Networks in policy, management and governance: a comparative literature review to stimulate future research avenues

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Abstract Policy networks, network management and network governance have received particular attention in the public sector literature over the last 20 years. Networks have been studied from different perspectives resulting in the creation of various concepts and definitions. However, the proliferation of definitions, metrics and language is responsible for a confusing picture, where policy networks, network management and network governance are used both as synonyms and to define different concepts. We review the existing literature with two aims: firstly, to compare the three streams of literature, by highlighting their similarities and dif-ferences; secondly, to propose a guide for network scholars that identifies the importance of each stream in analyzing specific issues.

1 Introduction

It is widely recognized that deep changes have taken place within our society. By way of example, problems that need to be addressed by the public sector have often become "wicked" and complex (Weber and Khademian 2008; Rittel and Webber 1973), resources are often dispersed among different actors (Provan and Milward 2001), clients have multiple needs (Messner and Meyer-Stamer 2000) that pose "nonroutine and nonstandard service challenges" (Head and Alford 2013, p. 2) (Messner and Meyer-Stamer 2000) and the context of public actions is more

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complex, involving several institutions working on different levels and in different sectors (Airaksinen and Åström 2009; Löfgren and Ringholm 2009).

Starting from the end of the 1990s, public-sector scholars have agreed that, to answer to these complex problems, the traditional governments should collaborate with other private and third sector actors (Menahem and Stein 2013; Provan and Lemaire 2012; Isett et al. 2011; Turrini et al. 2010; Kenis and Provan 2009; Keast et al. 2004). Accordingly, the traditional relationship between public, private and societal sectors has changed, and it is now characterized by an increased role of non-governmental actors both in defining and implementing public policies and in delivering public services (Graham et al. 2009; Rethemeyer and Hatmaker 2008; Keast and Brown 2002; Milward and Provan 2000). The policy definition process relies on the involvement of different stakeholders through policy networks (Menahem and Stein 2013; Blanco et al. 2011; Park et al. 2009; Bõrzel, 1998; Klijn 1996; Marsh and Rhodes 1992), while the centralistic model of services provision is shifting to collaborative arrangements and services delivery networks (Provan et al. 2013; Robins et al. 2011; Graham et al. 2009; Raab and Milward 2003).

From an academic perspective, the concept of networks has attracted the attention of several public sector researchers. In the public sector literature, network studies can be classified into three research streams (Raab et al. 2013; Isett et al. 2011; Klijn et al. 2010; Raab 2002): policy networks, network management and network governance. Although the three streams of research share a common denominator —i.e. the reasons behind the development of networks—they are used both as synonyms and as three separate research topics. When used as synonym, the conflicting terminology led to a fragmented and confusing picture (Blanco et al. 2011; Isett et al. 2011; Berry et al. 2004; Börzel 1998). On the contrary, when treated as separated topics, the three research traditions developed as highly specialized and strongly independent fields of research, with a specific language and analytical frameworks (Mandell and Keast 2014). Some authors recognize the interdependence between the three research traditions thus identifying open questions to be addressed: the relationship between network management and network governance (McGuire and Agranoff 2011), whether policy networks are the necessary condition for network governance to emerge (Damgaard 2006) and if collaborative networks and policy networks are separate entities that can be analyzed independently (Agranoff 2006).

The current confusing picture of the three research traditions requires further conceptual clarifications (Blanco et al. 2011; Wachhaus 2009; Berry et al. 2004). From an academic perspective, the topic is certainly not new and previous efforts had been made to introduce such conceptual clarity (see Blanco et al. 2011; Isett et al. 2011; Berry et al. 2004; Börzel 1998). Extant contributions, surely offer different perspectives of analysis (e.g. research questions, methodological approach, theoretical framework), but they have three main limitations. First, existing literature reviews, although analytical and comprehensive, only describe of the state of the art of each stream of research (see Berry et al. 2004; Börzel 1998) without providing suggestions to research on the stream of literature that could be beneficial to address a specific research objective. Second, very often, the three streams of research have been studied "in isolation" as separate research traditions with scant

attention on convergences, interrelation and divergences among them. Third, and in relation with the previous limitations, scant attention has been paid to the complementarity of the three research traditions. Complementarities are useful to study networks from different perspectives and to enhance the understanding of one research tradition with the support of the other two. These limitations have favoured an independent evolution of the three streams of research constituting a barrier to the development of an integrated and interdisciplinary network theory that provides a common language to network scholars (Mandell and Keast 2014).

In a similar vein, Keast et al. (2014) recently highlight the need to analyse and to compare the different research streams on networks both to avoid the current confusion and to provide theoretical foundations to develop newer network research. Recognizing the need for more theoretical clarity, we develop a literature review on policy networks, network management and network governance to reach three research objectives. First, this paper wants to identify the distinctive features of the research traditions to highlight differences and commonalities. Second, this paper attempts to identify the interdependencies among the three streams to favour the identification of new research avenues. Third, we try to develop a practical guide that support network scholars in choosing the most appropriate stream of research to achieve their research objective. This comparative approach to literature review could enhance network research at both theoretical and practical level. At a theoretical level it is an effort to clarify the "Babylonian" (Börzel 1998, p.254) picture of networks' research. Furthermore, the theoretical comparative approach could reciprocally inform research traditions, favouring the development of a comprehensive networks' research approach. At a practical level, the present research defines is the development of an operational guide to (newer) network researchers who are approaching this rich field of study. Specifically, the practical contribution lies in the identification, for each network topic studied in the past, the stream that had deeply addressed that topic and that, therefore, could support in a more comprehensive way the achievement of research objective. Compared to the previous literature review, this study tries to make a step further by stimulating different network research based on the interrelation and the three research traditions.

We define policy networks, network management and network governance broadly. *Policy networks* are defined as the representation of the policy-making process in which state agencies, interests groups and representatives of the civil society repeatedly interact to define public policies (Börzel 1998; Klijn and Koppenjan 1995; Marsh and Rhodes 1992; Van Warden 1992). *Network management* refers to the strategies, activities and managerial skills implemented by the network manager(s) to steer actors' interactions, to solve problems, to build consensus among participants and to coordinate inter-organizational activities in order to achieve network's goals (McGuire and Agranoff 2011; Kickert and Koppenjan 1997; Gage and Mandell 1990). Finally, *network governance* refers here to the process, often in charge of public authorities, of steering and governing networks in accordance with specific rules and procedures, with the final aim of producing and delivering public services (Sørensen and Torfing 2009). In other words, network governance refers to both the setting of network's goals and

objective and to the allocation of resources and funds that are managed by network managers at the network level.

The article is organized into three sections. The first illustrates the literature review process. The second presents the findings of the literature review and three sub-sections are identified. Finally, the third section proposes a guide for future network research while, at the end, we highlight future research avenues for network scholars and concluding remarks are presented.

2 Method and data collection

We adopted a multiple-step literature review (Fig. 1) adopting a strategy followed by different authors to ensure the transparency of the research (see Müller-Seitz 2012; Bakker 2010).

We chose English language journals belonging to ISI categories 31 (political science) and 43 (public administration) with an impact factor (IF) >1. Articles were selected using a set of specific keywords. We did not set any date limits so that we could access an extensive group of published works. Selected journals and keywords used are reported in Table 1. We initially retrieved 364 articles.

Relevant articles were selected by reading the entire paper. We included theoretical and empirical, qualitative and quantitative research papers dealing with policy networks, network management and network governance. By reading the references of each paper we identified other significant articles in journals not
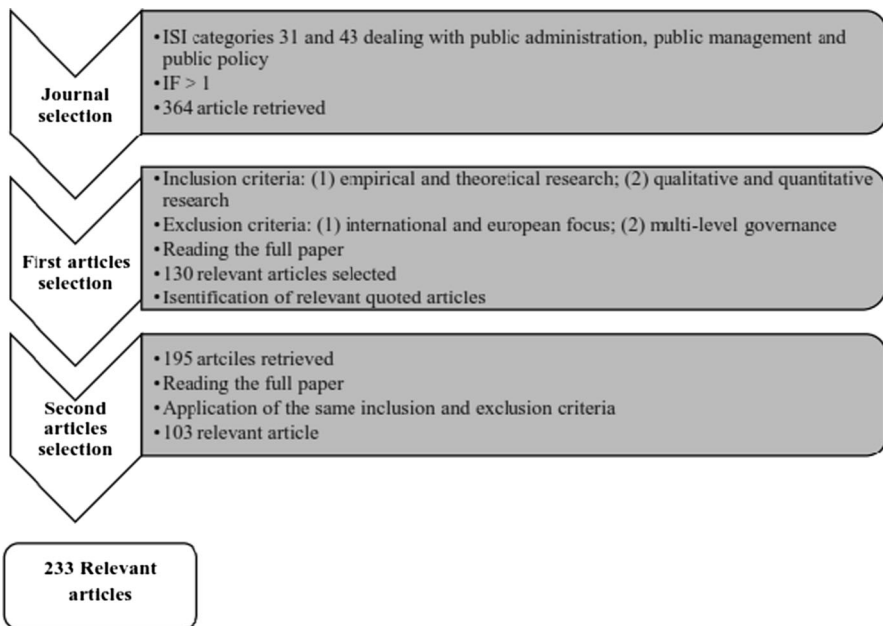

Journal selection
- ISI categories 31 and 43 dealing with public administration, public management and public policy
- IF > 1
- 364 article retrieved

First articles selection
- Inclusion criteria: (1) empirical and theoretical research; (2) qualitative and quantitative research
- Exclusion criteria: (1) international and european focus; (2) multi-level governance
- Reading the full paper
- 130 relevant articles selected
- Isentification of relevant quoted articles

Second articles selection
- 195 artciles retrieved
- Reading the full paper
- Application of the same inclusion and exclusion criteria
- 103 relevant article

233 Relevant articles

Fig. 1 Literature review process

Table 1 Literature review: selected journal and applied research criteria

Selected journals	Administration & Society, American Journal of Political Science, American Sociological Review, Annual Review of Political Science, Annual Review of Sociology, European Journal of Political Research, European Political Science, International Public Management Journal, International Journal of Public Sector Management, International Journal of Public Administration, International Political Science Review, Journal of European Public Policy, Journal of Policy Analysis and Management, Journal of Public Administration Research and Theory, Policy Sciences, Political Research Quarterly, Policy Studies Journal, Political Studies, Political Studies Review, Public Administration, Public Administration and Development, Public Administration Review, Public Management Review, Review of Policy Research, The Australian Journal of Public Administration
Keywords	Policy networks, network management, network governance
	and
	Research, reviews, features, approaches
Search criteria	Text words/English/Title/Abstract
Inclusion criteria	Empirical or conceptual articles
	National or sub-national level
	No restriction to a specific policy domain in empirical research
Exclusion criteria	Book reviews
	European level
	International level
	Business and profit cooperation

belonging to the initial set of selected journals. The so identified journals have been added to the initial set of journals and articles were selected basing on the previously identified keywords. As a result, 195 articles were added.

The literature review yielded a total of 233 relevant articles. The next section summarizes the main findings of this process.
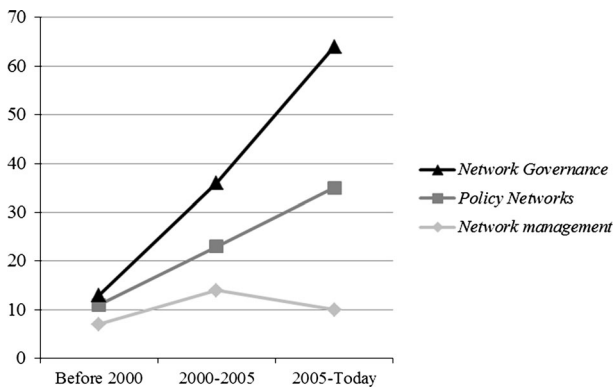

Fig. 2 Publication trend in policy networks, network management and network governance literature

Table 2 Issues discussed and related references

Findings	Issue description	References from network management	References from policy networks	References from network governance
Definitions provided	How network management, policy networks and network governance are defined by public scholars	McGuire and Agranoff (2011); Isett et al.(2011); Klijn et al. (2010); Agranoff (2006); McGuire (2002); Agranoff and McGuire (1998), (2001)	Henry (2011); Bevir and Richards (2009); deLeon and Varda (2009); Sandström and Carlsson (2008); Rethemeyer and Hatmaker (2008); Lubell and Fulton (2008)	Isett et al. (2011); Sørensen and Torfing (2007), (2009); Ansell and Gash (2008); Torfing (2005)
Network content	The level of network implementation and the aim of that implementation (e.g. decision-making or services delivery)	McGuire and Agranoff (2011); Isett et al. (2011); Agranoff and McGuire (1998), (2001)	Bevir and Richards (2009); Sandström and Carlsson (2008); Rethemeyer and Hatmaker (2008)	Isett et al. (2011); Sørensen and Torfing (2007), (2009); Ansell and Gash (2008)
Actors	Types of actors involved, their nature, their interest and the role of the state	McGuire and Agranoff (2011); Klijn et al. (2010); Agranoff (2006); McGuire (2002); Agranoff and McGuire (1998), (2001)	Zheng et al. (2010); Lubell and Fulton (2008); Sandström and Carlsson (2008); Rethemeyer and Hatmaker (2008)	Sørensen and Torfing (2009), 2007; Keast and Brown (2006); Torfing (2005); Van Kersbergen and Van Waarden (2004); Keast and Brown (2002)
Relationships between actors	Features of actors' relationships	McGuire and Agranoff (2011); Whelan (2011); Klijn et al. (2010); Agranoff (2006; McGuire (2002); Agranoff and McGuire (1998), (2001)	Park and Rethemeyer (2012); Rethemeyer and Hatmaker (2008)	Sørensen and Torfing (2009), (2007); Keast and Brown (2006); Torfing (2005); Van Kersbergen and Van Waarden (2004)
Activities	Types of operational activities between actors involved and how they are regulated and managed	McGuire and Agranoff (2011); Herranz (2008); Pope and Lewis (2008); Agranoff (2006); McGuire (2002); Agranoff and McGuire (1998), (2001)	Van Bueren et al. (2003)	Vabo and Røiseland (2012); Røiseland (2011); Sørensen and Torfing (2009)
Outcome	The results and/or the after effects of the networking process and how it could be measured	McGuire and Agranoff (2011); Chen (2008); Pope and Lewis (2008); O'Toole and Meier (2004); Milward and Provan (2003); Agranoff and McGuire (1998); Mandell (1988)	Sandström and Carlsson (2008)	Sørensen and Torfing (2007), (2009)

3 Findings

This section is organized into three sub-sections: the first describes the historical development of the three streams; the second explains the organization of findings and the last one provides a comparative description of policy networks, network management and network governance.

3.1 Historical development

Although the three streams analyse a contemporary subject, their development has followed different paths. Figure 2 shows the publication trend for each stream.

In recent years, there has been an increase in publications on network governance and policy networks, while network management literature peaked in the early 2000s. Among the three streams, literature on network governance is growing faster than that on the other two: it is a relatively new topic and has attracted attention over the past few years.

Despite these differences, the research focus of each stream is similar in terms of research questions and trade-off between empirical and theoretical investigation. Earlier publications focus on theoretical questions, with the authors wondering why networks emerge and how they differ from traditional policy-making and service provision models. The answer lies in the increased complexity and fragmentation of society that calls for the involvement of non-governmental actors in carrying out traditional public tasks (see Van Bueren et al. 2003; Considine and Lewis 2003; O'Toole and Meier 1999). The theoretical focus was then abandoned in favour of empirical research. By applying different methodologies, empirical papers study the operational activity and management or governmental tasks of networks, e.g. network framing, design, metagovernance, rules for governing policy arenas (see Park and Rethemeyer 2012; McGuire and Agranoff 2011; Zheng et al. 2010; Klijn et al. 2010).

3.2 Organization of findings

In this section we present the distinguishing features of each research stream and we introduce the theoretical comparative analysis among them. The comparative analysis is organized into five main dimensions, based on the issues emerged from the literature review. These issues were then used to propose an integrated guide for network scholars. Table 2 summarizes these issues with related references.

3.3 Policy networks, network management and network governance: definitions

Literature provides several definitions for each of the three research streams. Some authors establish clear boundaries among the three, while other definitions are overlapping. We present the diverse definitions and descriptions identified by

Table 3 Policy networks, network governance and network management: definitions and peculiarities

	Policy networks	Network governance	Network management
Definition	Policy networks refers to the patterns of interactions that take place between different individual and organizational stakeholders involved in a policy decision-making process (that is articulated in games and arenas) to deal with a common policy problem in order to favour joint and shared solutions	Network governance refers to a set of individual or organizational actors that collaboratively control, define and govern the activities carried out by a set of actors involved in public services delivery and public goods production. These governing activities cover both the strategic and the operational decision-making process	Network management refers to a set of activities implemented by network managers in order to manage and maintain a cluster of different organizations involved in public services provision and public goods production

different authors (see Park and Rethemeyer 2012; Sørensen and Torfing 2009; Lubell and Fulton 2008; Agranoff 2006; Klijn 2001) in Table 3.

Policy network literature focuses on the decision-making process implemented to address common policy problems (Bevir and Richards 2009; Lubell and Futon 2008; Börzel 1998; Marsh and Rhodes 1992). Here, most attention points on the interactions that take place among actors involved in the process (Park and Rethemeyer 2012; Henry 2011; Klijn 1996, 2001). On the contrary, the gaming approach (Klijn et al. 2010) analyses policy networks as policy arena and policy games that change over time, depending on the relationships established among actors (Klijn et al. 2010). Policy games, indeed, result from the repeated interactions among actors who mutually adjust their own perceptions and strategies in order to facilitate the achievement of a common outcome (Klijn and Koppenjan 2006; Van Bueren et al. 2003).

Network governance literature mainly focuses on the steering activities carried on by public authorities, in charge of governing the network and its participants (Sørensen and Torfing 2009; Torfing 2005). These governing-related operations include strategic and operational decision-making processes covering long and short-term network activities and they usually take place within an institutionalized and legitimated set of norms and rules (Klijn et al. 2010; Sørensen and Torfing 2009; Torfing 2005). Network governance, therefore, is mainly related to government that is in charge of setting the network's goals and functioning rules and of defining the scope and the composition of networks (Koliba et al. 2011; Sørensen and Torfing 2009; Keast and Kerry 2002). In addition, a key feature of network governance literature is the recognition of the fundamental role of public authorities in implementing, controlling and steering networks (Ansell and Gash 2008).

The network management stream focuses on the activities taken by network managers to facilitate a successful collaboration between actors in charge of providing public services and public goods (McGuire and Agranoff 2011; Agranoff 2006; McGuire 2002; Agranoff and McGuire 1998). Therefore, their main efforts

involve pinpointing the managerial initiatives and tasks that can improve network performance and maintain the collaboration among the organizations involved (McGuire and Agranoff 2011). That is to say that, while network governance takes place at the upper government level, in which long term objectives and the overall scope of the network is defined, network managerial activities take place at the network level where the fundamental tasks of managers is to ensure that governmental objectives are achieved.

3.4 Policy networks, network management and network governance: commonalities and differences

The theoretical comparison of the three streams is organized according to five different dimensions. Starting from how these issues are discussed in each stream, we have highlighted commonalities and differences between the three. Table 4 presents a synthesis of these issues and related commonalities and differences.

3.4.1 Network content

With the term "network content" we refer to the rationale behind network implementation, that depends on the values and perspectives of the decision-makers and stakeholders involved. It is organized into three sub-issues, i.e. network rationale, relevant value and relevant perspective.

Network rationale refers to the reasons behind the implementation of the network—i.e. to define public policies or deliver public services. Accordingly, policy networks often refer to the decision-making process aimed at addressing a policy problems (Bevir and Richardson 2009; Sandström and Carlsson 2008; Rethemeyer and Hatmaker 2008; Klijn 1996, 2000). Conversely, network governance and network management share the network rationale, since they are often implement to provide public services and public goods (McGuire and Agranoff 2011; Sørensen and Torfing 2009; Agranoff 2006; Torfing 2005; McGuire 2002).

Relevant values are expected to depend on network rationale. Since policy networks are implemented with the purpose of taking joint and shared decisions on a common policy problem, relevant values are consequently the participation and the involvement of different stakeholders. By offering different perspectives on the problem and proposing different solutions, the involvement of different stakeholders could reasonably lead to more innovative solutions to address a policy problems (Park and Rethemeyer 2012; Isett et al. 2011; Klijn 2001). In network governance, the relevant value is the allocation of power between the governing actors, allowing them to act as a legitimated controllers over the others (Torfing 2005). Power does not only refer to traditional authoritative power (e.g. resources allocation, laws' definition), but it includes also resources, skills and capacities that can give authority to specific actors (Torfing 2005). In network management, managerial values are fundamental, since public managers are expected to manage different organizations with conflicting goals (Agranoff and McGuire 1998). The ability of network managers to develop collaborative working practices and to define a credible compromise among different organizations is fundamental for achieving an

Table 4 Policy networks, network governance and network management: commonalities and differences

Issue	Sub-issue	Policy networks	Network governance	Network management
Network content	Network rationale	Decision-making	Service delivery	Service delivery
	Relevant value	Participation and involvement	Power allocation	Managerial
	Perspective	Decision-makers	Public authorities	Public managers
Actors	Type	Governmental and non-governmental bodies	Governmental and non-governmental bodies	Governmental and non-governmental bodies
	Organizational and individual actors	Individual and organizational actors	Individual and organizational actors	Organizational actors
	Role of the state	Relevant	Relevant	Not necessarily relevant
	Actors' interests	Conflicting	Conflicting	Conflicting
Relationships between actors	Duration	Temporary	Stable	Stable
	Role of trust	Relevant	Relevant	Relevant
	Dependency	Mutual	Mutual	Mutual
Activities	Modality for interaction rules	Fixed	Unfixed	Unfixed
	Operational collaboration	–	–	Structured
	Governance and control	–	Defined	–
Outcome	Level of analysis	Decision level	Service level	Service level
	Outcome conceptualization	Compromise between interests	–	Compromise between interests
	Relevant outcome dimension	Innovativeness and efficacy for participants	Democracy and effectivity	Effectiveness and quality for managers and customers
	Outcome operationalization	–	–	Defined
	Outcome information is relevant for	Public authorities and non-governmental stakeholders	Public authorities	Customers, Managers

efficient production of public goods (McGuire and Agranoff 2011; Agranoff and McGuire 1998).

Relevant perspectives are also different. Since the aim of policy networks is to deal with common policy problems and to focus on participation and involvement, the relevant perspective is that of the decision-makers. They should be accountable for finding out a solution to societal policy problems and they are responsible for stakeholders' involvement in the decision-making process (Zheng et al. 2010; Van

Bueren et al. 2003). In network governance literature, the perspective adopted is that of the public authorities involved in metagoverning processes, where they define steering rules to shape, guide and direct the behaviour of actors involved in the network (Baker and Stoker 2012). In network management, the fundamental perspective is the view of the public managers who implement different activities and strategies to manage and maintain different and sometimes conflicting organizations (Agranoff and McGuire 1998).

3.4.2 Actors

With respect to actors, two sub-issues are common to all three streams: the presence of governmental and non-governmental actors and their conflicting interests (McGuire and Agranoff 2011; Rethemeyer and Hatmaker 2008; McGuire 2002; Agranoff and McGuire 1998). First, the involvement of governmental and non-governmental actor is said to be essential to address the complex and fragmented social needs, as traditional governments do not always have the required skills and resources to provide adequate answers (Isett et al. 2011; Milward and Provan 2000). Second, the different actors involved can have conflicting interests and, therefore, it is essential to identify a compromise yielding the best solution for every actor to make the network works efficiently and effectively (McGuire and Agranoff 2011; Zheng et al. 2010).

Related to the analysis of actors, policy networks and network governance share more commonalities compared to network management. Policy networks and network governance streams are similar with respect to the nature of actors involved and the role of the State within networks.

The nature of actors specifies the type of actors involved and focuses on the distinction between individual and organizational actors. Policy networks and network governance mainly involve both individual and organizational actors. For policy networks literature, these are the stakeholders, which can be organizations as well as individuals, while network governance includes public organizations as well as individual actors. On the contrary, network management literature highlights a different nature of actors involved since public managers do not usually manage individuals, but rather organizations that represent single interests or points of view.

The role of the State is different. In policy networks and network governance, the State maintains a central role because it steers both the decision-making processes and the activities related to network's goals and functioning mechanisms (Park and Rethemeyer 2012; Keast and Brown 2006). Furthermore, because public networks are usually implemented with governmental commitment, the State maintains the task of defining the goals, actors to be involved, interaction modalities, dedicated resources and services to be provided (Ansell and Gash 2008; Börzel 1998). In network governance, the State covers two main roles. At a macro level, it facilitates the definition of a shared vision, it defines goals and objectives and it establishes adequate communication and accountability mechanisms (Keast and Brown 2002). At a micro level, i.e. when it acts within the network through public agencies, it participates as a network member, it negotiates with managers and other actors and

it should pursue the necessary balance between its steering role and controlling activities (Keast and Brown 2002).

On the contrary, the State has a secondary role in managerial activities within networks: here, the focus is on the operational activities of responsibility of the public managers involved. Public managers act independently and with the freedom of choosing the managerial strategy that seems most appropriate to achieve the network goals.

3.4.3 Relationships between actors

This label includes the role of trust, the mutual dependency among actors and the duration of their relationships. Relationships among actors have been investigated in all the three traditions as long as they are central to the effectiveness of networks, both at policy and at services level (Whelan 2011).

The role of trust and the mutual dependency are common to the three streams, while the expected duration of the relationship among the various actors is different in the three research traditions. In policy networks, relationships among actors usually take place starting from the constitution of the policy arena until the moment in which a joint policy decision is achieved. Through repeated interactions, the policy network evolves and passes different "arenas", characterized by different power relations, actors' roles and goals. Once the policy decision is defined, participants' collaboration could persist, but it is no longer necessary to identify a policy solution (Klijn 2001). In network governance and network management the relationships among actors are thought to be permanent: networks for services delivery are implemented to provide public services permanently (Isett et al. 2011; Sørensen and Torfing 2009; Torfing 2005). The relationships between the actors involved could be considered longer-lived compared to those of policy networks and are expected to last, at least, for all network's life cycle (Isett et al. 2011; Keast et al. 2004).

Mutual dependency of actors is a common element among the three streams as well as the fundamental role of trust for maintaining actors' relationships over time (Vangen and Huxham 2003). Actors are mutually dependent in terms of resources, information and knowledge (see Sørensen and Torfing 2009; Keast et al. 2004; Van Kersbergen and Van Waarden 2004). Their mutual dependency facilitates collaborative working between actors as they recognize their inability to address complex problems without resorting to other actors (Sandström and Carlsson 2008; Ansell and Gash 2008; Rethemeyer and Hatmaker 2008). In this collaborative process, trust reduces uncertainties about opportunistic behaviours of the other participants and it generates mutual understanding, it creates stability and promotes the exchange of information and resources (Klijn et al. 2010; Provan and Kenis 2008; Vangen and Huxham 2003). In addition, trust, by strengthening the collaboration between actors, is central in affecting network effectiveness (Whelan 2011). Whelan (2011) distinguishes between interpersonal and inter-organizational trust in network where the former is related to individuals, while the latter refers to relationships between organizations. Both types of trust, shape and re-shape network

relationships, leading or favouring the achievement of network effectiveness (Whelan 2011).

3.4.4 Activities

It refers to the operational actions carried out by decision-makers, network managers and the network metagovernors to steer or manage the network. Operational activities, since they are affected by the relevant values, rationale and perspective of these actors, also vary. For network management, these activities aim at facilitating inter-organizational cooperation and at improving collaboration between actors involved (Kickert and Koppenjan 1997). In policy networks, operational activities are defined by institutional rules that establish the modalities of interaction between stakeholders. In network governance operational activities refer to the funding and oversight role of government agencies with respect to the network's activities, goals, resources and services to be provided (Provan and Kenis 2008). Since governments are in charge of steering a different, and sometimes competitive, set of organizations, traditional governance mechanisms should be refined to be applied to networks (Keast et al. 2004). Traditional governments are now required to act as metagovernor of networks (Sørensen and Torfing 2009). Metagovernance activities refers to (1) *network design*, used to influence the scope, composition and institutional procedures of the network, (2) *network framing*, used by political authorities to define the goals, fiscal conditions and legal basis, (3) *network management*, used to reduce tensions, resolve conflicts and empower certain actors by mobilizing specific resources and (4) *network participation*, used to influence the policy agenda and build a negotiated decision-making process (Sørensen and Torfing 2009).

Network management literature distinguishes between the network managers' tasks, strategic behaviour and operational activities. Public network managers are required to: (1) select the appropriate actors and resources to achieve network's goals (Agranoff and McGuire 1999), (2) constantly bear in mind the line-up of possible collaborators because the number of potential partners is high (Agranoff and McGuire 1999), (3) maintain a flexible and adaptable network, by adding new partners and minimizing what is known as "organizational turf wars" (Agranoff and McGuire 1998, 1999), (4) seek network's autonomy, which, in turn, reduces uncertainty (McGuire and Agranoff 2011).

Agranoff and McGuire (2001), Herranz (2008) and Klijn and Koppenjan (2000) divided the different managerial strategies into three classes. The first, provided by Agranoff and McGuire (2001), distinguishes between *activation* (i.e. the identification of the adequate participants and stakeholders), *framing* (i.e. influencing values and altering the perceptions of participants), *mobilizing* (i.e. the definition and the achievement of a set of common objectives) and *synthesizing* (i.e. the development of a cooperative environment that can favour productive integration between participants). The second class is that identified by Herranz (2008), who distinguished between *reactive facilitation* (i.e. emphasizing social interactions rather than procedural mechanisms) and *contingent coordination* (i.e. managing the perceptions of participants through bargaining and the development of new ideas).

Regarding the third class of strategies used by network managers, Klijn (2005) identified two strategies: (1) *process management* (i.e. encouraging the interactions and promoting strategies to align the actors' different perceptions) and (2) *institutional design* (i.e. influencing the actors by modifying the institutional characteristics of the network, which affect the actors' strategies and their opportunities for cooperation).

These managerial strategies operationally involve three set of activities: (1) mobilizing internal and external forces to support the network, (2) acquiring the necessary financing, expertise and other resources while planning future actions and (3) learning about external opportunities and constraints (McGuire 2002). In addition, as pointed out by Keast et al. (2004), a central task of networks' manager is to deal with conflicts that emerge between different and conflicting interests among network members. Otherwise, network manager should embody a new form of leadership that take the form of facilitator or broker (Considine 2001).

Policy networks, on the contrary, are thought to be governed by two types of rules: *arena rules*, that specify what is and what is not relevant for the actors involved in the policy process and *interaction rules*, that regulate the interactions between the actors (Klijn et al. 2010). By applying these rules, actors are expected to be able to govern the policy process, principally by managing *material-institutional resources* (*MIRs*), that are the financial, political, human and informational resources that an organization can employ and *social-structural resources* (*SSRs*), i.e. the resources that come from a persistent pattern of interaction between three or more actors (Park and Rethemeyer 2012).

3.4.5 Outcome

It refers to the final product of the networking process—i.e. a policy decision or the provision of public goods or services—and it is currently receiving increasingly attention (see Zheng et al. 2010; Sørensen and Torfing 2009; Milward and Provan 2003). Discussion on the outcome is articulated into different sub-issues (i.e. level of outcome analysis, outcome evaluation, outcome measurement, outcome information).

The level of outcome analysis reflects the level at which the network is implemented. It follows that both in network management and in network governance outcome evaluation occurs at the service level, while the policy network outcome is assessed at the decision-making level. However, although the outcome of network management and policy networks are evaluated at different levels, they are conceptualized as a compromise among interests in both traditions (McGuire and Agranoff 2011; Agranoff and McGuire 1998). In the case of network management the compromise is established among the different organizational interests (McGuire and Agranoff 2011; Agranoff and McGuire 1998), while, in policy networks, the compromise is represented by the trade-off between the interests of the individual and organizational stakeholders (Zheng et al. 2010). The outcome of network governance received less attention and further investigations are needed. Specifically, we do not actually know how to define and conceptualize the outcome of network governance and, therefore, how to evaluate and measure it.

For the three streams, outcome evaluation occurs by the use of different dimension. Policy networks use *innovativeness* and *efficacy*: the former refers to the degree to which the network has identified an innovative solution to a defined policy problem, while the latter is linked to the time-frame required to establish a collaborative relationship between the stakeholders and find a joint solution (Sandström and Carlsson 2008). The relevant dimensions for outcome evaluation in network governance are *effectivity* and *democracy* (Nyholm and Haveri 2009; Sørensen and Torfing 2009). Effectivity refers to the degree of collaboration between public authorities as metagovernors of the network, while democracy is related to the respect for institutionalized rules and accountability mechanisms. Elected public authorities, indeed, have to be accountable for the network's results both to society as a whole (intended as the community of tax-payers) and to all the groups directly affected by decisions taken at the network level. Network management literature has identified *effectiveness* and *quality* as the relevant dimensions for evaluating the outcome. Effectiveness refers to the quality of services provided and the efficient use of resources to produce or provide public services and goods (McGuire and Agranoff 2011; Chen 2008). Quality is a dimension used to assess the management activities carried out by the network manager and involves the sub-dimension of managerial behaviour and the managerial stability of the networks themselves (O'Toole and Meier 2004).

To what concern outcome measurement, network management literature provides different measurements to evaluate the outcome, ranging from customer satisfaction surveys (Milward and Provan 2003) and process measurements—e.g. joint operations at the organizational level (Chen 2008)—to managerial stability over time (O'Toole and Meier 2004)—e.g. the turnover rate of public managers. In network governance, the dimension of democracy becomes effective through the model of "democratic anchorage" (Sørensen and Torfing 2009). According to this model, democracy is ensured when the network is metagoverned by means of: (1) the monitoring system of elected politicians, (2) the involvement of private business and civil society actors, (3) the network is accountable to the groups affected by decisions taken at network level and (4) the implementation of commonly accepted democratic rules that ensure the inclusion of relevant actors (Sørensen and Torfing 2009).

Finally, outcome information is important for a different set of actors for each of the three streams. In policy networks, the innovativeness and efficacy of the policy decision reached is important both for public authorities and for all the non-governmental stakeholders involved in the decision-making process. Outcome information in network governance is relevant for public authorities, as the metagovernors of the network, allowing them to evaluate their metagovernance policy styles. Outcome information in network management is relevant for both network managers and for customers to improve the quality of services provided by the network and to enhance the satisfaction of users.

3.5 Policy networks, network management, and network governance: a proposed guide for future research

This section provides a preliminary guide for network scholars who have to cope with a considerable amount of networking literature. We do not have the presumption to define a rigid guide to channel each issue into a box relating to a particular stream, especially because areas overlap between the three streams. Rather, we try to suggest that one research stream may be more appropriate for a particular research goal. We have therefore defined a "degree of relevance" to each stream for every issue identified, so that researchers can choose the literature that best fits their analysis (Table 5). These issues are discussed starting from those with greatest overlap and leading to those where the three streams are most different.

3.5.1 Relationships among actors

All three streams give a support to scholars studying the relationships among network actors. This is particularly true for the role of trust and their mutual dependency.

Once a network scholar deals with the actors' relationships by focusing on the role of trust or their mutual dependency, it is possible to find relevant contributions in all the three research streams. However, when the research focuses on a network where the among between actors are expected to be longer-lived, network governance and network management literature give a significant contribution, while policy network stream is partial. This is justified by the fact that policy network literature is connected to the decision-making process, where actors usually work together for the time necessary to reach a satisfactory solution and, once the decision is taken, there is no further need for collaboration.

3.5.2 Actors

The study of network actors can benefit from the contribution of each of the three streams. This is particularly true when the researcher is investigating the effect of the actors' interest compared to network goals' achievement. In this case, significant contributions are provided by all of the three streams of literature. When the focus is on (1) the type of actors involved (governmental and non-governmental), (2) a network involving organizational and individual actors or (3) a network in which the State has a fundamental role, then policy network and network governance literature can give relevant contribution to research, since actors involved are both individuals (e.g. politicians, public administrators) and organizational (e.g. interest groups, voluntary organizations). Conversely, when the network is composed mainly by organizational actors, network management literature can provide strong support to the research. The contribution of network management literature in the previous topics is marginal: research mainly focuses on how to build and maintain effective collaborations between a specific set of organizations (see the management strategies proposed by McGuire 2002).

Table 5 An integrated roadmap for network scholars

Issue	Sub-issue	Specific issue	Stream relevance		
			Policy networks	Network governance	Network management
Relationships between actors	Role of trust	Role of trust	High	High	High
	Mutual dependency	Mutual dependency	High	High	High
	Duration	Duration	Partial	High	High
Actors	Actor interests	Actor interests	High	High	High
	Type	Governmental and non-governmental	High	High	Marginal
	Organizational and individual actors	Organizational and individual actors	High	High	Marginal
	Role of the state	Role of the state	High	High	Marginal
	Organizational and individual actors	Only organizational actors	Marginal	Marginal	High
Outcome	Level of analysis	Level of analysis: service level	Marginal	High	High
		Level of analysis: decision level	High	Marginal	Marginal
	Outcome dimension	Relevant outcome dimension	High	Partial	High
	Outcome operationalization	Outcome operationalization	High	Marginal	High
	Outcome information	Outcome information is relevant for	Partial	Marginal	High
Network content	Network rationale	Service-delivery	Marginal	High	High
		Decision-making	High	Marginal	Marginal
	Relevant value	Participation and involvement	High	Marginal	Partial
		Power allocation	Partial	High	Partial
		Managerial value	Marginal	Marginal	High
	Perspective	Decision-makers	High	Partial	Marginal
		Public authorities	Partial	High	Marginal
		Public managers	Marginal	Marginal	High
Activities	Operational collaboration	Operational collaboration	Marginal	Marginal	High
	Modality for interaction rules	Modality for interaction rules	High	Marginal	Marginal
	Governance and control	Governance and control	Marginal	High	Marginal

3.5.3 Outcome

Related to the outcome, the support of each stream of literature varies. Few studies deal with the outcome of network governance, a topic that needs further

investigation. Here, the main reason is that there are no agreed positions about either the definition or the evaluation of the outcome in network governance. The most quoted solution is that suggested by Sørensen and Torfing (2005), who see in effectivity and democracy the best dimensions to evaluate outcome.

Network outcome can be evaluated at two different levels, services level and decision-making level. When the network is implemented at the service level, a researcher can find relevant contributions on outcome evaluation in network management and network governance literature. This is particularly true for network management literature, which has devoted considerable efforts to identify the levels for outcome analysis (see the work of McGuire and Agranoff 2011; Milward and Provan 2003). When the focus is on the decision taken collaboratively between different stakeholders, researchers can find substantial help in policy network theory (see Zheng et al. 2010), while support from network governance and network management literature is still marginal.

When researchers are looking for significant dimensions to evaluate outcome, policy networks and network management literature can provide a useful support, while the contribution of network governance literature is partial. In particular, network management literature suggests that effectiveness is a relevant outcome dimension (Milward and Provan 2003); policy network literature, on the contrary, covers the efficiency and innovativeness of the decision (Sandström and Carlsson 2008). In network governance literature, there is only a reference to the democracy and the effectivity of the governance process (the model of "Democratic anchorage" proposed by Sørensen and Torfing 2005).

If the research focuses on outcome operationalization, policy networks and network management literatures can give a substantial support to network scholars. However, within this sub-issue, the contribution of network management is more structured (see the measurements proposed by Milward and Provan 2003 and by O'Toole and Meier 1999). In policy networks, significant contributions come from different scholars (see the Dutch School of Klijn, Kicker and Koppenjan), but they are unstructured and dispersed across different works and building a clear picture could be time consuming. On the contrary, outcome operationalization in network governance is still an open question and the contribution of literature can be only partial. However, it points the way for future research and new theoretical development.

Finally, when a researcher wishes to identify the actors who have an interest in outcome information, network management literature can give a support to the analysis, since network managers and network customers are the actors most interested in outcome and performance information. Policy networks and network governance literature provide a partial and a marginal support. These theories identify public authorities as the actors with the greatest interest in outcome information, but they give only partial suggestions about how to use this information to improve network processes, so their usefulness for scholars is less than that of management literature.

3.5.4 Network content

In the study of network content, the contribution of the three streams varies and literature should be selected according to the aim of the research. Only when

scholars are studying service delivery networks may they find strong support in both network management and network governance literature. These contributions become marginal when the focus of the research is on decision-making. In this case, researchers can improve their analysis by using policy network literature, which focuses on the decision-making process.

The study of relevant values and the network perspectives requires a specific stream to be selected. When researchers analyse the degree of participation and involvement from a decision-maker perspective, policy networks literature may offer a strong support, while, when the focus is on the allocation of power between network's actors following the perspective of metagoverning public authorities, the recommended stream may be network governance. Finally, network management literature can provide a strong support to researchers willing to investigate the management values of public managers governing a network involving different organizations.

3.5.5 Activities

Since the operational activities analysed in each stream of literature vary considerably, the selection of one stream is fundamental.

In particular, for researchers focusing on the operational collaboration that generally takes place between organizations involved in public service delivery, researchers may find network management literature useful. These activities refer to selecting the most strategic partners, acquiring the necessary financing or other relevant resources, influencing prevailing values, developing shared objectives, planning future actions and searching for external opportunities (McGuire and Agranoff 2011; Agranoff and McGuire 2001, 1999, 1998).

When the focus of research is on the modality of interaction and on the rules that guide the actors' behaviour, literature on network policy seems the most appropriate. The works of Klijn et al. (2010) or Park and Rethemeyer (2012) can guide the analysis by identifying (1) the relevant rules of the policy process (i.e. "arena" rules and "interaction rules") (Klijn et al. 2010) and (2) the relevant resources that actors can mobilize (i.e. "material-institutional resources" or MIRs, and "social-structural resources" or SSRs) (Park and Rethemeyer 2012).

When scholars wish to study the metagovernance of networks, they should search within network governance literature. While this information is fragmented and the field of research is relatively new, the work of Sørensen and Torfing (2009) on metagovernance processes can provide a useful support.

4 Discussion

4.1 Rational for this research

Starting from the late 1990s, there has been an increased attention in networks. Networks' studies adopt mainly three perspectives: policy networks, network management and network governance. Although they are not a new topic in the
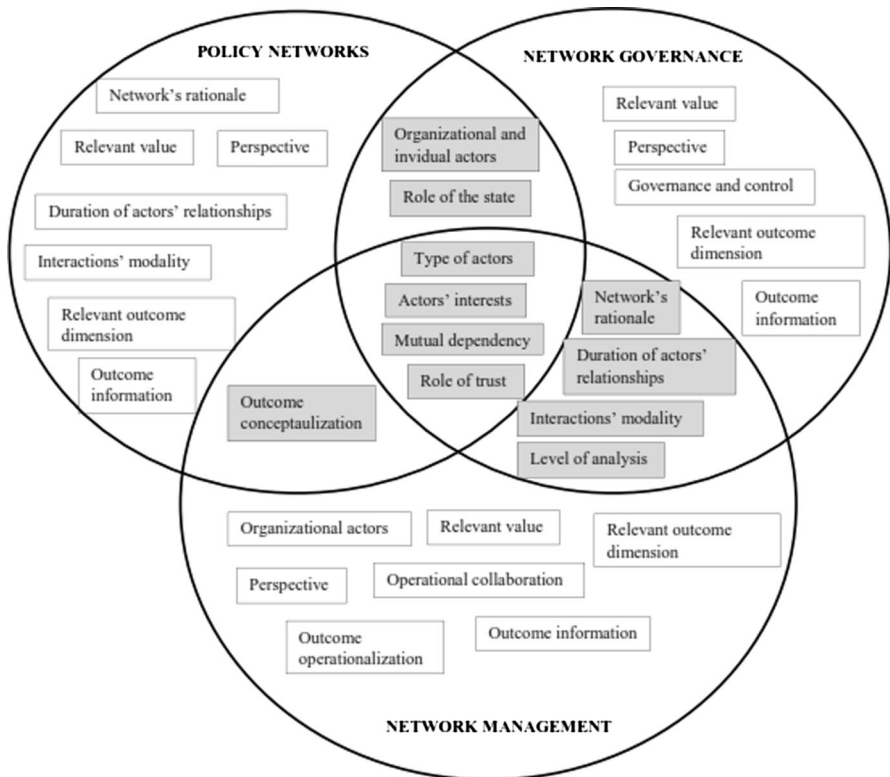
Fig. 3 Policy networks, network governance and network management: theoretical comparison

public sector literature, the three research streams are used interchangeably or they are considered as different concepts. Consequently, there is a confusing picture on the nature of policy networks, network management and network governance and on how they affect and influence each other (Berry et al. 2004). This confusing picture has been a barrier to the development of a comprehensive and interdisciplinary framework to study networks thus limiting the adoption of a common language among network scholars (Mandell and Keast 2014). Starting from the limitations of the extant literature and drawing on the need of a comprehensive network theory (Keast et al. 2014), we undertake a literature review on policy networks, network governance and network management with two research objectives. On the one hand, we clarify the three research traditions, focusing on similarities, divergences and interrelations between them (Fig. 3). On the other, we propose a research guide for network scholars that could be helpful to select the richer tradition according to their research objective(s).

4.2 Summarizing similarities and differences

Although implemented in a different domain of public action, the three streams are all related to the need of addressing public problems. However, although associated

with the need of solving complex public problems, the three concepts refer to different dimensions of public action (i.e. *network content*). Policy network literature mainly concerns the process of policy definition, in which different stakeholders are involved to find out an innovative policy solution; network governance takes place at the upper government level that retains the task of defining networks' scope, principles, functioning rules and to allocate funds and resources. Network management, on the contrary, takes place at the network level where managers empirically implement and control the achievement of network goals. Network managers are therefore in charge of making collaboration works, searching for potential partners and overseeing that participants pursue network's interests and not their personal gains.

As shown in Fig. 3, the three streams maintain specific elements, but they also share common issues. The common elements among the three traditions refer to the "human dimension" of networks: actors and the role of trust. Indeed, the three research traditions recognize that actors involved, although mutually dependent in term of resources, information and knowledge (Keast et al. 2004; Van Kersbergen and Van Waarden 2004), have different and sometimes conflicting interests that should be managed to make the network works (McGuire and Agranoff 2011). All the three traditions, in fact, recognize that the key challenge in networks is the ability to go beyond personal interests and preferences and to build stable and enduring cooperative relationships through the development of trusty relationships. Indeed, trust, often conceived as cyclical process involving expectation, risks and vulnerability (Vangen and Huxham 2003), is said to strengthen collaboration and cooperation between actors involved (Vangen and Huxham 2003). The benefits of trust are well acknowledged to the three research streams: it reduces uncertainties (Klijn et al. 2010), it generates mutual understandings (Provan and Kenis 2008), it reinforces positive relationships between partners (Keast et al. 2006) and it promotes exchanges of resources and information (Vangen and Huxham 2003). However building trust is challenging and it requires time and resources to become effective between actors (Keast and Brown 2006).

Other similarities emerge from our review. Figure 2 shows that network management and network governance share more similarities with respect to policy networks. As previously discussed, the level of analysis in network management and network governance refers to the services level and network's rationale in both tradition focuses on improving the quality and the coordination of services. On the other hand, policy network and network governance literature stress the relevance of the State in network processes. In both traditions, the State retains a central legitimacy to take key decision and to allocate funds and resources, giving it a privileged position (Park and Rethemeyer 2012; Ansell and Gash 2008; Börzel 1998). The state, indeed, as principal funders for services, is a powerful actor in setting network direction and goals (Keast and Brown 2006). However, the State is no longer the "driver's seat" (Keast et al. 2006) of networks since it needs the technical expertise and skills of non-governmental actors, giving life to a complex multilateral dependency between all the actors involved and their resources. Finally, policy networks and network management share the conceptualization of network outcome as a mediation between different and sometimes compelling interests.

4.3 Identification of new researches avenues

The theoretical comparative analysis of the three streams of research allows the identification of possible lines of future research. We found that further researches are required on the topic of outcome definition and measurement.

With respect to the outcome dimension, the network management literature is the most developed and it could offer fruitful research for both policy networks and network governance literature (see Raab et al. 2013; Turrini et al. 2010; Provan and Milward 2001). In particular, network management literature offers to the other two streams a shared understanding on how to measure and on which are the dimensions to evaluate network outcome. First, consistent with the multi-stakeholders approach (Provan and Milward 2001), network outcome can be evaluated at three different levels: the individual organization (i.e. the single organization), the network itself and the community of services users (i.e. local area served by the network) (Provan and Milward 2001). In each level, two performance dimensions are relevant: effectiveness and quality. The former refers to the efficient use of resources to provide high quality services and goods (McGuire and Agranoff 2011; Turrini et al. 2010), while the latter is used to evaluate the managerial ability of making the network work (O'Toole and Meier 2004).

On the contrary, outcome conceptualization and measurement in policy networks and network governance is still cloudy. Both traditions identified the relevant performance dimensions to assess network outcome. With respect to policy network literature, innovativeness and efficacy can be used to assess a policy decision. Here the former refers to the ability of a policy networks to achieve an innovative solution to common policy problems, while efficacy focuses on the required time frame to establish collaborative relationships between policy actors and to favour the definition of a common solution (Sanström and Carlsson 2009). In network governance tradition, Sørensen and Torfing (2009) identify effectivity and democracy as dimensions to evaluate the outcome. Effectivity focuses on the degree of collaboration with public authorities as network metagovernors, while democracy refers to the respect of democratic and accountability principles (Nyholm and Haveri 2009). We suggest here some possible research avenues with respect to the outcome dimension: What is the outcome of network governance? How can we measure and evaluate it? Under which conditions the outcome of network governance is actually effective and democratic?

We suggest here other two areas in which further research are needed. The first one refers to the modality of operational collaboration within policy networks and in network governance processes: are there any recurrent ways of interaction? Which are the relevant values that affect collaboration? How is it possible to stimulate a fruitful collaboration within the two areas? Second, we found that the role of the State was relevant in both network governance and policy networks. However, although the rationale and the content of networks in the two traditions are different, whether and how the role of the state change is unclear. We propose a similar reasoning for the role of trust. Trust is highly relevant in all the three traditions of research but, since the content of network implementation is different, how does trust change in the policy making process compared to the case of networks for

services delivery? What different paths do trust follow in the two cases? Are there different mechanisms to enhance trust among participants?

Finally, a further step in networks' research should favour the development of an overarching framework in which policy networks, network management and network governance literature interact with each other (Keast et al. 2014). The development of an overarching framework would allow researchers to study networks from various perspectives and in various stages of development. An overarching and unambiguous network theory, indeed, is necessary both to avoid misleading and confusing conceptualization of networks and their related issues (e.g. the relationships between network and governance that are different aspects on network theory) but also to diffuse the use of a common language between network scholars. The development of an overall and interdisciplinary theory of public networks could facilitate comparison between research and experiences while maintaining the peculiarities of each research tradition, leaving unaltered the perspectives through which networks are studied.

5 Conclusion

This literature review started from the recognition of theoretical confusion related to concepts and terminology used in the three main network research traditions. Although we call for a comprehensive framework between network research traditions that could potentially avoid a misleading use of terminology, we also recommend consideration of the different perspectives used by the three research traditions. On the one hand, our position is totally in line with Berry et al. (2004), who stated "that our field must be aware about taking the boundaries of networks as given and characterizing networks exclusively in instrumental terms" (Berry et al. 2004, p. 549), suggesting not to treat the streams as a completely separated issues. On the other, network research traditions can inform each other leading to the "cross-fertilization" (Berry et al. 2004, p. 540) of disciplines that can lead to new perspectives of analysis and development of novel ideas. However, it is important to bear in mind that the perspectives of analysis, as well as the research approaches, are sometimes different and terms applied in one research tradition could have a different meaning when used in the other two. Research traditions could not be used interchangeably, but they certainly are able to inform the others favouring both advance in our knowledge and the development of a network overarching framework.

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