This article identifies and describes the development of three parallel streams of literature about network theory and research: social network analysis, policy change and political science networks, and public management networks. Noting that these traditions have sometimes been inattentive to each other’s work, the authors illustrate the similarities and differences in the underlying theoretical assumptions, types of research questions addressed, and research methods typically employed by the three traditions. The authors draw especially on the social network analysis (sociological) tradition to provide theoretical and research insights for those who focus primarily on public management networks. The article concludes with recommendations for advancing current scholarship on public management networks.

The popular and academic literature that uses networks as a theoretical framework for research has exploded in recent years. However, the conceptual frameworks and key terms employed across the literature have created a complex and often confusing picture. Restricting our focus to sociology, political science, and public administration/public management, we have identified three major streams or traditions of network research, which can be labeled as (1)
social network analysis, (2) policy change and the impact of networks on policy outcomes (political science), and (3) public management networks. Each of the three traditions has been active for more than two decades, with the sociological work dating back to the 1930s, the political science literature to the early 1970s, and the public management research to the mid-1980s. Each has contributed important insights and fertile frameworks to the disciplines in which they are grounded. We argue, however, that until the last few years, there has been relatively little cross-fertilization across the research traditions, and it is often unclear whether authors in each research stream have intentionally disregarded or are simply unaware of the complementary research streams. In our view, this lack of interdisciplinary dialogue contributes to the confusion we describe. This criticism, of course, does not apply to all scholars developing network research, and one can argue that the purpose of network research differs enough so that methods and considerations from different fields do not need to be incorporated into each study. Our purpose here is to promote understanding and communication across the fields of study—not to judge whether the development of the fields has been adequate.

This article lays out the key intellectual developments of these research streams by briefly reviewing the literature and then comparing the streams on three dimensions—their assumptions about human motivation, their research methods, and their principal research questions. With regard to the public management stream, we also identify research questions that may offer future potential because our tradition has generally neglected them. We conclude with a series of recommendations on how research on public management networks can incorporate ideas from other traditions to sharpen its network research and understanding.

A Synopsis of the Three Intellectual Traditions

Networks in the Sociological Tradition (Social Network Analysis)

The sociological tradition of network studies can be seen as developing from three foundational streams: the sociometric studies rooted in Gestalt psychology, the Manchester anthropologists, and the Harvard structuralists.

Sociometry. Although Elton Mayo and his colleagues in the Hawthorne studies first used network configurations to analyze social behavior, most current social network analysis descends from the sociometric models, steeped in Gestalt psychology, that Jacob Moreno (1934) developed in the 1930s. His method used the sociogram—representing groups as collections of points connected by lines—to diagram relationship networks among people and to identify patterns of interaction, cliques, and small group dynamics. It gave rise to a structural orientation in the study of social networks that persists to the present day.

A separate branch of Gestalt psychology addressed questions about how the quality and intensity of interactions affect group relations. Cartwright and Harary (1956), for example, showed that links between individuals could be given positive or negative signs (indicating positive and negative relations) and directional arrowheads. Thus, relations within triads can be shown as either balanced or unbalanced, and researchers can then identify elements of the structure where strain is most likely to lead to changes in relationships. Using triads as the building blocks, their contribution made it possible to model larger networks in which, for example, conflict exists between subgroups while consensus exists within each of the subgroups.

The Manchester Anthropologists. Although the Manchester group consisted of a variety of scholars working over two decades, we focus on the work of Clyde Mitchell (1969) and Siegfried Nadel (1957). Nadel (1957) believed it is necessary to identify and distinguish both the forms, or structures, of relations and the social or cultural contents they convey. He presumed that “role” should be seen as the central concept in sociological theory. In this view, social structures are structures of roles, and roles, together with their role sets—that is, the combinations of actors who comprise an individual’s various and sometimes contradictory role partners—are defined through networks of interdependent activities. Roles are defined, however, not only by structural relationships—that is, the particulars of who speaks to whom or who influences whom—but also by embedded context and institutionalized expectations, often local and particularistic. A particular role relationship may have to do with authority, influence, information, marriage, kinship, friendship, economic exchange, or a host of other contextual meanings, and no role exists without a contextual definition of this sort. As important as this insight is, it has largely been neglected by network analysts because it implies an irreducible paradox (called Nadel’s paradox). That is, while structural modeling draws on standardized mathematical methods and allows generalizable comparisons among network structures, each particular role is defined by local expectations and understandings that make it fundamentally incomparable to others.

Mitchell (1969) developed two approaches by which researchers can identify network structures in the abstract. The first approach centers networks around a particular individual, which he called the “ego-centered” approach. In the second approach, which emphasizes the network’s content or meaning, we label the network with abstractions that describe particular modes of social activity, such
as political interaction, kinship, marital ties, friendship, or work activities. Mitchell (1969) created a number of useful measures regarding the quality of dyadic relations, including reciprocity, intensity, and durability, to study partial networks. He also devised a set of concepts relating to macro features of the network, including density (the proportion of all possible ties that are, in fact, connected), reachability (roughly the total number of steps required for total diffusion of information to occur within the network), and cliques and clusters (measures that capture network subgroups).

The Harvard Structuralists. In the late 1960s, Harrison White and his students at Harvard began to resurrect lessons from the Hawthorne studies together with the earlier work of Moreno and the later Gestalt social psychologists, which produced major advances in the quantitative analysis of network configurations. Their approach to modeling and measuring social roles mathematically, called blockmodeling, provided a foundation that contemporary network analysts continue to use. In blockmodeling, groups of actors are clustered together in increasingly homogenous blocks by an iterative succession of Pearson product-moment correlations from the columns of an adjacency matrix. The blocks of individuals identified through this process are said to be structurally equivalent—that is, they are relatively similar to each other in their relations to all others in the network.

Before the late 1960s, the study of networks among American sociologists was preoccupied with the question of power and the ways in which power is attained or denied through interactions. This orientation came from theoretical and empirical studies in the 1950s by political scientists and sociologists such as Floyd Hunter (1953), C. Wright Mills (1956), Ralf Dahrendorf (1959), and Robert Dahl (1961). The work of the Harvard structuralists, therefore, opened the promise of rigorous, generalizable methods to a body of work that had been largely dependent on the strength of theoretical development and case studies of individual communities.

Mark Granovetter’s research provided an additional theoretical boost to the study of social networks. Granovetter’s early writing (1973, 1974) looked at the role of informal ties in individuals’ employment prospects. This work advanced a theory of information diffusion and communication across networks that helped to explain their importance. According to Granovetter, the information that passes through a network depends on the strategic goals of individuals within the network and their gatekeeping positions within the network. Moreover, his weak-tie thesis demonstrated how individuals in these critical boundary-spanning roles help to connect groups within a society that might otherwise be isolated from each other because of their members’ tendency to enforce group norms and loyalties. The strength metaphor, therefore, refers both to the influence that these boundary-spanning individuals have and to their importance in holding together the diverse structural groups of a society.

Following Granovetter, Linton Freeman (1979) examined the role of an individual’s position in a network on his or her power and outcomes within the network. The positional measures of individual centrality that he developed continue to be used by contemporary network analysts. In addition, four subsequent bodies of network research owe much to the theory and methods created by the Harvard structuralists: community power studies, especially from Edward Laumann, Franz Papi, and their colleagues (Laumann and Papi 1976; Laumann, Marsden, and Galaskiewicz 1977; Galaskiewicz 1979); interlocking boards of directors (Mariolis 1975; Mizruchi 1982; Burt 1982); the “structural hole” thesis and the contingent value of managers’ access to social capital (Burt 1992, 1997); and dynamic networks and dynamic-network modeling (Topper and Carley 1999; Carley, Lee, and Krackhardt 2001; Carley 2002).

Networks in the Political Science Tradition

Three streams of research in American political science have advanced the examination of networks in policy change and implementation. One stream concerns policy innovation; a second stream addresses policy change and agenda setting; and a third stream employs neo-institutional economic theory to assess how networks affect collective action and policy outcomes.

Policy Innovation. Some of the earliest writings in political science referring to policy networks date from the research on policy change, innovation, and agenda setting. Walker’s (1969) work assessed which states are most innovative, considered how states learn about policy innovations, and used networks to describe the regional and national networks that promote policy innovation diffusion.

A fertile line of policy innovation and diffusion research developed during the 1990s. Berry and Berry (1990, 1992) test internal determinants and diffusion theories in an integrated longitudinal model using event history analysis. Mintrom’s work (2000; Mintrom and Vergari 1998) examines states’ school-choice policy, defining internal networks (state policy insiders) and external networks (regional and national) and finding that different networks affect the consideration and adoption of school-choice laws. Mintrom (2000) frames the integration of the new institutionalism literature (which suggests that institutional structures affect behavior) and incorporates the sociological view that individuals are embedded in sets of social relationships that influence their behavior and choices.

Policy Change and Agenda Setting. A second line of political science research grew out of the research on in-
terest groups and community power (Hunter 1953; Dahl 1961), which is anchored by Heclo’s (1978) work and describes “issue networks” as loose groups of Washington insiders, academics, think tank policy experts, and media writers who influence policy based on program or functional areas. From this branch of research has evolved the important work on agenda setting and policy development, including the policy streams work of Kingdon (1984), the punctuated equilibrium model of Baumgartner and Jones (1993), and the advocacy-coalition framework developed by Sabatier and Jenkins-Smith (1993, 1999). Policy networks in these works are communication networks among (1) association and interest group members, (2) policy specialists, and (3) elected officials and their staff who have specific policy interests and actively influence the policy process. These explicit networks, however, are generally illustrated through case studies and are not captured in broader empirical studies.

**Neo-Institutional Economics.** Although Mintrom and Vergari (1998) import sociological ideas into their analysis of individual communication, public policy research still rarely uses a behavioral approach to build policy-related networks. A third stream of political science policy network research has its lineage in Ostrom’s institutional-rational analysis (1972, 1990) and North’s (1990) and Williamson’s (1975, 1981) transaction-cost frameworks. Schneider, Teske, and Mintrom (1995) see networks as a way to increase the supply of entrepreneurs by reducing the costs of entrepreneurship and to assess whether differences in organizational structure and networks affect the number of entrepreneurs in local governments.

The most current theoretical and empirical efforts seek to expand the policy network approach from the adoption level to the collaborative behavior exhibited in policy networks. Scholz, Lubell, Schneider, and associates have produced several important articles that empirically assess network forms of organizations on collective-action problems (Lubell et al. 2002; Schneider et al. 2003). These scholars assume there are always collective-action constraints for organizations to achieve cooperative relationships in managing local common resources. Researchers of regional governance networks view local network partnerships as political contracts developed by actors seeking to minimize the first-order collective-action problems associated with the use of local common resources. These researchers assume that networks can stimulate collaboration and cooperation through information and reputation effects that encourage the development of common perspectives on environmental policy issues and norms of cooperation and trust. In this approach, the researchers ease the boundaries of a specified network and map a wide range of actors, encompassing both formal and informal links that include exchange or reciprocal relations, common interests, and bonds of shared beliefs and professional perspectives. In more concrete terms, multi-actor partnerships emerge through interagency cooperation, intergovernmental program management structures, complex contracting arrays, and public and private partnerships. Local networks are treated as public goods that are undersupplied because of the cost of creating and maintaining networks. However, the flow of network benefits to individual participants and the policy community are constrained by the costs of developing and maintaining contracts, which the contract perspective refers to as “transaction costs.” From the contractual perspective, network partnerships are most likely to emerge when potential benefits are high and the transaction costs of developing negotiating, monitoring, and enforcing the political contracts are low. In related but separate work, O’Toole (1997b) also examines how individuals and organizations working in networks can develop stable and preferable outcomes sufficient to overcome the difficulties of implementing innovations through networks of independent actors, and he suggests ways to reduce transaction costs.

**Networks in the Public Management Tradition**

**Identifying Public Management Networks and Network Management Behavior.** Research on network management and network structures in public management is relatively newer than either sociological or public policy network research, and it has grown primarily out of research in intergovernmental relations. Networking was first identified and assessed for policy management and governance in rural development and regional councils (Gage 1984); later, intergovernmental scholars saw networking more as a method of management to incorporate the complex horizontal and vertical relationships necessary to deliver intergovernmental programs effectively (Gage and Mandell 1990; Agranoff 1986). By the late 1980s, academics were writing studies on intergovernmental management (Agranoff 1986), examining the success of federal policy implementation (Peterson, Rabe, and Wong 1986), and defining typologies and characteristics of networks specifically (Gage and Mandell 1990), all based on field work and in-depth case studies. Networks and the individuals in them are studied in public management to understand (1) whether networks exist and how they function (Mandell 1988; Scharpf 1978); (2) how people function in networks as managers, that is, what skills and managerial techniques are used in diverse types of networks compared to hierarchical organizations (Gage and Mandell 1990; Agranoff and McGuire 2001); and (3) what impact networks have on decision making, policy outputs and outcomes, and democratic values of governance (Provan and Milward 1995; Agranoff and McGuire 2003). By the mid-1990s, network research had become evident in prestigious journals in the public administration.
field. Fueled especially by concern over government re-invention and the hollowing out of the state (with more workers on private and nonprofit payrolls to actually deliver services), scholars in the United States produced a variety of articles and books that focus on managing the networks that have become increasingly important delivery systems for public services (Agranoff and McGuire 1998; O’Toole 1997a; Provan and Milward 1991, 1995, 2001). Meanwhile, a parallel literature developed in Europe (Kickert, Klijn, and Koppenjan 1997; Mayntz 1993; Marsh and Rhodes 1992).

**Network Performance and Outcomes.** In a field geared toward instrumental concerns, researchers considered important performance questions, such as how particular characteristics of public management networks affect relationships with management outcomes and policy performance. Provan and Milward (1991) argue that the idea of a service-implementation network is closely tied to the notion of implementation structure, and institutional-level factors, such as professional norms in the form of a treatment philosophy for human services clients, are positively related to favoring network involvement. Their model of network effectiveness includes elements of the network structure and context. In a subsequent study of four cities’ community mental health programs (1995), they demonstrate how interorganizational networks centralized around a primary coordinating agency—which they call a network administrative organization—produce better outcomes for the system’s mental health clients than systems with more diffuse network structures. Later, Provan and Milward (2001) argue that highly dense and centralized networks work well in public service delivery if environmental and institutional norms support cooperation and collaboration among participants in the network.

Also highlighting the structural features of local economic development networks, Agranoff and McGuire (1998) argue that the density of networking in local economic development departments is positively related to the adoption of economic development policy. In another piece, Agranoff and McGuire (2001) suggest a series of important questions in public management network research, including identifying for network management the possible critical functional equivalents to traditional management processes and the cohesive elements that hold networks together. They offer initial answers based on an extensive review of existing research and their own lengthy fieldwork in economic development, community services, and social services networks. Their recent book, Collaborative Public Management (2003), summarizes their work on economic development networks over the past decade, answering how networks are managed and describing the links among players, strategies used by networks, and policy instruments adopted to promote economic development.

In response to earlier works, which presumed a relatively simple and linear relationship between network configurations and service-delivery performance, O’Toole and Meier (1999) posit an interactive, nonlinear approach that reflects complex depictions of public management and its influences. In their examination of public management networks and education program performance, Meier and O’Toole find that “performance improves in districts where superintendents engage in more network interactions, even if one controls for a variety of factors that affect this performance….” (2001, 291). An article two years later analyzes educational performance over five years in more than 500 U.S. school districts and notes that the results “consistently show network-managerial impact on the most salient performance measure in Texas, whether in linear or nonlinear specifications” (Meier and O’Toole 2003, 697). Thus, their work demonstrates in testable, large-N studies that network management makes a difference to organizational and policy outcomes.

**Comparing the Three Traditions: Assumptions, Methods, and Research Questions**

From the three research traditions, we chose three dimensions to compare across the streams: their assumptions about human behavior, their research methods in use, and their typical research questions (see table 1). We conclude this section with a discussion of questions that have been neglected in the public management literature and that may offer fertile ground for future public management network scholars.

**Assumptions about Human Behavior**

**Social Network Analysis.** Sociologists provide a variety of answers about the motivations of participants in social networks. In general, they prefer to describe individuals as having intentions rather than motivations. In their view, the notion of motivation presumes that goal-directed action springs from within the individual, reducing the individual to an atomized actor stripped of all social contextual influences. While they do not deny that individuals can be efficacious, sociologists tend to emphasize how socialization and social context provide norms, ideas, and structures that both facilitate and constrain the range of behaviors that individuals exhibit, while also shaping the ways that behaviors are received by the environment.

Although sociologists may not universally subscribe to his view, Mark Granovetter’s embeddedness thesis (1985) is a mainstream sociological account of the relationship between action and context. Writing in response to Williamson’s (1975, 1981) transaction-cost theory,
Granovetter proposes that human behavior arises from a variety of contextual influences, and individuals’ actions pursue a range of intentions that include political influence, prestige, affection and attachment, kinship and familial obligation, personal identity, emotion, and economic well-being. The neo-economic institutional approach, in contrast, tends to atomize the individual and reduces him or her to a single predisposition: economic self-interest. Granovetter characterizes this as an “undersocialized” view of human action.

The “grand” structural theories of earlier sociologists such as Talcott Parsons, on the other hand, tend to “oversocialize” the individual by portraying a determined social system that strips the actor of all possibility for voluntary action.\(^7\) Paradoxically, both the under- and oversocialized accounts strip the individual of the rich contextual surroundings in which he or she is embedded. Moreover, both grand structural theory and the neo-institutional economic approach are built on reified functionalist tautologies. That is, the former assumes the presence of a system—which is, in fact, an abstraction—that persists because it needs to; the latter assumes that organizational form occurs as a clever solution to the economic problems of uncertainty and opportunism in market exchanges—problems that economists create as abstractions in their theorizing. In contrast to these perspectives, Granovetter argues that social structures are ongoing, continually changing phenomena that are constructed historically through the specific, concrete actions of particular actors in specific circumstances. The actor in Granovetter’s model is the same contextually embedded actor as in Nadel’s paradox, an actor whose particular role in any given situation is defined by local expectations and understandings.

This characterization of the network participant’s embeddedness in complex, sometimes conflicting role expectations undergirds numerous sociologically oriented network studies. David Krackhardt illustrates this conundrum in a succession of papers (1990, 1992) that reveal how two types of social action within the same network—exerting instrumental influence as opposed to making changes in deeply held values—depend on actors situated in very different structural positions within the network. But the embeddedness assumption is not universally present in sociological network studies. Especially in network studies within and among organizations, instrumental, goal-oriented action is presumed to underlie the organization’s activities, rational action is often assumed to guide individual action, and economic outcomes are frequently the dependent variable of interest to the researcher. This is especially well illustrated in Ronald Burt’s work on the “contingent value” of managers’ access to social capital (1997). Burt illustrates the economic rewards that accrue to those who fill the “structural holes,” that is, those who achieve weak ties (Granovetter 1973) between groups internal and external to the organization that are otherwise isolated from each other.

**Policy Networks.** The literature on policy change and political science assumes that individuals are rationally instrumental and participate in the policy process both as individuals and as members of other organizations to effect change in policy and society. Influenced by Mancur Olson’s (1965) work on the importance of collective-action incentives for keeping organizational members, the works build from assumptions of rational man, though the policy change process itself is characterized more as a garbage can or satisficing process. Individual decision makers generally also satisfice in adopting solutions to specifically defined problems.

**Public Management.** The public management literature has grown so much it is hard to generalize accurately about the underlying assumptions of human behavior. However, this literature generally considers whether networks help to implement programs and policy more effectively (Provan and Milward 1995; Agranoff and McGuire 2003). A prominent instrumental orientation is found in much of the public network management literature. Agranoff and McGuire, for example, refer to networks as “multiorganizational arrangements for solving problems that cannot be achieved, or achieved easily, by single organizations” (2001, 296). We believe this definition would be shared by most public

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management scholars, and we assume it is a widely held view. We will return to this issue in our discussions in the two subsequent sections of this article.

**Research Methods**

There are many similarities and a few differences in the methods employed in the three academic traditions. Most of the work on policy networks and public management research through the early 1990s used single and comparative case studies developed from field research to describe program operations and emerging structures of networked regional and local programs, in contrast to traditional single-agency program studies. Intergovernmental programs have always had vertical differentiation because of the inherent presence of required conditions and funding patterns in intergovernmental grant-in-aid programs. Network studies often focus on the horizontal complexity required to administer and implement programs when individual programs depend on resources and expertise from other programs, rather than on vertical network issues.

In the sociological tradition, case studies are prominent as well, especially in the work of the Manchester group (Nadel 1957; Mitchell 1969). Similarly, qualitative data gathering has been used extensively in studies of community power, and the subsequent analysis has often used nonquantitative approaches to create depictions of the actual power structure (Laumann and Pappi 1976) rather than providing the thick, rich descriptions often associated with qualitative methods.

Although Euclidean distance techniques have been employed extensively among sociologists and in limited ways in public management network research (Provan and Milward 1995; Provan and Sebastian 1998), they have been relatively absent in the policy network tradition (c.f. Schneider et al. 2003). Blockmodeling, meanwhile, has remained the exclusive province of sociologists (Lorrain and White 1971). Various forms of regression analysis, on the other hand, appear in all three traditions. In the sociological tradition it has typically been used in conjunction with Euclidean distance techniques (Krackhardt 1990; Burt 1997) to capture the effects of individuals’ structural positions on outcomes such as power, pay, promotion, and the accuracy of individuals’ mental models of the network. In public management research regression has similarly been used in conjunction with Euclidean distance techniques (Provan and Sebastian 1998), but it has typically been used in cross-sectional and time-series designs in large-N studies that capture the relationships between individuals’ engagement with others in their networks and other inputs and service-delivery performance (O’Toole and Meier 1999; Meier and O’Toole 2001, 2002, 2003). In policy network research, regression analysis has been widely used in large-N studies to examine relationships between networks and policy outcomes (Schneider, Teske, and Mintrom 1995; Lubell et al. 2002). Two other sets of methods have been employed in applications related to networks exclusively in policy networks and sociological research. Event history analysis, for example, has been used in policy diffusion studies to examine how factors internal and external to states affect the diffusion of policies across the states (Berry and Berry 1990, 1992; Mintrom and Vergari 1998). Dynamic-network analysis, primarily in computer simulations, has been employed recently in social network analysis to examine the evolutionary effects on network structure (as a dependent variable) of such influences as earlier structural characteristics and the removal or addition of key actors from the network (Carley 2002; Carley, Lee, and Krackhardt 2001).

**Principal Research Questions**

*Social Network Analysis.* Two words summarize the focus of this body of work: structure matters. That is, network structure matters as an antecedent to various outcomes, and it matters as an important outcome of other factors. One way to sum up the two sides of this equation is to note that the social network perspective treats networks in some instances as an independent variable, and in other instances as the dependent variable, although as Borgatti and Foster (2003) point out, articles of the former type far outnumber those of the latter type. In theoretical work, however, and in some of the most recent empirical activity, the reciprocal relationships between structure and behavior and the dynamic nature of the network itself is extensively explored (Carley 2002; Carley, Lee, and Krackhardt 2001).

The existing research on the consequences of network structure includes outcomes that are micro and macro in nature. Among the micro-level or individual-level consequences are attitude similarity; job satisfaction; individual power; leadership (who is chosen and how he or she behaves); who gets jobs, promotions, and raises; employee turnover; interpersonal conflict; and ethical and unethical behavior. Among the variety of micro-level factors that have been shown to influence network structure are such variables as the physical and temporal proximity of various actors; other structures and routines, such as organizational workflows and hierarchies; actor similarity, or homophily; and personality types. Research that addresses macro-level antecedents and outcomes includes studies of board interlock (ties that exist between two organizations when individuals sit on both organizations’ governing boards); joint ventures and alliances; and shared knowledge (sometimes called “knowledge management”), with the majority of this work emphasizing networks as antecedents rather than consequences (Borgatti and Foster 2003).
**Policy Networks.** We observe that the literature on policy networks addresses two general questions. One set of questions asks how policy actors achieve the policies they desire. This literature examines the actual behaviors and interactions of stakeholders, policy specialists, and government officials in particular policy arenas. A second literature asks how actors’ roles and the network structures themselves influence policy outcomes. There are several subcomponents of literature for this second general question. One asks, for example, how do communication networks influence the shape of policies that evolve? Another subset asks how network structures facilitate the emergence of policy entrepreneurs and expand the numbers of entrepreneurs in various policy arenas. A third subset of this literature examines how the structures of networks influence policy participation, interpersonal relations, and the effectiveness of government institutions.

**Public Management.** Agranoff and McGuire (2001) assemble a comprehensive review of network literature, applying lessons from the existing literature to address seven “big” questions for public management network research. We do not duplicate their contribution; rather, we will summarize the general thrust of questions addressed in the existing literature and conclude this section by drawing on work from the other two traditions to identify important questions that public management network scholars might turn their attention to.

We submit that the public management network literature addresses two broad questions: How do networks—especially network structure—influence effectiveness in public service delivery? And, how do managers’ actions affect networks and their performance? The literature addressing network effectiveness offers comparisons about both the means and the ends of public service delivery. Networks have been compared to traditional hierarchical organizations in terms of their flexibility or nimbleness of operation, and they have similarly been compared to traditional government organizations for their ability to achieve outcomes that citizens desire. Relatedly, a small literature addresses questions about which characteristics of network structure lead to successful performance outcomes.

Agranoff and McGuire (2001) suggest four general tasks that network managers and leaders need to effect, and their review assembles the various pieces of literature that address these tasks. First, there is the problem of identifying and activating the potential and necessary participants and resources. Second is the task of framing the rules, values, and context of the network. Third, the network manager must mobilize the participants toward a holistic purpose and strategies. Finally, the network manager must synthesize or facilitate the participants toward effective interaction in pursuit of a common goal.

**Unaddressed Questions.** We now turn to a short list of questions, both empirical and theoretical, that is inspired by the work of the other two traditions but has not yet been addressed in the public management network literature.

First, we note there is a potential dark side to networks that, with one exception (Raab and Milward 2003), has been generally overlooked in the public management literature. We suspect that inattentiveness to these implications is a result of the instrumental orientation in our field generally and in the network literature in particular. That is, for most of us, our first inclination is to consider networks for the contributions they can make to overcoming the limitations of traditional bureaucracies. We contend there are at least two types of undesirable consequences from network activities. The first is identified by Raab and Milward (2003): namely, that some networks in the public arena may be used for private ends that are not in the public interest. This potential problem begs that we become more active in examining the ends of particular public networks and consider who benefits and who loses from the network’s activities.

The second implication has to do with the means or activities of networks that appear to their participants and stakeholders to produce ends that are ostensibly in the public interest. Specifically, some network structures and activities imprison their participants in ways that may not be good for their own long-term interests and ongoing mental health. As Granovetter (1973, 1974) demonstrates, some dense (strong-tie) networks have a powerful tendency to support “groupthink” and to discourage insiders from looking outward, even when doing so would be to their benefit. In addition, such networks are resistant to the flow of new ideas and competing points of view. Aside from the effects on individuals, such networks may be deleterious to overall harmony and communication in a community or society. Our research and theoretical development needs to be open to examining both the assumed “bright” side of network activities and potential areas for dark-side exploitation. A well-rounded understanding of our field calls for the bright and dark sides to inform each other.

Second, as we have suggested elsewhere, the field has been resistant to empirical and theoretical examination of the fundamental assumption that networks exist to solve problems. Alternative explanations exist: Perhaps networks are merely abstractions in the minds of scholars, and we are the ones who attach meaning to them, irrespective of what their own participants believe their activities mean. Perhaps to the extent that such structures exist, they are merely temporary constructions in the minds of their participants rather than persistent phenomena for which participants share a common understanding. Or perhaps on close examination we might find that, as Nadel’s paradox suggests, most network participants hold varied and unique
understandings of why a particular network exists, who is involved in it, and why they, as individuals, are involved.

Finally, the question of network evolution has not been closely examined by mainstream public management scholars. This gap in our scholarship goes hand in hand with the paucity of studies that consider networks as the dependent variable. A mature approach to network studies must engage the possibility that networks are also the outcomes of other activities and that they evolve through dynamics that do not always fit our neat theoretical frameworks for thinking about them.

**Recommendations for Incorporating Other Streams into a Public Management Research Agenda**

In this section, we lay out an agenda of questions for public management network research that is informed by network insights from the other traditions reviewed in this article.

**How Do Networks Develop and Change?**

What factors lead to particular configurations of networks and influence the effectiveness of management and policy? Are individuals, statutory changes, the natural evolution of network growth, or other factors more important? Granovetter’s (1973) theory of weak ties and strong ties (the role of norms and close personal relationships) and Burt’s (1992, 1997) ideas about structural holes (diffusion across networks) in network development and operations can illuminate lessons to maintain effective networks for particular purposes, such as importing innovative ideas to address problems, and demonstrating how network managers develop good working relationships within their networks. These lessons need to be empirically demonstrated.

**What Are the Consequences of Networks?**

In 1997, Kickert, Klijn, and Koppenjan wrote, “In the literature, theories regarding the consequences of policy networks for governance and public management have not been elaborated in detail” (60). Not much has changed since then on this topic; most of the public management research has studied networks as independent variables to explain policy outcomes and service effectiveness. From the literature on policy change and political science, four ideas can be applied to the study of policy networks as dependent variables. First, which factors most influence network development and effectiveness? From Berry and Berry (1990, 1992), we learn that both internal factors and external political, societal, and environmental factors, as well as diffusion, should be identified and tested to understand these issues. Second, who has power in networks and what impact does this have on service delivery and responsibility to citizens? Research on community power suggests that examining whose interests are represented and who has power over decisions is critical. Current prescriptions on broad and inclusive citizen participation suggests we should be expanding citizen involvement beyond including only well-organized interest groups, seeking stakeholders who are unorganized and generally not at the policy table.

Third, the advocacy-coalition framework’s (Sabatier and Jenkins-Smith 1993) focus on core beliefs suggests we should examine the importance of core beliefs among network participants to understand how well networks work and when they change members. Do shared core beliefs have a major impact on network stability and effectiveness? Fourth, how do different decision-making methods affect networks? Viewing networks as independent variables, what impact do networks (both different types but also compared to traditional hierarchical agencies) have on decision making and resource-allocation strategies? Can networks help to overcome biases toward incremental decision making? Do networks, their pooled resources, and risk-taking levels lead to incremental or more radical change? Or do networks lead to groupthink decision making and the selection of second- or third-best choices?

What, in particular, are the negative consequences of networks? These may include the erosion of democratic links, promoting groupthink, promoting homophily and particular “good ole boy” hiring rather than merit employment, and enabling “greedy institutions” (Coser 1975)—networks in which the community overpowers individual freedom and ability to resist. Networks may oppress in similar ways that institutions do.

**What Impact Do Networks Have, and How Are Networks Used?**

Public managers do take advantage of networks to solve problems, but this should not lead us to overlook network activities that reflect the exercise of power to serve narrow rather than common interests. Previously we mentioned recent work by Raab and Milward (2003) on “dark networks” that examines the role of networks in achieving illegal activities. An older literature demonstrates the dangers of network homophily, that is, the tendency of people of similar background and status to cluster together, thus inhibiting the exchange of diverse viewpoints and preserving the interests of elites and inhibiting opportunities for others (Granovetter 1974; Ibarra 1992; McPherson, Smith-Lovin, and Cook 2001). The instrumental orientation has also recently been challenged prescriptively by those who say the New Public Management (and the use of networks to deliver public services) may give too much policy choice to managers and undermine the democratic link between citizens and elected officials—with administrators as...
implementers or “conservators” (Terry 2003). Networks are seen as a process that has emerged to implement programs in an era of government reinvention (Osborne and Gaebler 1993) and governance (Frederickson 1997).

**Are Networks Really Managed, and How Do We Better Understand the Multiple Roles of Network Members?**

As a field of practice, our calling leads us to want to manage the delivery of services as effectively as possible. But our access to social network theory also permits us to place our prescriptions in perspective so that we do not lose sight of our being embedded in expectations for productivity and effectiveness. Indeed, the focus on network managers and the behaviors for successfully managing a network encounter a serious problem when examined against Nadel’s (1957) irreducible paradox. But if a network is a structure of interacting participants, which one among them is in fact the network manager? If the role between two people is the building block of networks, as Nadel proposed, and the content of each role is unique to the individuals, then each role set has a unique “content,” a unique reason for its existence. Yet mobilizing, for example, one of the key network management processes, “requires a view of the strategic whole and an ability to develop and achieve a set of common objectives based on this whole” (Mandell 1988, 33). But unless an individual or organization is designated in statute as network administrator, whose strategic vision is to be mobilized? Indeed, is there really a “strategic whole,” or does the most influential, the most charismatic, or the most forceful individual simply extract the following of others within some zone of acceptance? Public managers desire practical tools that help them to operate in an increasingly networked world, and the literature cited by Agranoff and McGuire (2001) suggests a number of such tools. But questions about success in network activities must always be asked in conjunction with normative questions about success for what, for whom, and at whose expense? Moreover, this situation begs the descriptive and theoretical question as well: Is the network really “managed” by anybody, let alone a specific, identifiable network manager?9

**How Do Networks Shape Behavior and Performance?**

Networks in policy and public management research are generally identified by the researcher and often are presumed to solve an economic problem (either transaction costs or a collective-action problem). Often the network is presumed not to extend beyond the boundary that has been artificially created by the researcher. These studies typically show that structure makes a difference in public policy or public management outcomes. What we don’t know, when we as scholars have imposed the purpose and boundary of the network, is whether the network we have identified is in fact a reflection of other more influential structures in the community or communities we are studying. Relatedly, even if we can identify particular structures that make a difference—regardless of whether they are major or minor structures in the general scheme of things—we cannot necessarily ascertain how these particular structures arose. Thus, the most salient dynamics driving the evolution of network structures may be quite unrelated to the purpose the researcher imposes on the network through the research design. And as Provan and Sebastian (1998) show, differences in network performance are often related to nested, or multiplex, links among network participants.

Studies that use social network analysis to identify how the actual network structures shape behaviors and performance are in short supply, and those who employ these methods acknowledge the limitations of generalizability for their results (Provan and Milward 1995; Provan and Sebastian 1998). But their results suggest the importance of examining structures microanalytically, and they contend great complexity in the way that rules, incentives, and relationships matter in network interactions. Case studies often mine these contextual complexities, but they are less able to substantiate the extended effects of structural relations among multiple actors. Large-N studies, on the other hand, offer the most generalizable results, but they are unable to tap the specifics of structural context. The strengths and limitations of these methods illuminate the context—structure dilemma that Nadel (1957) identified nearly half a century ago.

**Conclusions and Recommendations**

Public management network research is a new and growing branch of public administration; this is exemplified by a quote from Laurence O’Ttoole in a 1997 seminal article laying out his view of the major research agendas concerning networks:

> Several influences appear to be at work to encourage further expansion [of network research]. For all this admittedly spotty evidence, there has been relatively little impact on scholarship in the field. The dominant picture, as seen in courses, texts, and standard theories, is that of a universe centered around the individual agency and its management. Accordingly, there is plenty of work to be done to adapt what we think we know to the emerging networked world. (1997a, 47)

Seven years later, there is such an abundance of quality research on networks that one literature review cannot cover it all. O’Toole (1997a, 50) lists five topics with implications for research on networks: (1) undertake systematic
research to explore the descriptive questions on the network agenda; (2) shift units and/or levels of analysis to the network; (3) address both conceptual and theoretical agendas by identifying dimensions of network structure that may help to explain and mediate program and service-delivery results; (4) concentrate emphasis on some highly networked contexts and devote attention to policy problems that exhibit marked deviation from the stable and nearly decomposable issues forming the strongest justification for hierarchy; and (5) address perennial issues of normative theory with a sensitivity to the network theme.

Our brief assessment of the research progress made in seven years to the five topics O’Toole identifies would be the following: (1) the descriptive work on networks (topic one) has developed as has research on topic three—identifying dimensions of network structure. Not much work has been completed on topic two—using the network as the unit of analysis (Provan and Milward’s work is an exception), and except for the neo-institutionalist and Meier and O’Toole’s work, topic four has not been harvested. O’Toole’s 1997 plea for more research on normative issues in networks has perhaps been the least-addressed area in public management research (except for Agranoff’s recent work on networks’ impact on democratic governance). O’Toole asks, “Do networks catalyze tendencies for further diffusion [of responsibility], or do they encourage more responsible conduct and consciousness? What kinds of networks?” (1997a, 50). Some of our recommendations for future research echo the need for more attention to normative issues in network governance.

We conclude with a brief overview and short summary of our key points. First, we contend that our field must be aware about taking the boundaries of networks as given (in statute or in other formal declarations) and characterizing networks exclusively in instrumental terms. Network structure matters, especially, as researchers have shown (Provan and Milward 1995), when it predicts some features of public service outcomes, or when its members can readily describe its activities and participants (Agranoff and McGuire 1998). But our tendency to focus on its instrumental implications—especially when we select the implications—must be tempered by a commitment to get an empirically accurate picture of the network. That means actively considering how we theorize what the network does and how we identify its participants and set its boundaries. We need to integrate realist methods and boundary setting with the instrumental aspects of public management outcomes that our field of practice pushes us to emphasize.

Second, we need to encourage a variety of methods for studying public management networks and cultivate discussion among those who employ different methods or whose work is guided by different theoretical orientations. We must recognize the value added by social network analysis while rejecting the tendency to dismiss small-N studies. We need to find ways to collaborate so that the best qualitative efforts to explore networks can be connected to others who use mathematical modeling borrowed from social network analysts and still others who use multivariate analysis in large-N studies. Our qualitative efforts must root out all the complexities of the realist network and articulate the contexts in which the network’s actors are embedded. We must do this to ascertain that the network configurations we model are, in fact, the principal structures influencing individual and collective actions in our public management studies. By doing this, we may avoid focusing on less significant network substructures while failing to capture the major network features and configurations that identify who and what really make things happen. Despite the underlying theoretical and methodological complexities, our quantitative efforts should include time-series analysis and dynamic modeling that attends to changes in network structures over time. Our dynamic modeling efforts must inform and be informed by the efforts of qualitative researchers to ground their conclusions in the activities of actual, evolving networks and their participants.

Third, in much of the network research, we can treat the complex role of contexts in which network participants are embedded, not as noise that is incidental to the purposes of the network, but as everyday sources of meaning that guide and define the actions of the participants. We are unlikely to resolve Nadel’s paradox in our research, but we can embrace it in conjunction with our effort to cultivate multiple research methods. We must be aware of our tendency as researchers to impose meaning on the network—at the expense of participants’ understanding of the network—and to consider whenever possible that the network and its meaning are viewed from the participant’s perspective as well as our own. Through thick, rich descriptive accounts, we can more fully illuminate the contextual side of the dilemma. Case studies can be used to triangulate the results of large-N studies that we are increasingly using in network research. Simultaneously, dynamic modeling done in concert with qualitative inquiry can provide a more complex view of structural iterations that both define the role contexts in which participants are embedded and reflect the consequences of participants’ actions.

Fourth, we need to focus on comparative network performance, using the network as the unit of analysis both as an independent variable (and its impact on service delivery, policy, and management outcomes), but also as a dependent variable. What are the types of community relations, social capital, entrepreneurial activities, public participation, and other local factors that give rise to effec-
tive networks? How can we, as teachers and consultants of management, cultivate these conditions? At the community level, how do functional networks develop? How does broad and inclusive public involvement affect network development compared to a narrower public focus?

Finally, we note that the recent public management focus on networks has allowed us to study governance, policy process, and performance outcomes with a sharper lens. However, there are some costs that have not been addressed yet in our field’s work. First, we tend to see the positive sides of network structures without examining the possible negative side, such as convergence toward groupthink, dependence on effective leaders and collaboration skills, and possible inefficiencies due to participant turnover and communication and meeting costs. Second, focusing on networks of people and groups in the policy process discourages us from seeing those outside of these networks because they are relatively powerless and not participating in the political system. Dahl’s study of community power (1961) examined who engages in discussion and decision making on a range of policy issues. But he only examined issues that were on the agenda and not those suppressed or ignored. The networks we look at for public management and policy change reflect those who “have access to the microphone” and whose voices are being heard, not those members of society who have no access or whose voices are silent. The challenge for public management scholars is to continue to ask these difficult questions so that matters of equity and other values of democracy show up in our studies of policy change and the delivery of public services through networks.

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Notes

1. This literature review began as part of a graduate study group in which we covered network research in the three fields. We did not include coverage of networks in information studies, business, public health, and other fields that have used network metaphors and frameworks for research.
2. Our background in this section is drawn largely from Scott (2000) and Knoke (1990).
3. For a review and illustration of Nadel’s paradox, see DiMaggio (1992).
4. Freeman’s centrality calculations and many other subsequent measures for networks as a whole and individuals within them depend on a Euclidean distance approach rather than blockmodeling. For an explanation of the differences and disparate capabilities of the two approaches, see Burt (1978).
5. We cite these bodies of research for historical perspective, but it is beyond the scope and space constraints of this article to review them in detail.
6. David Knoke (1990) and his coauthors (Knoke et al. 1996) have made extensive contributions to policy and political network research by introducing sociological concepts (that is, the structural network approach) to the study of policy and broader fields of political science (such as international relations). However, his work seems to be more influential in sociology than in political science.
7. This critique of oversocialized sociological theories arose earlier in the work of Dennis Wrong (1976). Granovetter illustrated how “reformist” economists had appropriated an oversocialized approach in their introduction of variables such as class and culture as predictors of economic behavior.
8. For useful reviews of the literature on social network analysis, see Borgatti and Foster (2003), Knoke (1990), and Scott (2000). We offer a condensed presentation of their reviews. The authors are also indebted to Daniel Brass for sharing his own extensive bibliographic materials. Borgatti and Foster (2003) note that the number of publications indexed by Sociological Abstracts containing “social network” in the abstract or title grew from approximately 150 articles per year in 1990 to more than 600 in 2000. In the interest of space in the narrative and list of references, we exclude individual citations to the many pieces of applicable literature in this and the other two streams of network literature. Readers may contact the authors if they are interested in individual citations.
9. In fact, Carley, Lee, and Krackhardt’s (2001) simulation research shows that in decentralized networks, actors can quite readily move into a new role as central actor when an existing central actor is removed, making them less susceptible than hierarchical structures to power vacuums when leaders are removed.

References


