor. Many in the network also nominated the Chair (111) as a strong resource. Both the Research I President and governing board Chair share the same in-degree score of eleven (see, Table 4.18).

Examining the degree centrality measure for Research I (see, Table 4.19), on the average the actors have a degree of 5.129. The range of out-degree is larger than that of in-degree and there is less variability among in-degree than out-degree. The network is more homogenous for in-degree network members (President of the institution and Chair of governing board) than for out-degree network members. Overall the Freeman graph centralization measures for the

network as a whole indicate an out-degree graph centralization of 51.222% and in-degree graph centralization of 20.222%.

Figure 4.4

Research I Sociogram

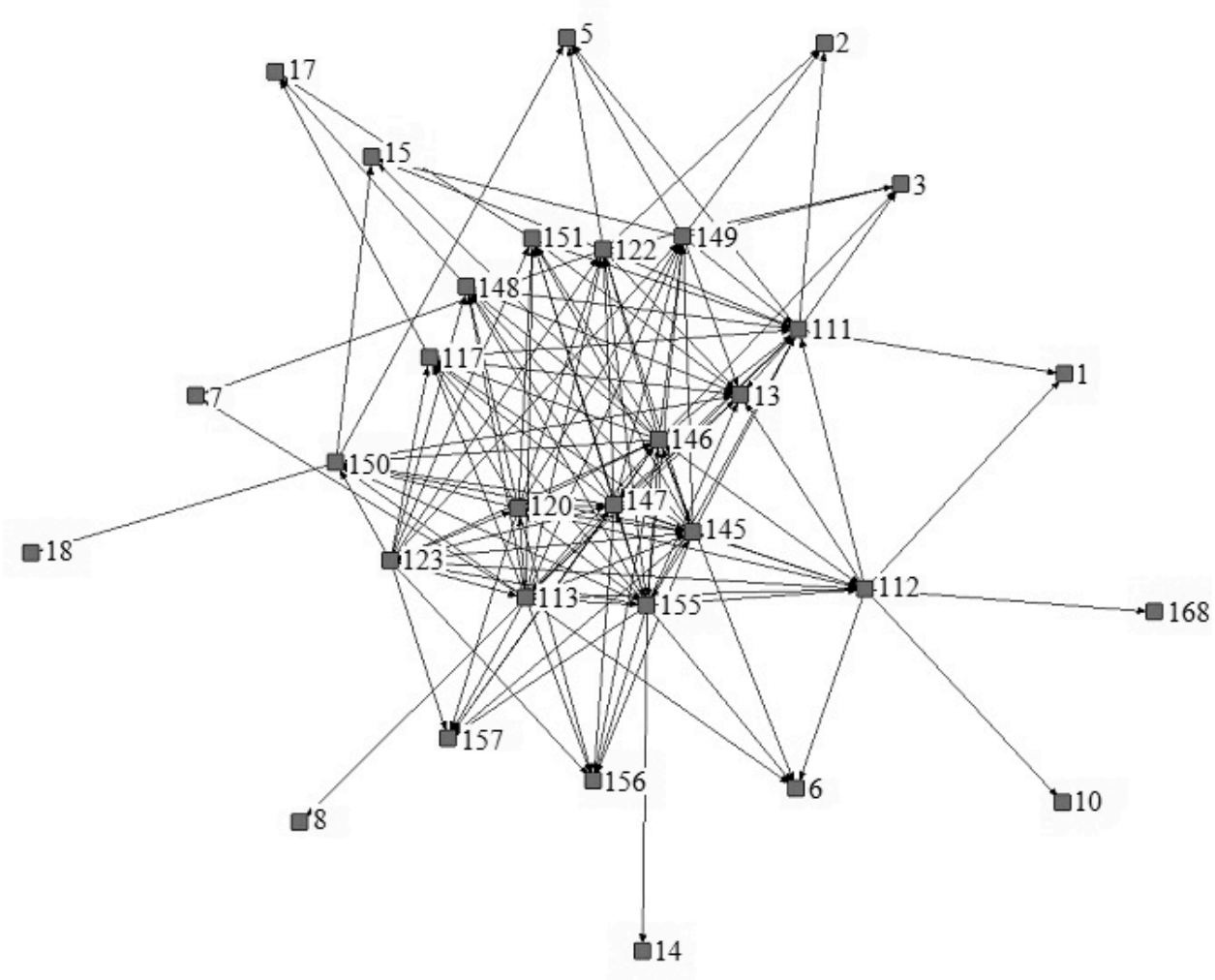


Table 4.17

Out-degree Statistics for Research I Governing Board Members

Actor	Mean	SD	Sum	Variance	Min.	Max.	N	N Miss
113	0.667	0.471	20	0.222	0	1	30	0
146	0.633	0.482	19	0.232	0	1	30	0
155	0.633	0.482	19	0.232	0	1	30	0
147	0.567	0.496	17	0.246	0	1	30	0
145	0.533	0.499	16	0.249	0	1	30	0
120	0.5	0.5	15	0.25	0	1	30	0
123	0.5	0.5	15	0.25	0	1	30	0
112	0.233	0.423	7	0.179	0	1	30	0
122	0.233	0.423	7	0.179	0	1	30	0
149	0.2	0.4	6	0.16	0	1	30	0
111	0.167	0.373	5	0.139	0	1	30	0
150	0.133	0.34	4	0.116	0	1	30	0
117	0.1	0.3	3	0.09	0	1	30	0
148	0.1	0.3	3	0.09	0	1	30	0
151	0.1	0.3	3	0.09	0	1	30	0
1	0	0	0	0	0	0	30	0
2	0	0	0	0	0	0	30	0
3	0	0	0	0	0	0	30	0
5	0	0	0	0	0	0	30	0
6	0	0	0	0	0	0	30	0
7	0	0	0	0	0	0	30	0
8	0	0	0	0	0	0	30	0
10	0	0	0	0	0	0	30	0
13	0	0	0	0	0	0	30	0
14	0	0	0	0	0	0	30	0
15	0	0	0	0	0	0	30	0
17	0	0	0	0	0	0	30	0
18	0	0	0	0	0	0	30	0
156	0	0	0	0	0	0	30	0
157	0	0	0	0	0	0	30	0
168	0	0	0	0	0	0	30	0

Table 4.18

In-Degree Statistics for Research I Governing Board Network

Actor	111	13	5	1	2	3	112	168	146	10	6	113
Mean	0.367	0.367	0.133	0.067	0.1	0.133	0.233	0.033	0.233	0.033	0.133	0.2
SD	0.482	0.482	0.34	0.249	0.3	0.34	0.423	0.18	0.423	0.18	0.34	0.4
Sum	11	11	4	2	3	4	7	1	7	1	4	6
Variance	0.232	0.232	0.116	0.062	0.09	0.116	0.179	0.032	0.179	0.032	0.116	0.16
Min.	0	0	0	0	0	0	0	0	0	0	0	0
Max.	1	1	1	1	1	1	1	1	1	1	1	1
N	30	30	30	30	30	30	30	30	30	30	30	30

Actor	7	8	117	145	147	156	123	148	120	149	155	157
Mean	0.067	0.033	0.233	0.2	0.2	0.233	0.2	0.233	0.2	0.233	0.2	0.233
SD	0.249	0.18	0.423	0.4	0.4	0.423	0.4	0.423	0.4	0.423	0.4	0.423
Sum	2	1	7	6	6	7	6	7	6	7	6	7
Variance	0.062	0.032	0.179	0.16	0.16	0.179	0.16	0.179	0.16	0.179	0.16	0.179
Min.	0	0	0	0	0	0	0	0	0	0	0	0
Max.	1	1	1	1	1	1	1	1	1	1	1	1
N	30	30	30	30	30	30	30	30	30	30	30	30

Actor	122	150	151	17	15	18	14
Mean	0.233	0.233	0.233	0.1	0.133	0.033	0.033
SD	0.423	0.423	0.423	0.3	0.34	0.18	0.18
Sum	7	7	7	3	4	1	1
Variance	0.179	0.179	0.179	0.09	0.116	0.032	0.032
Min.	0	0	0	0	0	0	0
Max.	1	1	1	1	1	1	1
N	30	30	30	30	30	30	30

Table 4.19

Research I: Freeman's Degree Centrality Measures for each Actor and Overall Descriptive Statistics

Actor	OutDegree	InDegree	NrmOutDeg	NrmInDeg
113	20	6	66.667	20
155	19	6	63.333	20
146	19	7	63.333	23.333
147	17	6	56.667	20
145	16	6	53.333	20
123	15	6	50	20
120	15	6	50	20
112	7	7	23.333	23.333
122	7	7	23.333	23.333
149	6	7	20	23.333
111	5	11	16.667	36.667
150	4	7	13.333	23.333
151	3	7	10	23.333
148	3	7	10	23.333
117	3	7	10	23.333
8	0	1	0	3.333
13	0	11	0	36.667
156	0	7	0	23.333
5	0	4	0	13.333
7	0	2	0	6.667
3	0	4	0	13.333
1	0	2	0	6.667
168	0	1	0	3.333
157	0	7	0	23.333
10	0	1	0	3.333
6	0	4	0	13.333
2	0	3	0	10
17	0	3	0	10
15	0	4	0	13.333
18	0	1	0	3.333
14	0	1	0	3.333
Mean	5.129	5.129	17.097	17.097
Std Dev	6.964	2.709	23.214	9.03
Sum	159	159	530	530
Variance	48.499	7.338	538.883	81.535
Min.	0	1	0	3.333
Max.	20	11	66.667	36.667
N	31	31	31	31

The reach centrality measures (Table 4.20) for the Research I governing board indicate how close each actor is to all others in the network. The outward reach measures reinforce the results based on the degree centrality measures. The inward reach measures reinforce the centrality of the President and Board Chair to the network with inward reach scores of 14 and 13 respectively. However, four other actors are identified as easily accessible in the network – the Executive Assistant to the President (5), the Chief Financial Officer (3), the Board Secretary (2), and the Athletic Director (1). Correspondingly, each has an inward reach score of 10.5, 10, 9.5 and 9. In essence these scores represent the number of board members who nominated this selection of actors.

Table 4.20

Research I: Reach Centrality Measures

Actor	OutdwReach	IndwReach	nOutdwReach	nIndwReach
113	26	7.5	0.839	0.242
155	25.5	7.5	0.823	0.242
146	25.5	8	0.823	0.258
147	24.5	7.5	0.79	0.242
145	24	7.5	0.774	0.242
123	23.5	7.5	0.758	0.242
120	23.5	7.5	0.758	0.242
112	18.667	8	0.602	0.258
122	8.5	8.5	0.274	0.274
149	7.5	8.5	0.242	0.274
150	6	8.5	0.194	0.274
111	6	13	0.194	0.419
148	6	8.5	0.194	0.274
117	6	8.5	0.194	0.274
150	5	8.5	0.161	0.274
8	1	5.333	0.032	0.172
13	1	14	0.032	0.452
156	1	8.5	0.032	0.274
5	1	10.5	0.032	0.339
7	1	6.333	0.032	0.204
3	1	10	0.032	0.323
1	1	9	0.032	0.29
168	1	5.5	0.032	0.177

Table 4.20 (cont'd)

157	1	8.5	0.032	0.274
10	1	5.5	0.032	0.177
6	1	7	0.032	0.226
2	1	9.5	0.032	0.306
17	1	7.833	0.032	0.253
15	1	8.5	0.032	0.274
18	1	5.833	0.032	0.188
14	1	5.333	0.032	0.172
Mean	8.13	8.13	0.26	0.26
SD	9.62	1.91	0.31	0.06
Sum	252.17	252.17	8.13	8.13
Variance	92.52	3.64	0.1	0
Min.	1	5.33	0.03	0.17
Max.	26	14	0.84	0.45
N	31	31	31	31

The betweenness measures for Research I do not reveal much new information. Since in the network is strongly connected, actors can readily connect without an intermediary (see, Table 4.21).

Table 4.21

Research I: Freeman Betweenness Centrality Measure

Actor	Betweenness	nBetweenness
146	24.848	2.856
111	23.098	2.655
112	20.064	2.306
113	12.064	1.387
122	11.814	1.358
150	11.798	1.356
155	8.564	0.984
149	8.314	0.956
151	3.23	0.371
117	3.23	0.371
148	3.23	0.371
147	0.564	0.065
145	0.182	0.021
1	0	0
8	0	0
5	0	0
13	0	0
156	0	0

Table 4.21 (cont'd)

3	0	0
7	0	0
120	0	0
123	0	0
168	0	0
157	0	0
10	0	0
6	0	0
2	0	0
17	0	0
15	0	0
18	0	0
14	0	0
Mean	4.226	0.486
SD	7.181	0.825
Sum	131	15.057
Variance	51.56	0.681
Min.	0	0
Max.	24.848	2.856
N	31	31

Research II.

The modest response rate by Research II governing board (44.4%) limits interpretability. Even so social network scholars have found measures of centrality remain robust under conditions of error, including low marginal response rates (Borgatti, Carley, & Krackhardt, 2006). Based on the responses, the overall network matrix density is 0.0793 (SD .2702). This represents a very small percentage (7%) of all the possible ties (69). The average geodesic distance is 1.250. This score indicates most governing board members are connected to the whole network either directly or through a mutual actor. The sociogram (Figure 4.5) illustrates the network data collected by the few participating board members. The number of peripheral actors connected to the network by only three board members is particularly interesting. The Research II board is obviously infused with a great amount of information from networks beyond the board.

The out-degree centrality measures for Research II indicate that board members 141 and 140 are connected to a large portion of the network. Since only a small portion of board members responded it is unclear if other board members may be more connected (see, Table 4.22). The in-degree statistics provided more useful information. The data suggest that the President (13) and Board Secretary (2) are recipients of the greatest number of connections (see, Table 4.23). This finding is consistent with the prior three governing board network analysis.

Figure 4.5

The Research II Sociogram

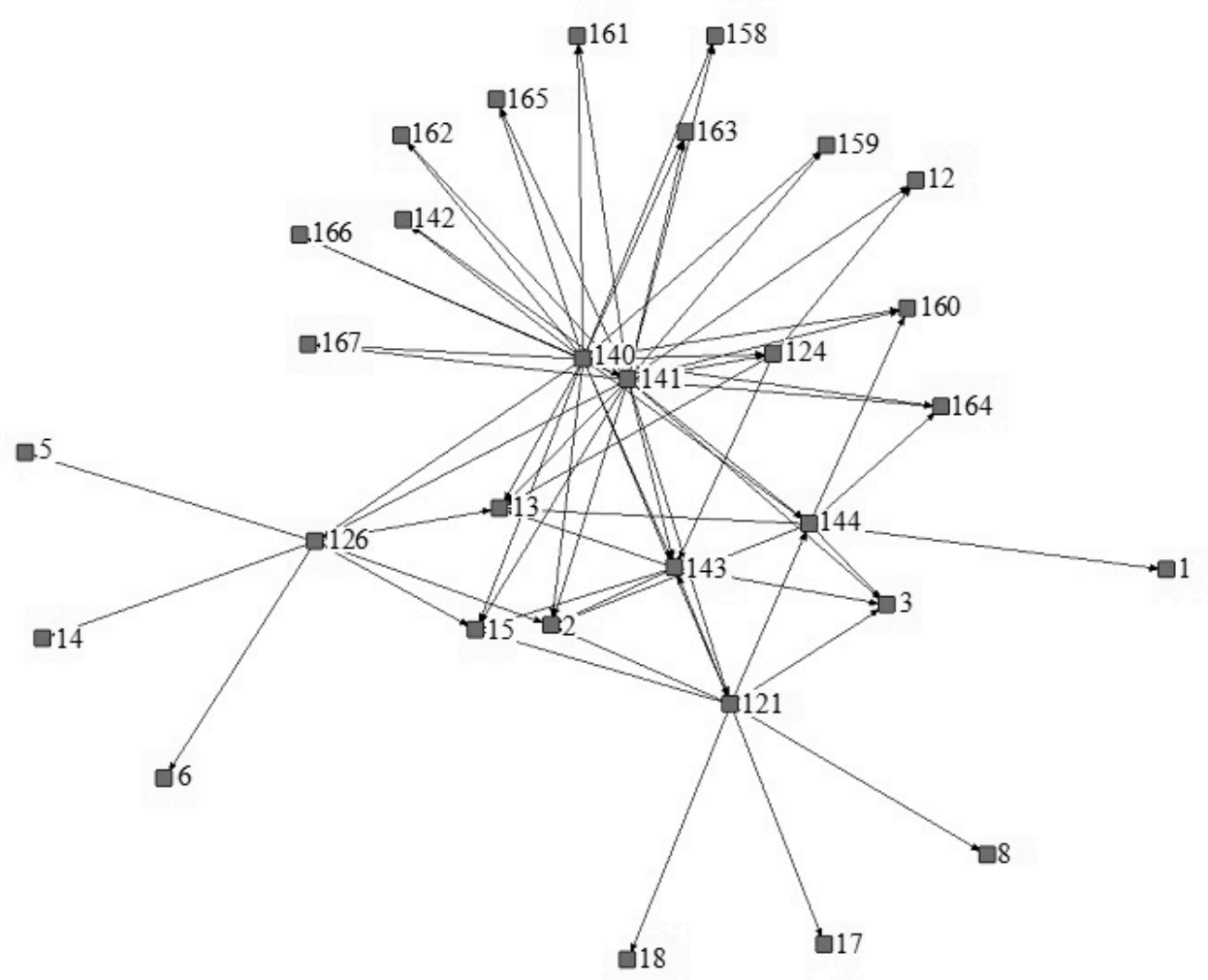


Table 4.22

Out-degree Statistics for Research II Governing Board Members

Actor	Mean	SD	Sum	Variance	Min.	Max.	N	N Miss
141	0.759	0.428	22	0.183	0	1	29	0
140	0.69	0.463	20	0.214	0	1	29	0
121	0.276	0.447	8	0.2	0	1	29	0
126	0.207	0.405	6	0.164	0	1	29	0
144	0.207	0.405	6	0.164	0	1	29	0
143	0.138	0.345	4	0.119	0	1	29	0
124	0.103	0.305	3	0.093	0	1	29	0
1	0	0	0	0	0	0	29	0
2	0	0	0	0	0	0	29	0
3	0	0	0	0	0	0	29	0
5	0	0	0	0	0	0	29	0
6	0	0	0	0	0	0	29	0
8	0	0	0	0	0	0	29	0
12	0	0	0	0	0	0	29	0
13	0	0	0	0	0	0	29	0
14	0	0	0	0	0	0	29	0
15	0	0	0	0	0	0	29	0
17	0	0	0	0	0	0	29	0
18	0	0	0	0	0	0	29	0
142	0	0	0	0	0	0	29	0
158	0	0	0	0	0	0	29	0
159	0	0	0	0	0	0	29	0
160	0	0	0	0	0	0	29	0
161	0	0	0	0	0	0	29	0
162	0	0	0	0	0	0	29	0
163	0	0	0	0	0	0	29	0
164	0	0	0	0	0	0	29	0
165	0	0	0	0	0	0	29	0
166	0	0	0	0	0	0	29	0
167	0	0	0	0	0	0	29	0

Table 4.23

In-degree Statistics for Research II Governing Board Network

Actor	121	18	144	2	143	3	17	15	8	124	13	12
Mean	0.069	0.034	0.103	0.207	0.138	0.138	0.034	0.172	0.034	0.069	0.207	0.069
SD	0.253	0.182	0.305	0.405	0.345	0.345	0.182	0.378	0.182	0.253	0.405	0.253
Sum	2	1	3	6	4	4	1	5	1	2	6	2
Variance	0.064	0.033	0.093	0.164	0.119	0.119	0.033	0.143	0.033	0.064	0.164	0.064
Min.	0	0	0	0	0	0	0	0	0	0	0	0
Max.	1	1	1	1	1	1	1	1	1	1	1	1
N	29	29	29	29	29	29	29	29	29	29	29	29

Actor	126	6	5	14	140	158	159	160	161	162	163	164
Mean	0.069	0.034	0.034	0.034	0.034	0.069	0.069	0.103	0.069	0.069	0.069	0.103
SD	0.253	0.182	0.182	0.182	0.182	0.253	0.253	0.305	0.253	0.253	0.253	0.305
Sum	2	1	1	1	1	2	2	3	2	2	2	3
Variance	0.064	0.033	0.033	0.033	0.033	0.064	0.064	0.093	0.064	0.064	0.064	0.093
Min.	0	0	0	0	0	0	0	0	0	0	0	0
Max.	1	1	1	1	1	1	1	1	1	1	1	1
N	29	29	29	29	29	29	29	29	29	29	29	29

Actor	165	141	166	167	142	1
Mean	0.069	0.034	0.069	0.069	0.069	0.034
SD	0.253	0.182	0.253	0.253	0.253	0.182
Sum	2	1	2	2	2	1
Variance	0.064	0.033	0.064	0.064	0.064	0.033
Min.	0	0	0	0	0	0
Max.	1	1	1	1	1	1
N	29	29	29	29	29	29

The average degree centrality measure for the governing board members is 2.300. As is true for the other three governing boards the out-degree range is larger than that of in-degree. Moreover, the variability is greater with out-degree relationships than in-degree. These data suggest that the social network of Research II displays a similar pattern to the prior institutions. The in-degree data are more concentrated on a select few actors with small variance (President (13), Provost (15), and Board Secretary (2)). Table 4.24 represents the degree centrality measures for Research II Governing Board. Overall the Freeman graph centralization measure for the network as a whole indicates an out-degree graph centralization of 70.273% and an in-degree graph centralization of 13.199%.

Table 4.24

Research II: Freeman's Degree Centrality Measures for each Actor and Overall Descriptive Statistics

Actor	OutDegree	InDegree	NrmOutDeg	NrmInDeg
141	22	1	75.862	3.448
140	20	1	68.966	3.448
121	8	2	27.586	6.897
144	6	3	20.69	10.345
126	6	2	20.69	6.897
143	4	4	13.793	13.793
124	3	2	10.345	6.897
15	0	5	0	17.241
8	0	1	0	3.448
17	0	1	0	3.448
2	0	6	0	20.69
12	0	2	0	6.897
3	0	4	0	13.793
6	0	1	0	3.448
5	0	1	0	3.448
14	0	1	0	3.448
18	0	1	0	3.448
158	0	2	0	6.897
159	0	2	0	6.897
160	0	3	0	10.345
161	0	2	0	6.897

Table 4.24 (cont'd)

162	0	2	0	6.897
163	0	2	0	6.897
164	0	3	0	10.345
165	0	2	0	6.897
13	0	6	0	20.69
166	0	2	0	6.897
167	0	2	0	6.897
142	0	2	0	6.897
1	0	1	0	3.448
Mean	2.3	2.3	7.931	7.931
SD	5.435	1.394	18.743	4.807
Sum	69	69	237.931	237.931
Variance	29.543	1.943	351.288	23.107
Min.	0	1	0	3.448
Max.	22	6	75.862	20.69
N	30	30	30	30

The reach centrality scores for Research II governing board parallel the out-degree centrality measures. Also, the inward reach measures reinforce the centrality of the President and board secretary to the network with each having an inward reach score of 7.5. However, board member 124 appears as a central actor with a reach score of 6.5. Table 4.25 presents the reach centrality scores for the Research II governing board.

Table 4.25

Research II: Reach Centrality Measures

Actor	OutdwReach	IndwReach	nOutdwReach	nIndwReach
141	26.5	2	0.883	0.067
140	25.5	2	0.85	0.067
121	11	3	0.367	0.1
144	7	4	0.233	0.133
126	7	3	0.233	0.1
124	5.5	3	0.183	0.1
143	5	5	0.167	0.167
124	1	6.5	0.033	0.217
8	1	3	0.033	0.1
17	1	3	0.033	0.1
2	1	7.5	0.033	0.25
12	1	3.5	0.033	0.117
3	1	6	0.033	0.2

Table 4.25 (cont'd)

6	1	3	0.033	0.1
5	1	3	0.033	0.1
14	1	3	0.033	0.1
18	1	3	0.033	0.1
158	1	3	0.033	0.1
159	1	3	0.033	0.1
160	1	4.5	0.033	0.15
161	1	3	0.033	0.1
162	1	3	0.033	0.1
163	1	3	0.033	0.1
164	1	4.5	0.033	0.15
165	1	3	0.033	0.1
13	1	7.5	0.033	0.25
166	1	3	0.033	0.1
167	1	3	0.033	0.1
142	1	3	0.033	0.1
1	1	3.5	0.033	0.117
Mean	3.68	3.68	0.12	0.12
SD	6.44	1.41	0.21	0.05
Sum	110.5	110.5	3.68	3.68
Variance	41.42	1.99	0.05	0
Min.	1	2	0.03	0.07
Max.	26.5	7.5	0.88	0.25
N	30	30	30	30

Similar to the findings for the other three governing boards, the betweenness scores do not reveal new information about the network (see, Table 4.26).

Table 4.26

Research II: Freeman Betweenness Centrality Measure

Actor	Betweenness	nBetweenness
121	6.25	0.770
126	6	0.739
144	5.75	0.708
143	3.75	0.462
141	0.75	0.092
124	0.5	0.062
18	0	0
15	0	0
8	0	0
17	0	0
2	0	0

Table 4.26 (cont'd)

12	0	0
3	0	0
6	0	0
5	0	0
14	0	0
140	0	0
158	0	0
159	0	0
160	0	0
161	0	0
162	0	0
163	0	0
164	0	0
165	0	0
13	0	0
166	0	0
167	0	0
142	0	0
1	0	0
Mean	0.767	0.094
SD	1.874	0.231
Sum	23	2.833
Variance	3.512	0.053
Min.	0	0
Max.	6.25	0.77
N	30	30

Summary of Results

In sum, the average governing board membership in this study was 11.5 with lay citizens representing a majority. Faculty, staff, and student representatives were also included. The average governing board member's term was 5.7 years. On the governing boards males significantly out numbered females. Males represented 80% of governing board membership. The professional occupations of board members were concentrated in senior executive level positions within the private sector and the field of education. The average years of service on the governing board was 2.8 years by board members. Moreover, board members attended on average seven board meetings each calendar year.

The governing board members' perceptions on how the board functions is concentrated on four primary findings. First, board members unanimously indicated that the recent financial crisis has created a unique period for higher education. Moreover, during this time of financial crisis governing boards are taking more deliberate actions and engaged more actively in decisions than in previous years. This finding reinforced my assumption that the fiscal crisis is impacting higher education governance. Second, governing board members have established policy positions that are negotiated. Governing board members view board meeting as time to discuss and negotiate policy disagreements. In a related way the third common perception by governing board members is that the professional backgrounds of board members impact board members decisions on the board. Fourth, communication from the President of the institution emerged as the most constant source of information for governing board members. Beyond, the President, the board members indicated that communication from the Chief Financial Officer is an important information source. Communication from the Chief Financial Officer is potentially explained by the strong influence of the financial crisis on institutional policy decisions.

The social network analysis demonstrated that identifiable social networks did in fact exist for each governing board. Furthermore, commonalities in the social networks are present across the four participating institutional governing boards. Let me first briefly summarize the results for each institution. Then I will present the common patterns in the governing boards' social network.

Examining the set of centrality measures, it is evident that at Maters' I the most central actors are the Chair of the governing board as well as the President and Provost of the institution. These actors have the greatest number of in-degree connections. The Chief Financial Officer becomes an additional central actor when examining the reach centrality scores. This measure is

a mechanism to measure the shortest-path length between actors in the network. As a result the Chief Financial Officer while not a high recipient of ties is connected to a large portion of the whole network via short-paths. The peripheral actors in the Masters I governing board social network are Deans, the Executive Assistant to the President, Faculty Senate, General Counsel, and state legislative office.

Of the centrality measures the President of Masters II is frequently most central actor in the governing board network. The one exception is the betweenness centrality measure. As a measure it provides insight into how removing an actor from a network would disrupt connections between other actors in the network. For Masters II, the Chair of the governing board falls on the greatest number of paths between other pairs of actors. As a result the Chair is central to the network as a boundary spanner. The peripheral actors are frequently external to the institution and include the state legislative office, state higher education system chancellor, Governor, and professional colleagues of board members. The one peripheral actor internal to the institution is the secretary of the governing board.

At Research I the President and Chair of the governing board are the greatest recipient of in-degree relationships and structurally central to the network. A number of additional actors (Executive Assistant to President, Chief Financial Officer, Board Secretary, and Athletic Director) are central to the network under the reach centrality measure. These actors are accessible to the governing board via short-paths. The peripheral actors of the network consist of the Governor, professional colleagues, and spouse/family members.

The President, Board Secretary and Provost at Research II are central to the governing board social network. The governing board members nominated a large number of peripheral actors with some internal and others external to the institution. These actors include students,

athletic director, faculty members, professional colleagues, spouse/family members, and state higher education system chancellor.

Commonalities in the governing board social networks exist at two levels. At one level is to examine the networks as a whole. The other is to study the network by determining positions of individuals within the network. A common pattern among the governing board networks as a whole is the high level of connectedness (see, geodesic scores). The governing board networks are comprised of many short-paths. As a result governing board members are only one or two ties away from all network members. Another frequent feature of the whole networks was the presence of peripheral actors.

The commonalities that emerged in examining the individual actors in the governing board networks are from the in-degree data. The in-degree data indentifies the actors in the network most frequently consulted by the governing board members. Utilizing the normative scores allows for comparison across all four institutions. It is evident that the governing board members most frequently depend upon the President of the institution. The Chair of the governing board was frequently the actor with the highest betweenness score for each board. This finding emphasizes the important role the Chair plays in connecting the governing board network. Removal of the Chair would disrupt connections between other actors in the network. Additionally using the reach centrality scores both the President and Chief Financial Officer are comparable sources of information for all four institutions' governing board members. These individuals are accessible to governing board members through short network paths. Collectively, it appears that the President and Chief Financial Officer of the institution and the Chair of the governing board are central to the governing board networks in this study. The cohesion around this particular set of actors demonstrates that a majority of governing board

members share ties with these individuals. Moreover, it emphasizes the positional advantage these actors have in the network.

In Chapter 5 I use these results to answer each research question and situate these findings in established literature. I also propose how research, practice, and policy can be advanced based on the study's findings.

CHAPTER 5

In this final chapter, I offer answers each research question. Next, I discuss the findings of the current study by situating them in existing research. I conclude by discussing implications for research, practice, and policy.

A defining feature of American higher education is the provision for authority over the institution by an external governing board consisting of lay members of the public (Thelin, 2004). Studies of higher education governing boards typically focus on structure and performance (Kezar & Eckel, 2004; Kezar, 2006; McGuinness, 2003; Minor, 2006; Tierney, 2004b) as well as assume governing boards endorse institutional policies created under the leadership of the executive officer (Mintzberg, 1979). Research has yet to explore in any depth the impact of higher education governing board members as social actors.

Situated in the current financial crisis and a trend of declining public investment in higher education (Fairweather, 2009, 2006; NACUBO/NCSE, 2010; Weerts & Ronca, 2006; Zumeta, 2006), the current study examines the social network patterns of governing board members at public institutions and expands the knowledge of how governing boards work. The study sought to determine whether identifiable social networks for public higher education governing board members exist, to develop an overall picture of public higher education governing board networks, and to understand the internal and external factors impacting governing boards' social networks during times of fiscal crisis.

This study draws upon the technique of social network analysis as a means to understand how public governing boards work. As an analytical tool, social network analysis examines the relations and patterns of relations among actors by mapping interactions and relationships (Marin

& Wellman, 2010; Wasserman & Faust, 1994).

From August 2010 through January 2011, I collected data from public post-secondary governing boards to examine the social network patterns of governing board members at public institutions and explored the broad range of interactions that can influence governing boards' networks. I used a survey instrument to capture information about governing boards' social networks; to learn about factors influencing the governing board social networks; and to gain insight into how the governing board functions in the context of the current fiscal crisis.

Research Questions

An examination of governing boards at four public post-secondary institutions alone is hardly a basis for generalization about higher education governance, but it does suggest certain conclusions. Below I use these results to answer each research question in turn.

Are there identifiable social networks for public higher education governing boards?

The results indicate identifiable social networks for public higher education governing boards. All four governing boards are tightly connected (see, Table 5.1). The geodesic scores for each institution indicate that the whole network can be reached with relative ease. To put it another way, the governing board members know one another directly or through a mutual actor. Moreover, the governing board members are connected to all the actors in the network via short

Table 5.1

Governing Board Networks Geodesic Distance

Institution	Geodesic Distance
Masters I	1.559
Masters II	1.529
Research I	1.460
Research II	1.250

paths.

The President at each institution was a strong recipient of relationships (in-degree measure). The normative in-degree scores[5] across all four boards are close (Masters I = 30.435; Masters II = 31.818; Research I = 36.667; Research II = 20.69). Another similarity is that the Chair of the board was frequently the actor with the highest betweenness score for each board. The level of betweenness was not comparable across all four boards; however, the Chair was a critical connector for actors within the networks.

Each of the public governing boards also had peripheral actors that were connected to the structural core of the network. In other words, a common feature of the governing board networks is the infusion of new information from a broad spectrum of actors beyond the board members. Some of the peripheral actors are internal to the institution; however, frequently the actors are external community members. Common across two or more governing boards were the legislative office, Executive Assistant to the President, State Higher Education System Chancellor, professional colleagues, students, family/spouse, and Governor. For example in State B, the Governor is a peripheral actor in both the research and masters level institutions.

If so, how much variation exists in the social networks across governing board members and governing boards as a collective team?

Individual governing board members' networks had a considerable amount of variation. The overall out-degree graph centralization measures as well as each of the individual actor outward centrality measures demonstrate that the centrality of individual board members varies

[5] The standardized measures for the centrality measures allows for comparisons across networks of different sizes and densities (expresses data as a percentage of the number of actors in the network, less one (ego)).

rather substantially. Ultimately across all four governing boards the positional advantages of board members is unequally distributed in the network.

Alternatively, the governing board networks had noteworthy cohesion around inward data. As a collective team the governing boards frequently relied on common sources of information as well as individual actors. For example, the reach centrality scores pointed to select group of actors within each network. Examining the standardized reach scores for each institution the data suggests that both the President and Chief Financial Officer are comparable sources of information for all four governing boards. Table 5.2 presents the standardized reach centrality scores for these two network members. Moreover, this finding aligns with the mean scores representing the high percentage of board members indicating that communication from the President and Chief Financial Officer are consulted as sources of information. At the same time the governing board networks are also infused with new information from a diversity of peripheral actors.

Table 5.2

Standardize Reach Scores for Institutional Chief Financial Officers and Presidents

Institution	Standardize Reach Scores	
	Chief Financial Officer	**President**
Masters I	.313	.375
Masters II	.297	.370
Research I	.323	.452
Research II	.200	.250

To what extent do internal and external factors impact governing boards' social networks?

My goal in this section is to identify common forces identified by all four governing boards as influencing board networks. I begin by discussing the common internal factors followed by frequently noted external factors.

All four governing boards indicated that board members have established policy positions

that they bring to their role. In addition, their professional backgrounds were frequently listed as influencing their role as institutional leaders. Communication from the President, Chief Financial Officer, Provost, and Chancellor of the State Higher Education system were indicated by boards to be sources of knowledge most frequently consulted in their role. Interestingly, across all four boards, the President was highest in-degree receiver of relationships. In contrast, the State Higher Education System Chancellor was often a peripheral network actor typically interacting through a tie to a board member central to the network. Beyond individuals, the source of knowledge most commonly relied upon to by the boards are board meeting materials. These materials are prepared by institutional leadership and provide a filtered source of information.

The most striking external factor was the almost unanimous agreement that the current global financial crisis affected how governing boards function. All four governing boards indicated that the recent global fiscal crisis represented a unique historical period where board decisions were more likely to affect the future of the institution significantly. During this time of financial crisis the governing board was taking more deliberate actions and engaging more actively in decisions than in previous years. In addition, the governing boards frequently indicated that the multiple layers of governance impacted how the board works.

Discussion of Findings

The following section discusses the findings of the current study in the context of established scholarship. I begin by presenting the composition and characteristics of the governing boards in the study. Next I discuss the governing board members' perceptions of how the board functions inclusive of both internal and external factors. Finally, I describe the characteristics of the governing board social networks.

Governing Board Composition and Characteristics

The four governing boards in this study are similar in several ways to the general profile of public post-secondary governing boards. In comparison to the data reported by the AGB *2010 Survey of Public Colleges and Universities Governing Boards*, the governing boards in the current study are comparable across a number of dimensions.

Size, composition, and method of appointment are points of comparisons. The governing boards were comparable in size. Using a historical survey base ranging from 1986 to 2010, the AGB study revealed that the average number of voting board members remained relatively stable over the years, at about 11 or 12. In a parallel fashion the average size of the participating governing boards in the current study was 11.5. Across all four boards governance is primarily vested in lay citizen members ranging from a low of 9 to a high of 16 in individual boards. The Governor appoints the lay members for all four boards; however, Masters II and Research I also require the consent of the state Senate. This is consistent with national trends for gubernatorial appointment and legislative confirmation of public governing boards: "The majority of members of most public governing boards (77%) were appointed by the governor, 60 percent with confirmation by the state legislature and 17 percent without; 5 percent of boards were elected, 3 percent were appointed by legislatures, and 15 percent were selected in a combination of ways or in some other manner" (AGB, 2010).

All four institutions included student representation on the board. For two institutions board membership also includes faculty members and staff selected by the governing structures of their respective constituencies. As reported by the AGB in 2010, 50.3 percent of public college boards included at least one student as a voting member of the board, and 28.2 percent included at least one nonvoting student member. Of public colleges, universities, and systems,

13.3 percent included at least one faculty member as a voting board member, and 9.7 percent included a nonvoting faculty member. In addition, 7.2 percent included at least one staff member as a voting board member, and 3.6 percent included one or more nonvoting staff.

Based on survey responses, the current composition of all four participating governing boards is 80% male and 20% female. This is consistent with the AGB report that indicated men outnumbered women on governing boards by more than two to one in 2010, 71.6 to 28.4 percent. In addition, 23.1 percent of board members were racial and ethnic minorities, including 15.8 percent African Americans or Blacks, 4.1 percent Hispanics and Latinos, 2.1 percent Asians and Pacific Islanders, 0.7 percent American Indians and Alaskan Natives, and 0.4 percent other races; 74.3 percent were White non-Hispanic and 2.6 percent unknown races. Minority trustees increased from 21.3 percent in 2004 to 23.1 percent in 2010. In the current study a majority of the board members are Caucasian (85%) with the remainder of the board members self-identifying as Black/African American (10%) and Asian/Pacific Islander (3%).

This sample was also similar to national averages in the length of their terms and extent of participation. On average public board members typically serve six years for a single term. The length of a single term for the current study's governing board members was 5.7 years. The lay citizen members serve terms on average for 6.7 years while faculty members, students, staff, and other members serve terms on average of 1.8 years. The AGB study also revealed that public boards met on average six or seven times per year. Board members in this study attended on average seven board meetings a year.

In the current study board members are frequently in senior level executive positions (48.7%) within the private sector or field of education (22.0%). The professional background of half (49.4%) of board members of public colleges and universities in 2010 was business as

reported by the AGB.

In examining this data my conclusion then is that the participating governing boards in the current study provided representative sample on key demographic characteristics including size, composition, gender and ethnicity, occupation, and service. I now turn to discussing governing board members' perceptions on how the board functions.

Governing Board Members Perceptions

The perceptions by governing board members in this study about how the board functions frequently is consistent with findings found in contemporary research on governance. The following section first focuses on exploring the implications of fiscal instability on the governance of higher education institutions. Next, the effect on institutional governance by the policy positions and professional backgrounds of governing board members is examined. Lastly, is an acknowledgement about the impact by the multiple layers of governance found in public higher education.

The finding that the current global financial crisis affects how governing boards function is consistent with previous research on the effect of the long-term decline in state funding for post-secondary education, tuition increases, and decreasing endowment returns on higher education institutions (Fairweather, 2009; Keller, 2009; Long, 2010; NACUBO/NCSE, 2010; Weerts & Ronca, 2006; Zumeta, 2006). Even so the results of this study show that the effects of the recent fiscal crisis on governing boards goes well beyond what board members have seen in the past (including declining state financial support). All four governing boards in this study indicated that the recent global financial crisis represented a unique historical period where board decisions were more likely to affect the future of the institution significantly. During this time of financial crisis respondents indicated that governing boards took more deliberate actions and

engaged more actively in decisions than in previous years. This finding is consistent with both theoretically-based arguments by Chaffee (2010) and Wellman (2009) as well as by survey results from the APLU study *Coping Strategies of Public Universities During The Economic Recession of 2009: Results of a Survey on the Impact of the Financial Crisis on University Campuses* where respondents indicated the use of both short-term and long-term budget cutting and revenue enhancing strategies (Keller, 2009). Governing boards in this study seemed aware of the gravity of their decisions for the future of the institution. However, governing boards appear uncertain about the resources that might best guide them in their institutional leadership role during this period of fiscal turbulence.

To understand this dilemma better I turn to work carried out by Chait and his colleagues (1991). Chait et al. found the contextual, analytical, and strategic dimensions of governance critical to effective governing board performance. These dimensions of governance focus on the distinctive characteristics and culture of the college's environment. Moreover, governing board members who have an appreciation for the academic context rely on the institution's mission, values, and traditions as a guide for decisions. Chait and colleagues (1991, 1996) advocate for governing board members to recognize the complexity and subtleties in the issues faced by the board and to develop policy responses the fit the institutional context. Ultimately this recommendation requires the board to embrace an institutional outlook when addressing problems and search for concrete information from multiple sources to develop solutions.

One important contribution of this study is that board members bring policy positions with them to the role and negotiate with other members on the basis of those policy positions. This finding contrasts with some existing research on governing boards. Although the political nature of board functioning has long been acknowledged (Birnbaum, 1988; Chait, Holland &

Taylor, 1991), Chait et al.'s (1991) finding that effective boards attempt to minimize conflict and avoid win-lose situations does not sufficiently portray the amount of negotiation and potential conflict on boards found in this study even when the board is functioning effectively. In this study it appeared board member disagreements are common and that such disagreements did not necessarily adversely affect cohesion. It is quite possible that the finding from this study conflicts with previous studies because of the nature of the 2008 fiscal crisis, particularly how boards had to seek a variety of possible solutions without the option to sit passively by or to follow historical precedent.

Another related finding from this study is the impact of governing board members professional backgrounds on the decision making of the governing board. Consistent with research (Chait et al., 1996) boards in this study depended upon the professional expertise and affiliations of board members to solve problems for the institution. In this context the professional backgrounds of board members is useful in understanding how boards work and who they rely on for information. As described by Chait et al. (1996) on one hand having board members contribute outside their area of expertise seems beneficial for board cohesion. In particular, boards whose members feel confident in asking questions outside their personal area of expertise often encourage new lines of inquiry and creativity (Chait et al., 1996). Boards with members who stick solely to their area of expertise may not fully explore the governance and fiscal solutions if the board does not contain members from a wide variety of backgrounds (Chait et al., 1996). Again this finding may be related to boards having to find a resolution to the problems created by the financial crisis and found that considering a wide array of possible solutions from different perspectives increased their effectiveness.

A nominal finding from this study is the effect of the multiple layers of governance on

how the governing boards function. This finding is consistent with previous research articulating the unique and complex governance structures in public higher education systems (Kezar, 2006; McGuinness, 2003, 2005; Minor, 2006). As indicated by Kezar (2006) effective public governing boards coordinate with the governor's and legislature's strategic plans and communicate regularly with state leaders. The four governing boards in this study receive communication directly from the state higher education officer. Moreover, the governing boards' social networks commonly included the legislative office, state higher education system chancellor, and governor. Although these external actors were often found on the periphery of the network, their impact is not necessarily minimal. Rather the governing boards' connection to state-level actors infuses new information into the board and links the board to a broader network.

Governing Board Social Network Characteristics

Public higher education governing boards appear to have identifiable social networks. Moreover, commonalities in the governing board social networks exist. The geodesic scores for all four participating governing boards indicate that the boards are tightly connected. As such the governing board members know one another directly or through a mutual actor. Moreover, the governing board members are connected to all the actors in the network via short paths. This finding of strong cohesion combined with board composition resonates with scholars who articulate the importance of understanding the influence of individual behavior in organizations (Frank, 1996). Moreover, the finding lends itself to considering governing boards as collective teams that have the potential to build successful collaborations to address institutional challenges (Gray, 1989).

Strongly connected networks potentially are ineffective because actors can become

trapped (Gargiulo & Benassi, 1999; Gulati & Westphal, 1999; Portes & Landolt, 1996). It appears that governing boards counter this problem in two ways. First, this study concluded that governing board members do have dissenting policy positions that are negotiated. As such it appears alternative perspectives are encouraged and the possible negative consequences of strong cohesion are offset. Second, governing board networks are infused with new information from a diversity of peripheral actors. Each of the public governing boards had peripheral actors that were connected to the structural core of the network. This finding is consistent with Kezar's (2006) scholarship that discusses the important influence stakeholders have on public higher education governing boards. Moreover, this finding is consistent with Burt's (1992) explanation that weak ties can generate positive outcomes. Peripheral actors in governing board social networks potentially enable institutional change and adaptation (Christensen & Horn; 2011; Frank, Zhao, & Borman, 2004; Handy, 2002).

Results from this study show that the President and Chief Financial Officer are equally important sources of information for all four governing boards. Board members primarily depend upon communication from the President and Chief Financial Officer for information. Other individuals frequently consulted by the board are the Provost and Chancellor of the State Higher Education system. Tierney and Minor (2004) claim that communication among relevant actors is essential to effective governance. The findings of this study indicate that the most relevant actors to the governing boards are the President and Chief Financial Officer. Governing board members dependence upon the President and Chief Financial Officer for guidance in institutional decisions and strategy is often acknowledged (Chait et al., 1991, 1996; Kezar, 2006). Furthermore this finding supports research that cites the comfort and expertise board members have with financial issues and frequent reliance financial performance indicators to

guide decisions (Chait et al., 1996). It is unclear from this study whether governing boards' reliance on the President and Chief Financial Officer for information increased during the present financial crisis.

Utilizing the normative social network metric scores, it is evident that the governing board members most frequently depend upon the President of the institution. The in-degree data for the President commonly indicated that he/she was a central actor. Additionally using the reach centrality scores both the President and Chief Financial Officer are comparable sources of information for all four institutions' governing board members. These individuals are accessible to governing board members through short network paths. This finding is consistent with scholars who frequently discuss the integral relationships among the governing board and senior level administrative leaders (AGB, 2006, 2010; Birnbaum, 1988; Chait et al., 1991, 1996; MacTaggart & Mingle, 2002). Frank, Krasue, & Penuel (2010) support this interpretation -- successful organizational change depends in part on information flows from network members who possess high quality knowledge.

The high betweenness score for the Chair of the Board in all four institutions indicated the Chair is the primary connector or boundary spanner for actors within the networks. This finding is consistent with research on the importance of boundary spanners to connect and link subgroups within the organization (Burt, 1976; Cross, Parker & Borgatti, 2002; Frank, 1996; Marin & Wellman, 2010; Rawlings & McFarland, 2010).

In summary, it appears that the President and Chief Financial Officer of the institution and the Chair of the governing board are central to the governing board networks in this study. The cohesion around this particular set of actors demonstrates that a majority of governing board members share ties with these individuals. Moreover, it emphasizes the positional advantage

these actors have in the network and ultimately the governance of the institution.

Implications for Research, Practice, and Policy

A primary reason for conducting this study was to help inform future research, practice, and policy relating to higher education governance. The following section discusses implications for researchers, institutional governing boards, and the Association of Governing Boards of Universities and Colleges.

Researchers

An empirical question guiding this study was whether or not identifiable social networks existed in higher education governing boards. The results of this study positively indicated the presence of social networks. Even more striking was the common features in the social networks across the four governing boards. I acknowledge that an examination of governing boards at four public post-secondary institutions alone is hardly a basis for generalization. However, the findings of the current study suggest that the application of social network analysis to higher education governance offers new insights to understand how governing boards work.

The current study supports the continued usage of social network analysis as a means to understand how governing boards work. As such, a variety of social network analysis research agendas emerge. Of interest is to understand more fully the knowledge and resources drawn upon by the set of central actors in the governing board networks. As central actors in the network they possess positional advantages. One interesting approach would be to employ an ego analysis for central actors (e.g. President, Board Chair, Chief Financial Officer). This type of study would develop networks for central actors in higher education governing boards and enable scholars to understand the influences upon these actors (Burt, 2004, 2005; Marin &

Wellman, 2010). Applied to a single institution it would offer a deeper understanding of the impacts on the governing board social networks. Applied to a larger sample of actors in a similar role function, an ego analysis would allow for comparisons of resources depended upon by a set of actors from a variety of institutions. Furthermore, an ego analysis may be advantageous since it overcomes some of the limitations imposed by a whole network study (Hanneman & Riddle, 2005; Marsden, 1990). Alternatively, by conducting interviews with these central actors, researchers could develop a deeper understanding of the role they play in governing board networks. This qualitative approach would be a means to develop case studies for specific governing boards.

Additionally, having addressed the empirical question of the existence of social networks, more complex social network analysis potentially could be advantageous. Social network analysis could be applied to further understand specific institutional policy decisions made by governing boards (Frank, 1996, 2005; Kraatz, 1998). In this case social network analysis could measure how important and influential certain types of information or resources are in the governing board network (Borgatti & Carboni, 2007) as it relates to specific policies. For example, data could be collected on who governing board members are speaking to about a financial policy and an academic policy. These networks could then be compared.

Attribute data about governing board members could be applied to social network analysis for further conclusions about the network (Marin & Wellman, 2010). For example, governing board members professional affiliations could be overlaid on the governing board network. This type of study would potentially provide further explanations of ties and relationships found among the network.

Social network analysis studies could be designed for other governing board structures

such as private higher education institutions, elected public higher education governing boards, or state system governing boards.

Beyond the application of a new theoretical framework to studying higher education governance, the current study also offers contributions to established educational research. One finding worthy of further consideration is that governing board members bring established policy positions to their institutional leadership role. These policy positions could potentially be the result of the formal appointment process, basis, or personal experience. Moreover, board members use governing board meetings to negotiate policy positions. This finding contrasts with some existing research on governing boards that indicate that governing boards typically act in bureaucratic, hierarchical ways (Birnbaum, 1988; Chait, Holland, & Taylor, 1991; Mintzberg, 1979). It is possible that this finding conflicts with previous studies because of the unique nature of the current fiscal crisis and the necessity by boards to develop creative solutions to pressing challenges. More research is warranted to understand if the pattern of intensive negotiations centered on issues with legal, financial, or employment implications held true prior to 2008 because state contributions to public post-secondary education have been declining for a significant period of time (Zumeta, 2006).

Another question remaining at the end of the current study to research are strategies and practices for navigating the financial environment. This study concluded that the current environment is requiring board members to be more engaged than in previous time periods. However, board members are unclear about the importance of different sources of information to guide them in their institutional role. Exploring policies and practices used by governing boards to navigate these turbulent financial times would be of benefit to Presidents who are most

frequently consulted by governing board members for guidance in their institutional leadership role.

Examining how governing boards function the data suggestions a few interesting research alternatives. Governing Boards Members' Perceptions (see, Table 4.5) suggests some differences between Masters and Research institutions. Future research could explore if there are significant differences and what are the policy implications. Additionally, the only negative score was by Research II in assessing the usage of faculty by the board when considering cost saving strategies that affect the academic curriculum and degree programs. However, the Provost for Research II was a high receiver of relationship in the social network. It would be interesting for future research to examine the extent to which the governing board views the Provost as the voice of the faculty.

Institutional Governing Boards

The contributions of the current study to higher education governance are worth noting. One important finding is that the recent financial crisis on governing boards represents a unique historical period that is requiring governing boards to take more deliberate actions and engage more actively in decisions than in the past. However, this study indicates that governing boards appear uncertain about the resources that might best guide them in their institutional leadership role during this period of financial turbulence. This study also concluded that the President is the most common source of information for governing boards. Moreover, the Chair of the governing board is frequently the boundary spanner among the governing board network. Taken together these findings support the integral role both the President and Chair have in leading the governing board. From a social network perspective these actors are within the "horizon" of having informal influence on the governing board as an organization (Friedkin, 1983).

Additionally, higher education scholars (Chait, 1991; Kezar, 2006; AGB, 2006) frequently advocate that governance performance is enhanced by successful relationships between the President and Chair.

Governing boards could potentially benefit from increased self-awareness about their own social networks. An understanding of who the board is depending on for information to inform policy decisions or deferring institutional management is important. A board's awareness of this information provides insight into how the board operates and can be a foundation for evaluating organizational practices and assessing the need for change.

During this time of financial turbulence, this study demonstrated the need for Presidents and governing board Chairs to distribute timely and succinct information to governing board members that can spur creative solutions to current institutional challenges. Alternatively some scholars advocate that financial crisis will require disruptive innovation to initiate change (Christensen & Horn, 2011). Linking this approach to the current study, governing boards would be wise to consider the advocacy by peripheral actors in the network.

Another implication for institutional governance is the finding that board members use board meetings to negotiate established policy positions. With public higher education governance subject to sunshine laws this finding supports creating alternative space for board members to discuss dissenting opinions. Time designated for board members to negotiate alternative policy perspectives and share viewpoints of peripheral actors of the governing board network will potentially avoid the "dark side" of social cohesion (Gargiulo & Benassi, 1999; Gulati & Westphal, 1999; Portes & Landolt, 1996). Moreover, this process will hopefully enable boards to generate creative solutions to institutional challenges posed by the current financial crisis and established trend of declining state support. As concluded by Kezar (2006), a unique

element requiring attention by public higher education governing boards to achieve high performance is attention to external stakeholders.

Another finding of the current study was the impact of governing board members professional backgrounds on how the board functioned. With a majority of public higher education governing boards appointed by the Governor (AGB, 2010) the study concludes that the appointment process of governing board members may benefit from considering industry sectors of future board members. This finding is consistent with Chait et al.'s work (1991, 1996) that advocates for drawing upon the expertise of board members. In addition, this policy implication is in alignment with a small movement by six states to establish screening and nominating committees to vet potential governing board candidates on merit before advancing them to the Governor (Novak, 2009).

Several states are considering proposals to restructure or strengthen public higher education governance as a result of economic turbulence and greater calls for institutional accountability. As noted by Novak, "public-policy developments during 2008 and early 2009 and those expected over the next two years have raised the bar on expectations for greater board engagement" (2009, p. 16). The results of the current study support this trend and clearly illustrated that the current financial environment is generating more active governing boards. As a result, governing board members need to be prepared to engage deeply in the critical issues facing higher education.

Association of Governing Boards of Universities and Colleges

The AGB is a national association that serves governing boards and leaders of universities, colleges, and systems through the dissemination of research and publications as well as delivery of programs. In acknowledging the strong work of the AGB, my intention in this

section is to put forward a few thoughts about services the AGB could offer member institutions based on the results of the current study.

The data suggests that governing board members are unclear about the most timely and relevant sources of information to guide them during this financial crisis. The AGB could develop more mechanisms to deliver current information to governing boards and institutional leaders to help institutions navigate the turbulent financial times. Additionally, drawing upon the knowledge of AGB staff and faculty consultants who regularly engage with higher education governing boards generate a selection of best practices on how boards function during this financial crisis as well as strategies governing boards are using to address critical challenges. These timely lessons could be invaluable for other boards confronting similar challenges.

Additionally, the results of the current study reinforced the central role of the institutional President. Understanding that numerous higher education associations develop programs for institutional leaders, the AGB is well situated to develop a specific line of services for institutional Presidents that focuses on advancing governing board performance. Drawing upon Chait et al., (1991), the AGB could develop programs that help institutional Presidents advance the six dimensions of effective governance. Alternatively, the AGB could assist Presidents in using board self-assessment tools to facilitate organization learning and change.

The data from the current study suggests some significant differences in the perceptions of how the board functions between governing boards members from different types of institutions. As the AGB develops programs and services it might consider the varying needs beyond public and private institutions, but to also to consider institutional type.

The social network analysis reveals interesting information about how governing boards function. Through the Board Consulting Services the AGB could utilize this analytical tool in

their consulting engagements to help boards better understand the resources they frequently depend upon. Potentially this could be powerful and informative information for governing boards in reflecting on how they function.

Conclusion

This study sought to determine whether identifiable social networks for public higher education governing board members exist, to develop an overall picture of public higher education governing board networks, and to understand the internal and external factors impacting governing boards' social networks during times of fiscal crisis.

Data collected from four public post-secondary governing boards from two states demonstrated that identifiable social networks did in fact exist for each governing board. Commonalities in the social networks were present across the four participating institutional governing boards. The commonalities that emerged in examining the individual actors in the governing board networks are from the in-degree data. The in-degree data indentifies the actors in the network most frequently consulted by the governing board members. Utilizing the normative scores it is evident that the governing board members most frequently depend upon the President of the institution. The Chair of the governing board was frequently the actor with the highest betweenness score for each board. This finding emphasizes the important role the Chair plays in connecting the governing board network. Additionally using the reach centrality scores both the President and Chief Financial Officer are comparable sources of information for all four institutions' governing board members. These individuals are accessible to governing board members through short network paths. Collectively, it appears that the President and Chief Financial Officer of the institution and the Chair of the governing board are central to the governing board networks in this study. The cohesion around this particular set of actors

demonstrates that a majority of governing board members share ties with these individuals. Moreover, it emphasizes the positional advantage these actors have in the network.

The governing board members' perceptions about how the board functions is concentrated on four primary findings. First, board members unanimously indicated that the recent financial crisis has created a unique period for higher education. Moreover, during this time of financial crisis governing boards are taking more deliberate actions and engaged more actively in decisions than in previous years. Second, governing board members have established policy positions that are negotiated. Governing board members view board meeting as time to discuss and negotiate policy disagreements. Third, the professional backgrounds of board members impact board members decisions on the board. Fourth, communication from the President of the institution emerged as the most constant source of information for governing board members. Beyond, the President, the board members indicated that communication from the Chief Financial Officer is an important information source.

APPENDIX A

Glossary of Terms for Social Network Analysis

Actor: An individual in the network (commonly referenced as actors/nodes/vertices).

Closeness Centrality: Captures the shortest-path length between an actor and every other actor in the network. Measured by a variety of metrics.

Degree Centrality: A count of the total number of connections linked to an actor. As a measure it does not differentiate between quantity and quality. For directed networks an in-degree and out-degree centrality measure is calculated for each actor.

Freeman Betweenness Centrality: A measure of how often an actor lies on the shortest path between other actors. As a measure it provides insight into how removing an actor from a network would disrupt connections between other actors in the network. Additionally, this measure can identify structural holes in a network where two or more actors fail to connect.

Freeman Graph Centralization: An expression of the degree of variance in a network as a percentage of a perfectly connected network of the same size. In directed networks, the measure is calculated for both directions

Geodesic Distance: The number of relations in the shortest possible path from one actor to another.

Graph Density: The proportion of all possible ties that are actually present.

In-degree: Column data of network matrix. Identifies actors as receivers of information or relationships.

Network Matrix: A mathematical format to represent the relationships in a sociogram.

Out-degree: Row data of network matrix. Identifies actors as senders of information or nominators of relationships.

Peripheral Actor: Actors on the fringe of the network and often connected to networks that are not currently mapped.

Reach Centrality: One measure of closeness that examines how close each actor is to all others in the network.

Social Network Analysis: An analytical tool used to examine the patterns of relations among actors by mapping interactions and relationships.

Sociogram: A graph representing the actors and ties in a social network.

Tie: An indication of a relationship between one or more actors (commonly referenced as edges/ties/relations).

APPENDIX B

Survey

Public Higher Education Governing Board Survey

I am asking you and other governing board members at your institution to respond to the following research survey. I am trying to learn about the types of information and information sources higher education governing board members draw from in their role as an institutional leader during times of environmental distress, such as the current financial crisis. I will use the results of the research to capture an overall picture of public higher education governing board networks and begin to understand factors impacting governing board networks.

Completing this survey indicates your consent as a participant in this study insofar as your responses will be analyzed. Participating in this study is voluntary and I will keep all data collected confidential. You may refuse to answer any question and exit the survey at any time. Although I will protect your confidentiality by using a pseudonym for each institution and identification numbers for individual governing board members in all publications and written reports, you or others may be able to discern some of the identities based on reported attributes of the institution and individuals. Identifying information may be of the form: "Experienced board members (unnamed) at name ("name" is a pseudonym of the institution) indicate that ... "

Completing this survey should take approximately 10-15 minutes. Please return the survey in the enclosed self-addressed stamped envelope or take the survey online at http://www.surveygizmo.com/s3/310335/Public-Higher-Education-Governing-Boards

I appreciate you taking the time to respond to this survey.

Sincerely,
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Background and Board Membership Information

1. Please provide your name and the name of the institution.

Name: _____

Institution: _____

2. Please select your professional industry:

____ Accounting
____ Advertising
____ Aerospace / Aviation / Automotive
____ Agriculture / Forestry / Fishing
____ Biotechnology
____ Business Services Hotels, Lodging Places
____ Computers Hardware, Desktop Software
____ Communications
____ Construction / Home Improvement
____ Consulting
____ Education
____ Engineering / Architecture
____ Entertainment / Recreation
____ Finance / Banking / Insurance
____ Food Service
____ Government / Military
____ Healthcare / Medical
____ Internet
____ Legal
____ Manufacturing
____ Marketing / Market Research / Public Relations
____ Media / Printing / Publishing
____ Mining
____ Non-Profit
____ Pharmaceutical / Chemical
____ Research / Science
____ Real Estate
____ Retail
____ Telecommunications
____ Utilities
____ Wholesale
____ Transportation / Distribution
____ Utilities
____ Business / Professional Services
____ Other
____ Don't work

3. Please provide your current professional position:

____ Top Level Executive
____ Senor Vice President
____ Vice President
____ Director
____ Manager
____ Faculty Member
____ Professional
____ Student
____ Administrative/Support personnel
____ Unemployed/Retired/Homemaker

4. Gender

____ Male
____ Female

5. Race

____ Asian/Pacific Islander
____ Black/African-American
____ Caucasian
____ Hispanic
____ Native American/Alaska Native
____ Other/Multi-Racial
____ Decline to Respond

6. Please indicate the approximate frequency that you are on-campus for meetings, events, ceremonies, athletics, others:

____ Daily
____ Once a Week
____ Once a Month
____ 6 - 12 p/year
____ 1 - 5 p/year

7. Please indicate the number of years you have served on this board:

____ 1
____ 2
____ 3
____ 4
____ 5
____ 6
____ More than 6 years

8. Please indicate the number of board meetings you participate in during a year:

____ 1

____ 2

____ 3

____ 4

____ 5

____ 6

____ 7

____ 8

____ 9

____ 10

____ 11

____ 12

9. Please select all the committees that you serve on as a board member and indicate if you chair the committee:

Committee	Member	Chair
Academic Affairs Committee		
Audit Committee		
Building & Grounds Committee		
Committee on Trustees		
Compensation Committee		
Development Committee		
Executive Committee		
Finance Committee		
Investment Committee		
Student Affairs Committee		
Other		

Sources of Knowledge

This section focuses on your interactions and sources of knowledge, especially with regard to your role as a governing board member. A diagram of governing board networks will be created. Those diagrams will not identify anyone by name. Your answers will be anonymous.

10. In your role as a governing board member, please indicate the individuals you most frequently discuss institutional policies and strategies.

List as many individuals as you wish, indicate their role* as well as the frequency with which you interact with each person. Names are optional. Please consider individuals both internal and external to the institution. You do not have to use all the spaces provided.

** Role Options: Athletics Director; Board Member; Board Secretary; Chair of the Board; Chief Financial Officer of Institution; Executive Assistant to President; Faculty Member; Faculty Senate; Family; Governor; Governor Office; Legislative Office; National Higher Education Associations; Personal Friend; President of Institution; Professional Colleague; Provost of Institution; State System Chancellor; State System Board Member; State Higher Education Commission/Council Member; Spouse/Partner; Student; Unions; Other*

Name	Role*	Frequency of Interaction
1.		____ Daily ____ Weekly ____ Monthly ____ Once or twice a year
2.		____ Daily ____ Weekly ____ Monthly ____ Once or twice a year
3.		____ Daily ____ Weekly ____ Monthly ____ Once or twice a year
4.		____ Daily ____ Weekly ____ Monthly ____ Once or twice a year
5.		____ Daily ____ Weekly ____ Monthly ____ Once or twice a year
6.		____ Daily ____ Weekly ____ Monthly ____ Once or twice a year
7.		____ Daily ____ Weekly ____ Monthly ____ Once or twice a year
8.		____ Daily ____ Weekly ____ Monthly ____ Once or twice a year

11. In your role as a governing board member, what information sources do you consult when considering institutional policies. Please select all that apply.

____ Correspondence from Secretary of the Board

____ Correspondence from President of the Institution

____ Correspondence from Provost of the Institution

____ Correspondence from Chief Financial Officer of the Institution

____ Correspondence from Faculty Senate

____ Correspondence from State Higher Education Chancellor

____ Correspondence from State Higher Education Commissions/Councils

____ Reports from State Government Offices

____ National Higher Education Association Reports or Print Materials

____ National Media on Higher Education (e.g. Chronicle, Inside Higher Education)

____ Board meeting materials

____ Local Newspapers

____ Others

Board Decision Making Process

This section focuses on your perception of how the governing board reaches decisions.

12. Please select the process which your governing board most commonly reaches policy decisions

Board members ...

____ are uncommitted to a particular institutional policy decision and adopt the recommendation of the administration.

____ have established opinions on institutional policies and during the board meetings interests are negotiated.

Does this process vary by issue?

____ Yes

____ No

If yes, what issues most commonly do board members have established opinions and require negotiation: _____

13. Consider how your governing board functions. To what extent do you agree with the following statements:

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
Governing board stakeholders have an affect on governing boards decisions.					
The multiple layers of governance state coordinating systems, state higher education commissions, faculty governance impact institutional policies.					
Governing board members' professional backgrounds impact their decisions on the board.					
Governing board members' relationships inform and influence their decisions on the board.					
Differences of opinion in board decisions are more often settled by discussion than by vote					

Governing in a Financial Crisis

In the fall of 2008 the world economic markets entered a period of significant turbulence, a reality that when compounded with a long-term steady decline in state funding for public higher education has intensified the challenges confronting higher education institutions. Often higher education institutions are using both short-term and long-term budget cutting and revenue enhancing strategies. Please reflect on how your board is approaching institutional decision-making during this time of fiscal crisis.

14. During this time of financial crisis, do you believe your governing board is taking more deliberate actions and engaged more actively in decisions because of the implications for the future of the institution.

____ Yes

____ No

15. To what extent do you agree with the following statements:

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
To address the financial crisis the governing board is encouraging the development of specific institutional policies.					
Our board has adequate sources of knowledge to address institutional dilemmas presented by the financial crisis.					
When considering continued declining state appropriations, the board often tries to generate creative approaches or solutions to close budget gaps or manage costs.					
The board consults the faculty when considering cost saving strategies that affect the academic curriculum and degree programs.					
When considering institutional policies to address the financial crisis the board is in alignment with recommendations from the State Higher Education Commission, Council, or Coordinating System.					

Thank you for taking the survey. Your response is very important to my research.

APPENDIX C

Numeric Coding for Social Network Analysis

Role	ID Number
Athletics Director	1
Board Secretary	2
Chief Financial Officer of Institution	3
Deans	4
Executive Assistant to the President	5
Faculty Member	6
Faculty Senate	7
Family/Spouse	8
General Counsel	9
Governor	10
Legislative Office	11
Other	12
President of the Institution	13
Professional Colleague	14
Provost of the Institution	15
State Higher Education Commission/Council	16
State System Chancellor	17
Students	18
Masters I Board Members	116, 127, 136, 132, 135, 134, 119, 133, 118, 109 (Chair), 131
Masters II Board Members	128, 129, 137, 138, 139, 152, 153 (Chair), 154, 168, 169, 170, 171
Research I Board Members	111 (Chair), 112, 113, 117, 120, 122, 123, 145, 146, 147, 148, 149, 150, 151, 155, 156, 157, 168 (member resigned January 2011; 151 was replacement)
Research II Board Members	121, 124, 126, 140, 141, 142, 143 (Chair), 144, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167

REFERENCES

References

Adler, P. & Kwon, S. (2002). Social capital: Prospects for a new concept. *Academy of Management Review*, 27(1): 17–40.

American Association of University Professors (1967). *Statement on government of colleges and universities*.

AGB: *2010 Policies, Practices, and Composition of Higher Education Coordinating Boards and Commissions* (July 2010). Washington, DC: Association of Governing Boards of Universities and Colleges.

AGB: *Effective Governing Boards: A Guide for Members of Governing Boards of Public Colleges, Universities, and Systems* (2010). Washington, DC: Association of Governing Boards of Universities and Colleges.

AGB: *Faculty, Governing Boards, and Institutional Governance* (2009). Washington, DC: Association of Governing Boards of Universities and Colleges.

AGB: *Policy, Practices, and Composition of Governing Boards of Public Colleges, Universities, and Systems* (2010). Washington, DC: Association of Governing Boards of Universities and Colleges.

AGB: *The Report of the AGB Task Force on the State of the Presidency in American Higher Education: The Leadership Imperative* (2006). Washington, DC: Association of Governing Boards of Universities and Colleges.

AGB: *Statement on Board Accountability* (2007). Adopted by the AGB Board of Directors, January 17, 2007. Washington, DC: Association of Governing Boards of Universities and Colleges.

AGB: *Statement on Board Responsibility for Institutional Governance* (2010). Washington, DC: Association of Governing Boards of Universities and Colleges.

AGB: *Strategic Imperatives: New Priorities for Higher Education* (2009). Washington, DC: Association of Governing Boards of Universities and Colleges.

AGB: *Top Public Policy Issues for Higher Education in 2009 and 2010* (August 2009). Washington, DC: Association of Governing Boards of Universities and Colleges.

Alberbach J. & Rockman B. (2002). Conducting and Coding Elite Interviews. *Political Science and Politics 35* (4), 673-676.

Baldridge, J. (1971). *Power and conflict in the university.* New York: JohnWiley.

Baldwin, R., & Leslie, D. (2001). Rethinking the structure of shared governance. *Peer*

Review,3(3), 18-19.

Bastedo, M. N. (2005). The Making of an Activist Governing Board. *The Review of Higher Education* 28.4: 551-570.

Berry, J. (2002). Validity and Reliability Issues In Elite Interviewing. *Political Science and Politics 35* (4), 679-682.

Birnbaum, R. (1988). *How colleges work: The cybernetics of academic organization and leadership.* San Francisco: Jossey-Bass.

Birnbaum, R. (1989). The cybernetic institution: Toward an integration of governance theories. *Higher Education*, 18, 239-253.

Birnbaum, R. (1991a). "The latent organizational functions of the academic senate: Why senates do not work but will not go away." In M. W. Peterson, E. E. Chaffed, & T. H. White (Eds.), *Organization and academic governance in higher education* (4th ed., pp.195-207). Needham Heights, MA: Ginned Press.

Birnbaum, R. (1991b). Faculty in governance: The role of senates and joint committees in academic decision making [Special issue]. *New Directions for Higher Education, 1991*(75).

Birnbaum, R. (2004). The End of Shared Governance: Looking Ahead or Looking Back. *New Directions for Higher Education.* 2004(127), 5-22.

Bonacich, P. (1987). Power and Centrality: A Family of Measures. *American Journal of Sociology,* 92, 1170-1182.

Borgatti, S., & Foster, P. (2003). The network paradigm in organizational research: A review and typology. Journal of Management. 29(6): 991-101

Borgatti, S., & Molina, J. (2003). Ethical and strategic issues in organizational network analysis. *Journal of Applied Behavioral Science* 39(3), 337-349.

Borgatti, S., & Molina, J. (2005). Toward ethical guidelines for network research in organizations. *Social Networks*. 27(2), 107-117.

Borgatti, S., Mehra, A., Brass, D., & Labianca, G. (2009). Network Analysis in the Social Sciences. *Science.* 323 (5916), pp. 892-895.

Borgatti, S., & Carboni, I. (2007). Measuring individual knowledge in organizations. *Organizational Research Methods* 10(3): 449-462.

Borgatti, S., & Cross, R. (2003). A Relational View of Information Seeking and Learning in *Social Networks*. Management Science. 49(4): 432-445

Borgatti, S., Carley, K., & Krackhardt, D. (2006). Robustness of Centrality Measures under Conditions of Imperfect Data. *Social Networks* 28: 124–136.

Bornstein, R. (2010). *Succession Planning for the Higher Education Presidency*. Washington, DC: Association of Governing Boards of Universities and Colleges

Brass, D. J., & Burkhardt, M. E. (1993a). Potential power and power use: An investigation of structure and behavior. *Academy of Management Journal*, 36: 440–470.

Brass, D. J., & Burkhardt, M. E. (1993b). Centrality and power in organizations. In N. Nohria & R. Eccles (Eds.) *Networks and Organizations: Theory and Practice* (pp 191-215). Boston, MA: Harvard Business School Press.

Breiger, R. (2004) "The Analysis of Social Networks." In M. Hardy and A. Bryman (Eds.) *Handbook of Data Analysis*. London: SAGE Publication.

Burt, R. (1976). Positions in networks. *Social Forces,* 55, 93-122.

Burt, R. (1992). *Structural Holes*. Cambridge, MA: Harvard University Press

Burt, R. (2001). Structural holes versus network closure as social capital. In N. Lin, K. S. Cook, & R. S. Burt (Eds.) *Social capital: Theory and research*: 31–56. New York: Aldine de Gruyter.

Burt, R. (2004) "Structural holes and good ideas." *American Journal of Sociology*, 110(2): 349-399.

Burt, R. (2005). *Brokerage and Closure: An Introduction to Social Capital*. Oxford: Oxford University Press.

Butts, C. (2008). Social Network Analysis with sna. *Journal of Statistical Software* 24(6): 1-51.

Center for Higher Education & Policy Analysis. (2004). *Governance structures: A 50 state comparison* [CD-ROM]. (Available from the Center for Higher Education Policy Analysis, Rossier School of Education, the University of Southern California, WPH 701, Los Angeles, CA 90089-0031)

Center for Higher Education & Policy Analysis. (2004). *Selection and appointment of public trustees to public colleges and universities boards* [Policy brief]. (Available from the Center for Higher Education Policy Analysis, Rossier School of Education, the University of Southern California, WPH 701, Los Angeles, CA 90089-0031)

Chaffee, E. (March/April 2010) "The Possibilities of Strategic Finance" *Trusteeship* 2(18).

Chait, R.P., Holland, T.P., & Taylor, B.E. (1991). *The Effective Board of Trustees.* Phoenix: American Council on Education and The Oryx Press.

Chait, R.P., Holland, T.P., & Taylor, B.E. (1996). *Improving the Performance of Governing Boards.* Phoenix: American Council on Education and The Oryx Press.

Christensen, C. & Horn, M. (July/August 2011). Colleges in Crisis. *Harvard Magazine.*

Cohen M. D., & March, J. G. (1986). *Leadership and ambiguity* (2nd ed., 1974 original). Boston, MA: Harvard Business School Press.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, *94*, S95-S120.

Coleman, J. (1990). *Foundations of social theory*. Cambridge, MA: Belknap Press.

Costenbader, E., & Valente, T. (2003). The stability of centrality measures when networks are sampled. *Social Networks* 25, 283-307.

Cross, R., & Parker, A. (2004). *The hidden power of social networks: Understanding how work really gets done in organizations*. Boston: Harvard Business School Press.

Cross, R., Parker, A., & Borgatti, S.P. (2002). Making Invisible Work Visible: Using Social Network Analysis to Support Strategic Collaboration. *California Management Review*. 44(2): 25-46.

Cross, R.L., Parker, A. and Borgatti, S.P. (2000). A birds-eye view: Using social network analysis to improve knowledge creation and sharing. *Knowledge Directions*. 2(1): 48-61.

Crowell, L. (2004). Weak ties: a mechanism for helping women expand their social networks and increase their capital. *The Social Science Journal* 41: 15-28

Darling-Hammond, L. & McLaughlin, M. W. (1995, April). Policies that support professional development in an era of reform. *Phi Delta Kappan,* 76(8): 597-604

Davis, G. F., & Greve, H. R. 1997. Corporate elite networks and governance changes in the 1980s. *American Journal of Sociology*, 103(1): 1–37.

Del Favero, M. (2003). Faculty-Administrator Relationships as Integral to High-Performing Governance Systems: New Frameworks for Study. *American Behavioral Scientist*. 46(7), 902-922.

Dill, D. D., & Helm, K. P. (1988). Faculty participation in policy making. In J. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 4). New York: Agathon.

Doreian, P. (1974). On the connectivity of social networks. *Journal of Mathematical Sociology*. 3: 245-258.

Dressel, P. L. (1980). *The autonomy of public colleges. New Direction for Institutional Research: No. 26*. San Francisco: Jossey-Bass.

Eckel, P.D. (2000). The role of shared governance in institutional hard decisions: Enabler or antagonist? *Review of Higher Education*, 24: 15-39.

Fairweather, J. (November, 2009). "The Effect of the Global Financial Crisis on Academic Systems and Individual Universities." 2009 Beijing Forum. Beijing, China.

Fairweather, J. (2006) *Higher Education and the New Economy: Who Pays, Who Benefits?* East Lansing, MI: Educational Policy Center, Michigan State University.

Fernandez, R. M., Castilla, E. J., & Moore, P. (2000). Social capital at work: Networks and employment at a phone center. *American Journal of Sociology*, 105(5): 1288–1356.

Finkelstein, M. J. (1982) *Faculty colleagueship patterns and research productivity.* Paper presented an annual meeting of the American Educational Research Association. New York, NY.

Finsen, L. (2002) Faculty as Institutional Citizens: Reconceiving Service and Governance Work. In W.G. Berberet and L. A. McMillin (eds.), A New Academic Compact: Revisioning the Relationship between Faculty and their Institutions. Bolton: Anker.

Frank, K. A. (1998). Chapter 5: Quantitative Methods for Studying Social Context in Multilevels and Through Interpersonal Relations. *Review of Research in Education.* 23:171

Frank, K.A. (2005). "Teacher Networks" Entry for Encyclopedia of Schools. Ed. Kathryn Borman.

Frank, K.A. (1996). Mapping interactions within and between cohesive subgroups. *Social Networks* 18: 93-119.

Frank, K.A., & Fahrbach, K. (1999). Organization Culture as a Complex System: Balance and Information in Models of Influence and Selection. *Organization Science* 10(3), 253-277.

Frank, K. A., Krause, A., & Penuel, W. R. (2010). Knowledge flow and organizational change. Michigan State University and SRI International.

Frank, K.A., Zhao, & Borman, (2004). Social Capital and the Diffusion of Innovations Within Organizations: The Case of Computer Technology in Schools. *Sociology of Education*

77(2)*, 148-171.*

Freeman, L. (1979). Centrality in social networks: Conceptual clarification. *Social Networks* 1: 215-39.

Freeman, L. (2000). Visualizing Social Networks. *Journal of Social Structure* 1(1).

Freeman, L. (2004). *The Development of Social Network Analysis: A Study in the Sociology of Science*. Empirical Press of Vancouver, BC, Canada.

Friedkin, N. (1983). Horizons of Observability and Limits of Informal Control in Organizations, *Social Forces* 62:1. The University of North Carolina Press.

Fries-Britt, S. (2000). Developing support networks and seeking answers to questions. In M. Garcia (Ed.) *Succeeding in an academic career: A guide for faculty of color* (pp. 39-56). Westport, CT: Greenwood.

Gargiulo, M., & Benassi, M. (1999). The dark side of social capital. In S. Gabbay & R. Leenders (Eds.), *Social capital and liability*: 298–322. Norwell, MA: Kluwer.

Gayle, D.J., Tewarie, B., & White, A.Q. (2003). Governance in the Twenty-First Century University: Approaches to Effective Leadership & Strategic Management. In ASHE-ERIC Higher Education Report, 30(1).

Gerstick, C., Bartunek, J., Dutton, J. (2000). Learing from academia: The importance of relationships in professional life. *The Academy of Management Journal, 43(6),* 1026-1044.

Gladieox, L., King, L., & Corrigan, M. (2005). The Federal Government and Higher Education. In P. G. Altbach, R. O. Berdahl & P. J. Gumport (Eds.), *American higher education in the twenty-first century* (pp. 163-197). Baltimore: The Johns Hopkins University Press.

Gladwell, M. (2000). *The Tipping Point: How Little Things Can Make a Big Difference.* NY: Little, Brown & Company.

Goldstein, K. (2002). Getting in the Door: Sampling and Completing Elite Interviews. *Political Science and Politics 35* (4), 669-672.

Gulati, R., & Westphal, J. D. (1999). Cooperative or controlling? The effects of CEO-board relations and the content of interlocks on the formation of joint ventures. *Administrative Science Quarterly*, 44(3): 473–506.

Granovetter, M. (1973). The Strength of Weak Ties. *American Journal of Sociology* Vol. 78, No. 6, pp. 1360-1380

Granovetter, M. (1978). Threshold Models of Collective Behavior. *The American Journal of*

Sociology, Vol. 83, No. 6., pp. 1420-1443

Hamilton, N.W. (2004). Faculty Involvement in System-wide Governance. In W.G. Tierney (ed.), *Competing Conceptions of Academic Governance: Negotiation the Perfect Storm,* Baltimore: The Johns Hopkins University Press.

Hamilton, N.W. (2009). "Proactively Justifying the Academic Profession's Social Contract." In N.W. Hamilton and J.G. Gaff, *The Future of the Professoriate: Academic Freedom, Peer Review, and Shared Governance.* Washington, DC: AAC&U.

Handy, C. (2002). Elephants and fleas: Is your organization prepared for change? *Leader to Leader*, *24*, 1-5.

Hanneman, R. A. and Riddle, M. (2005). Introduction to social network methods. Riverside, CA: University of California, Riverside (published in digital form at http://faculty.ucr.edu/~hanneman/)

Hansen, D., Shneiderman, B., & Smith, M. (2011). *Analyzing Social Media Networks with NodeXL: Insights from a Connected World.* Burlington, MA: Morgan Kaufmann.

Haunschild, P. R., & Beckman, C. M. (1998). When do interlocks matter?: Alternate sources of information and interlock influence. *Administrative Science Quarterly,* 43(4), 815-844.

Hatala, J.P. (2006). Social Network Analysis in Human Resource Development: A New Methodology. *Human Resource Development Review*. 5(1): 45-71

Hearn, J. C., & Griswold, C. P. (1997). State-level centralization and policy innovation in U.S. postsecondary education. In B. A. Jones (Series Ed.) & L. F. Goodchild, C. D. Lovell, E. R. Hines, & J. I. Gill (Eds.), *Public policy and higher education: ASHE reader series* (pp. 421–452), Boston, MA: Pearson Custom Publishing.

Hill, B., Green, M. & Eckel, P. (2001). On Change IV: What Governing Boards Need to Know and Do about Institutional Change. Washington, DC: American Council on Education.

Hitchcock, M., Bland, C., Hekelman, F., & Blumenthal, M. (1995). Professional networks: The influence of colleagues on the academic success of faculty. *Academic Medicine,* 70(12), 1108-16.

Huisman, M. & van Duijin, M. A. J. (2005). Software for Social Network Analysis. In P. Carrington, J. Scott, and S. Wasserman (Eds.), *Models and Methods in Social Network Analysis*. New York: Cambridge University Press.

Johnston, S.W. (2003). Faculty Governance and Effective Academic Administrative Leadership. In S.L. Hoppe & B.W. Speck (Eds.) & M. Kramer & J. B. McLaughlin (Vol. Eds), *New Directions for Higher Education: No.124.* Identifying and Preparing

Academic Leaders (pp. 57-63). San Francisco: Jossey-Bass.

Kadushin, C. (2005). Who benefits from network analysis: ethics of social network research. *Social Networks* 27(2), 139-153.

Kaplan, G. (2004). Do Governance Structures Matter? *New Directions for Higher Education.* No. 127, 23-34.

Keller, (2009). *Coping Strategies of Public Universities During The Economic Recession of 2009: Results of a Survey on the Impact of the Financial Crisis on University Campuses.* Washington, DC: American Public-Land Grant Universities

Kerr, C., & Gade, M. (1989). *The guardians. Boards of trustees of American colleges and universities: What they do and how well they do it.* Washington, DC: Association of Governing Boards of Universities & Colleges.

Kezar, A. (2004). What is More Important to Effective Governance: Relationships, Trust, and Leadership, or Structures and Formal Processes? *New Directions for Higher Education.* 2004(127), 35-46.

Kezar, A. (2006). Rethinking public higher education governing boards performance: Results of a national study of governing boards in the United States. *Journal of Higher Education, 77*, 968-1008

Kezar, A., & Eckel, P. D. (2004). Meeting Today's Governance Challenges: A Synthesis of the Literature and Examination of a Future Agenda for Scholarship. *Journal of Higher Education*, *75*(4), 371.

Klovdahl, A. (2005). Social network research and human subject protections: Towards more effective infectious disease control. *Social Networks* 27(2), 119-137.

Kraatz, M. (1998). Learning by Association? Interorganizational Networks and Adaption to Environmental Change. *The Academy of Management Journal* 41(6), 621-643.

Krackhardt, D., & Porter, L. W. (1985). When friends leave: A structural analysis of the relationship between turnover and stayer's attitudes. *Administrative Science Quarterly*, 30: 242–261.

Laumann, E., Marsden, P., & Prensky, D. (1992). The Boundary Specification Problem in Network Analysis. In L.C. Freeman, D.R. White, A.K. Kimball (Eds.) *Research Methods in Social Network Analysis*. (pp. 61-89). New Brunswick, NJ: Transaction Publishers.

Leahey, E. (2007). Not by productivity alonge: How visibility and specialization contribute to academic earnings. *American Sociological Review* (72), 533-561.

Lin, N. (2001). *Social capital: A theory of social structure and action*. Cambridge: Cambridge University Press.

Lin, N, Ensel, W., & Vaughn, J. (1981). Social Resources and Strength of Ties: Structural Factors in Occupational Status Attainment. *American Sociological Review*. Vol. 46, No. 4, pp. 393-405

Lingenfelter, P. (2004). The State and Higher Education: An Essential Partnership. Ne*w Directions for Higher Education.* No. 127.

Long, K. (2010). *Private Colleges and Universities Financial Conditions Survey Conditions Survey*. Washington: DC: Association of Governing Boards of Universities and Colleges.

Longin, T. C. (2002). Institutional Governance: A Call for Collaborative Decision Making in American Higher Education. In W. G. Berberet and L. A. McMillin (Eds.), *A New Academic Compact: Revisioning the Relationship Between Faculty and their Institutions*. Bolton: Anker.

MacTaggart, T. & Mingle, J. (2002). *Pursing the Public's Agenda: Trustees in Partnership with State Leaders.* Washington, DC: Association of Governing Boards of Universities and Colleges.

Marsden, P. (1990). Network Data and Measurement. *Annual Review of Sociology* Vol. 16, 435-463.

Marsden, P. (1993). The reliability of network density and composition measures. *Social Networks*, 15(4), 399-432.

Marin, A. & Wellman, B. (2010). *Social Network Analysis: An Introduction* In P. Carrington and J. Scott (Eds.) Handbook of Social Network Analysis. London: Sage.

McDowell, J., & Smith, J. (1992). The effect of gender-sorting on propensity to coauthor: Implications for academic promotion. *Economic Inquiry,* 30(1), 68-82.

McGuinness, A. (1988). *State postsecondary education structures handbook. 1988.* Denver, CO: Education Commission of the States.

McGuinness, A. (1997). *State postsecondary education structures sourcebook*. Boulder, CO: National Center for Higher Education Management Systems.

McGuinness, A. (2003). *Models of postsecondary education coordination and governance in the states*. Denver, CO: Education Commission of the States. Available at: http://www.ecs.org/clearinghouse/34/23/3423.pdf

McGuinness, A. (2005). The States and Higher Education. In P. G. Altbach, R. O. Berdahl & P.

J. Gumport (Eds.), *American higher education in the twenty-first century* (pp. 198-225). Baltimore: The Johns Hopkins University Press.

McGrath, E.J. (1970). *Should students share the power? A study of their role in college and university governance.* Philadelphia: Temple University Press.

Miles, M. B., & Huberman, A.M. (1994). *Qualitative data analysis: A sourcebook of new methods* (2nd ed.). Beverly Hills, CA: Sage.

Milgram, S. (1967). The small world problem. *Psychology Today* 22:61—67.

Millard, R. M. (1980). Power of state coordinating agencies. In P. Jedamus & W. M. Peterson (Eds.), *Improving academic management. A handbook of institutional planning and research* (pp. 65-95). San Francisco: Jossey-Bass.

Miller, M. & Nadler, D.P. (Eds.) (2006). *Student Governance and Institutional Policy: Formation and Implementation.* Greenwich, CT: Information Age Publishing.

Millett, J. D. (1975). State coordinating boards and statewide governing boards. In R.O. Berdahl (Ed.), *Improving academic management: A handbook of institutional planning and research* (pp. 65—95). San Francisco: Jossey-Bass.

Mingle, J. (2005). *The Case for Coordinated Systems Of Higher Education***.** SHEEO Report (originally published 1995).

Minor, J.T. (2008). The relationship between selection processes of public trustees and state higher education performance. *Educational Policy*, 22 (6) pp. 830-853.

Minor, J.T. (2006). A case of complex governance: A structural analysis of university decision-making. *Journal of the Professoriate.* Number 2, pp. 22-37

Mintzberg, H. (1979). *The Professional Bureaucracy*. Englewood, NJ: Prentice-Hall.

Mizruchi, M. S. (1996). What do interlocks do: An analysis, critique, and assessment of research on interlocking directorates. *Annual Review of Sociology, 22,* 271-298.

Morphew, C.C. (1999). Challenges Facing Shared Governance Within the College. *New Directions for Higher Education.* No. 105, 71-79.

Morrill, R. (2010). *Assessing Presidential Effectiveness*. Washington, DC: Association of Governing Boards of Universities and Colleges

Morrison, G. & Merrill, D. (July/August 2009). Getting By Isn't Good Enough for Higher Education. *Trusteeship* 4 (17).

Mortimer, K. (1971). The dilemmas in new campus governance structures. *Journal of Higher Education, 42*, 467-483.

Mortimer, K. & McConnell, T. (1979). *Sharing authority effectively*. San Francisco: Jossey-Bass.

Mortimer, K. & Sathre C. (2006). Be Mission Centered, Market Smart, and Politically Savvy: The Art of Governance. In W.G. Tierney (Ed.), *Governance and the Public Good* (pp.73-95). Albany: State University of New York Press.

Mortimer, K. & Sathre, C. (2007). "The World is Changing Faster than the Governance Structure," pp. 1-20 and "In Defense of Shared Governance," pp. 111-128. The Art and Politics of Academic Governance, Westport, CT: ACE/Praeger.

NACUBO/NCSE (2010). Commonfund Study of Endowments. Available online at http://www.nacubo.org/

NCSL: State Budget Update (July 2009). Available online at http://www.ncsl.org/

NGA: National Governors Meeting Fiscal Survey of States (Fall 2010). Available online at http://nasbo.org/

NGA: National Governors Meeting Fiscal Survey of States (2009). Available online at http://nasbo.org/

National Center for Public Policy and Higher Education (2003). *College Affordability in Jeopardy: A Special Supplement to National Crosstalk.* Available online at: http://www.highereducation.org/reports

Novak, R. (2010). *State Governance Action Report 2010: An Early Reading of the States.* Washington, DC: Association of Governing Boards of Universities and Colleges.

O'Leary, V., & Mitchell, J. (1990). Women connecting with women: Networks and mentors. In S. S. Lie & V.E. O'Leary (Eds.) *Storming the tower: Women in the academic world* (pp. 58-73). New York: Nichols/GP

Pastor, J.C., Meindl, J. R., & Mayo, M. C. (2002). A network effects model of charisma attributions. *Academy of Management Journal*, 45(2): 410–420.

Patton, M. Q. (2002). *Qualitative evaluation and research methods* (3rd Ed.). Newbury Park, CA: Sage Publications.

Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective.* New York: Harper & Row.

Pope, M. L. (2004). A Conceptual Framework of Faculty Trust and Participation in Governance. *New Directions for Higher Education.* No. 127, 75-84.

Portes, A. (1998). Social Capital: Its Origins and Applications in Modern Sociology *Annual Review of Sociology* Vol. 24, 1-24.

Portes, A., & Landolt, P. (1996). The downside of social capital. *The American Prospectives*, 94: 18–21.

Pusser, B. (2003). Beyond *Baldridge:* Extending the political model of higher education governance. *Education Policy*, 17(1), 121-140.

Pusser, B., Slaugher, S. & Thomas, S. (2006). Playing the Board Game: An Empirical Analysis of University Trustee and Corporate Board Interlocks. *The Journal of Higher Education* 77(5), pp. 747-775

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon & Schuster.

Rawlings, C., & McFarland, D (2010). The Ties that Influence: How Social Networks Channel Faculty Grant Productivity. *Social Science Research*.

Renzulli, L. A., Aldrich, H., & Moody, J. (2000). Family matters: Gender, networks, and entrepreneurial outcomes. *Social Forces*, 79(2): 523–546.

Roger, E. (1995). *Diffusion of Innovation (4th Edition).* New York: The Free Press.

Seibert, S. E., Kraimer, M. L., & Liden, R. C. (2001). A social capital theory of career success. *Academy of Management Journal*, 44(2): 219–247.

Seidel, M. L., Polzer, J. T., & Stewart, K. J. (2000). Friends in high places: The effects of social networks on discrimination in salary negotiations. *Administrative Science Quarterly*, 45: 1–24.

Scott, J. (2000). *Social Network Analysis: A Handbook (2nd Edition).* London: Sage Publications.

Sparrowe, R. T., Liden, R. C., Wayne, S. J., & Kraimer, M. L. (2001). Social networks and the performance of individuals and groups. *Academy of Management Journal*, 44(2): 316–325.

Stephens, N. (2007). Collecting data from elites and ultra elites: telephone and face-to-face interviews with macroeconomists. *Qualitative Research 7*(2), 203-216

Tsai, W. (2001). Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. *Academy*

of Management Journal, 44(5): 996–1004.

Thelin, J.R. (2004). *A History of American Higher Education,* Baltimore: The John Hopkins University Press.

Tierney, W.G. (Ed.). (2004a). *Competing Conceptions of Academic Governance: Negotiating the Perfect Storm*. Baltimore, MD: Johns Hopkins University Press.

Tierney, W.G. (2004b). "A Cultural Analysis of Shared Governance: The Challenges Ahead. In J. Smart (ed.), *Higher Education: Handbook of Theory and Research* (Vol. 19). Norwell: Kluwer Academic Publishers.

Tierney, W. G. & Lechuga, V. (Eds.) (2004). Exploring Current Issues on Shared Governance. M. Kramer & J.B. McLaughlin (Vol. Eds.), *New Directions for Higher Education: No. 127, Restructuring Shared Governance in Higher Education.* San Francisco: Jossey-Bass.

Tierney, W.G. & Minor, J.T. (2004). A Cultural Perspective on Communication and Governance. *New Directions for Higher Education.* 2004(127), 85-94.

Turner, J.H. (1991). *The Structure of Sociological Theory,* 5th Ed. Belmont, CA: Wadsworth.

Useem, M. (1984). *The inner circle.* Cambridge: Oxford University Press.

Wasserman, S., & Faust, K. (1994). Social networks analysis: Methods and applications. New York: Cambridge University.

Weerts, D. & Ronca, J. (2006). Examining Differences in State Support for Higher Education: A comparative Study of State Appropriations for Research I Universities. *The Journal of Higher Education* Vol. 77 No 6, pp. 935-967.

Wellman, B. (1988). "Structural Analysis: From method and metaphor to theory and substance." In B. Wellman and S.D. Berkowitz (Eds.) *Social Structures: A Network Approach.* Cambridge: Cambridge University Press.

Wellman, J. (2002). *Weathering the Double Whammy Double Whammy: How governing boards can negotiate a volatile economy and shifting enrollments.* Washington, DC: Association of Governing Boards.

Wellman, J. (2009). 2009 ASHE National Conference. Delta Project Presentation.

White, H. (1992). *Identity and Control: A Structural Theory of Social Action.* Princeton, NJ: Princeton University Press.

Zimpher, N. (2010). "System Governance: Challenges for the Future" AGB National

Conference on Trusteeship. Orlando, FL.

Zumeta, W. (2006). The new finance of public higher education. In *The NEA 2006 almanac of higher education,* ed. H. Wechsler (pp. 37-48). Washington, DC: National Education Association.