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The dynamics of public networks A critique of linear process models

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Abstract

Purpose – This paper, by carrying out a review of the existent literature, tries to answer the question: what is the process an inter-organizational public network undergoes?

Design/methodology/approach – First, different linear-sequential network process models proposed by different scholars and disciplines are reviewed. Thereafter, grounded on the existing literature, some basic dimensions are identified, used to compare the different models proposed, highlighting complementarities and contradictions.

Findings – Different authors expect contradictory evolutions of the relations between actors along the stages. Complementing linear process models with other types of approaches, e.g. dialectical models, may well synthesize the opposing findings.

Originality/value – The gap in knowledge on public network process makes the study of network process both theoretically relevant and significant to practice. The main contribution of the paper is a comparative study of the conceptualizations of the process a network undergoes.

Keywords Social interaction, Networking, Knowledge management

Paper type Conceptual paper

Introduction

The re-shaping of the social structure termed as "mixed economy" (Austin and Hasenfeld, 1985), "quasi-markets" (Le Grand, 1991), "the shadow state" (Wolch, 1990), "government through the third party" (Salamon, 1981), "the contracting state" (Smith and Lipsky, 1993), or "the relational state" imply the fundamental idea that a variety of different actors must all be taken into account and made co-responsible of the search and implementation of solutions to cope with the new challenges facing current societies. This fact has displaced the traditional top-down public management towards newer management arrangements such as "public-private partnerships (PPP)" (Savas, 2000), "policy networks" (Kickert *et al.*, 1997), and "public networks" (Agranoff and McGuire, 2001).

Most research has focused on antecedent factors affecting the emergence of networks or on the different structures of networks (Ebers, 1997; Ebers and Jarrillo, 1997; Ring and Van de Ven, 1994). Much less research has been focused on the process through which the network evolves. Although understanding this process is fundamental to network management, since managers will have to take into account this process when deciding on inputs, investments or the structure (Ring and Van de Ven, 1994). The temporal implications of the process are also of great important since it will affect the evaluation of the network.



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This paper, by carrying out a review of the existent literature, tries to answer the The dynamics of question: what is the process an inter-organizational public network undergoes? The gap in our knowledge on public network process makes answering this question both theoretically relevant and significant to practice, given the increase in inter-organizational responses to the ever greater complexity of social challenges.

Given the added value to public management of multi-disciplinarity, the work is based primarily on the policy networks (Kickert et al., 1997; Marsh, 1998), business alliances and strategic networks (Kanter, 1994; Doz, 1996), network theory (Ebers and Grandori, 1997) and collaboration theory (Huxham, 1996) perspectives. The main contribution of the paper is a comparative study of the conceptualizations of the process a network undergoes. We focus on the management of the process of the functioning network based on Ring and Van de Ven's (1994) three linear macro stages (emergence, evolution and dissolution).

First we review different linear-sequential network process models proposed by different scholars. Thereafter, grounded on the existing literature, we identify some basic dimensions, which we will use to compare the different models proposed, highlighting complementarities and contradictions.

The dynamics of the network

Process – defined by Van de Ven as "a sequence of events as describes how things change over time" (Van de Ven, 1992, p. 169) – has been researched in organization studies using either one of four types of process theories (Van de Ven and Poole, 1995): linear-sequential, teleology (repetitive circular), evolutionary (driven by environment), and dialectics. With regards to research in network process, it is the first two which have been most popular: the linear sequential among public-private partnership (PPP) scholars (Lowndes and Skelcher, 1998; Osborne, 2000; European Commission, 2003; and Osborne and Murray, 2000)[1], while the alliance literature has also incorporated the teleology circular approach (Ariño and De La Torre, 1998; Ring and Van de Ven, 1994; Doz. 1996).

Linear sequential conceptualisations

Although some researchers prefer sequential linear conceptualisation of the process a network undergoes, while others prefer cyclical approximations (such as Ariño and De La Torre (1998), Ring and Van de Ven (1994), Hay (1998) and Doz (1996)), all researchers seem to agree that a network is created, it functions or develops and finally it ceases to exist. A basic logical sequential process composed of emergence, evolution and dissolution, using Ring and Van de Ven's (1994) terminology, is present in most research on network process.

During the emergence stage, the actors enter a pre-networking (Larson, 1992) or pre-partnership (Lowndes and Skelcher, 1998) phase where they court each other (Kanter, 1994) and establish a preliminary contact (Osborne, 2000), during the which mutual identification and appraisal takes place (Hay, 1998; and European Commission, 2003). Thereafter, before entering the evolution stage, actors "get engaged" (Kanter, 1994) and negotiate (Osborne and Murray, 2000), an agreement is reached (European Commission, 2003) and the network is formed (Hay, 1998; Kickert et al., 1997; Larson, 1992).

During what Ring and Van den Ven (1994) term as the evolution stage, actors start the "housekeeping" and "learning" (Kanter, 1994). The network now starts functioning (Hay, 1998), procurement (where tendering is required) and implementation take place (Lowndes and Skelcher, 1998; and European Commission, 2003), and the relationship solidifies (Larson, 1992).

The actors evaluate the partnership (Osborne, 2000), recognise failure or changes within the network (Kanter, 1994; Hay, 1998), which either produce changes to the network's agreements and functioning or may, ultimately, terminate it (Lowndes and Skelcher, 1998).

The decision to change, terminate, or abandon the network is based on the network's evaluation by the different actors. The network is evaluated at three different levels: each individual member organization (micro), the network as a whole (meso), and the network and its stakeholders (macro). First, the network must be internally efficient (Ebers and Grandori, 1997), its underlying game must be sustainable (Grandori and Soda, 1995): the payoff for all actors must be greater than going it alone (Eisenhardt and Schoonhoven, 1996; Kanter, 1994). Second, at a network level as a whole, the network must be equitable (Ring and Van de Ven, 1994; Doz, 1996), or fair (Jarillo, 1993). If the network is internally efficient and fair, then it is internally consistent. Also at a network level, the actors may also evaluate the networks adaptability to future expected events (Doz, 1996). Finally, external efficiency (Ebers and Grandori, 1997) refers to the wellbeing of all the stakeholders affected by the network and is especially relevant in public or cross-sector networks.

Up to this point, the different conceptualisations reviewed agree on the expected evolution of the network. Although the terminology differs and the linear stages are aggregated differently all authors agree on the fundamental characteristics of the linear evolution of the network (Figure 1).

Analytic dimensions of networks

The linear process models reviewed do not only present stages but also predict certain behaviour by the network through the different stages. Unfortunately, the models do not predict the network behaviour in terms of common dimensions. Therefore, in order to compare the different predictions offered by the models, we first identify some basic dimensions, which will be used as an analytic framework.

Ebers (1997) identifies five dimensions relevant to the management of inter-organisational networks. Three dimensions refer to micro-level ties, or relations between actors, while the other two refer to the governance structure (centrality and governance mechanisms). The relational dimensions are mutual expectations flows, resource flows and information flows.

Huxham (2003) using a similar rationale, identifies three leadership media, not always under the participants control. These media are structures (what Huxham refers to as the number of organisations and its openness, for example), processes (referred to as communication channels) and its participants. Hence, she also highlights, although in a less declassified manner, the meso-level (structures and participants) and the relational level (processes).

Similarly, the policy network management approach using game management and network constitution, as the name implies, focuses on the game, which are the action channels and rules (game management), and the network (as understood by this

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| Author | (Kanter, 1994) | (Osborne, 2000) | (European Commission, 2003) | (Lowndes and Skelcher, 1998) | (Hay, 1998) | (Larson, 1992) |
|-------------|----------------|---------------------|-----------------------------------|---|---|-------------------------------------|
| Dissolution | Change | Evaluation | | Partnership termination | Termination | |
| Evolution | Learning | Eva | Implementation | ne delivery | Recognition of failure | Network relationship solidification |
| | ٦ | ou | | Partnership programme delivery | R | |
| | House-keeping | Implementation | Procurement | | Functioning | |
| gence | Engagement | Negotiating | Design & Agreement | Partnership creation and consolidation | Formation Establishment of relationship | ablishment of elationship |
| | | _ | aisal | | | Est |
| Emergence | Courtship | Preliminary contact | Appraisal | Pre-partnership collaboration | Identification | Pre-networking |
| | | | Identification | | | |

Source: own

Figure 1. Linear processes as conceptualised by different authors

model), its structure, internal context and membership of the network (network constitution), hence differentiating between structure and process.

Relations: information, resource and mutual expectations flows

Relations are the building blocks of networks, and are not intrinsic characteristics of any part taken in isolation, but are an emergent property of the connection or linkage between units of observation (Knoke and Kuklinski, 1991). Given our focus on process and our interest in analyzing developmental aspects of networks, it seems appropriate to construct our analytic framework focusing on relations. In particular, we focus on three types of relations, following Ebers: resources, information, and mutual expectations (Ebers, 1997).

Resources are here broadly understood and may include tangible assets as financial and technological assets as well as intangible such as reputation or skills (Eisenhardt and Schoonhoven, 1996). These resource flows among the actors determine the future functioning of the network (Ebers and Grandori, 1997; Kickert and Koppenjan, 1997; Mohr and Spekman, 1996). As an example, once the different organisations have acquired the resources or skills they were after through the network, the diversity between them decreases and as a result their mutual attraction also decreases. The network may then be terminated since the objective of gaining certain resources may have been achieved. Hence, the changes in the resource base of the actors play a major role in network management.

However, in order for organisations to acquire resources through networks, they must themselves possess resources in order to be attractive to a potential partner (Eisenhardt and Schoonhoven, 1996). Moreover, the different parties try to strategically manipulate the transactions of the game itself in order to change the relationship of interdependence to one's own advantage (Grandori and Soda, 1995).

Clear understanding and knowledge of the aims and goals of the different organisations involved in the network is a crucial point highlighted by different authors (Huxham and Vangen, 2000; Hay, 1998; Doz, 1996), making information flows of viatl importance. Although common wisdom declares that the network aims must be clear to all, the common situation is that these are usually not explicitly agreed upon (Huxham and Vangen, 2000). A cause of this situation is that aims have three dimensions along which they may vary. Firstly, aims may vary according to the ownership. The aims may be those of the collaboration, those of the organisation and those of the individual. The second dimension is that of the openness of the aims. Aims may be hidden, assumed or explicit. The means at which aims may be achieved is the third dimension. Aims may be achieved via the individual alone, via the organisation alone or via the collaboration (Huxham and Vangen, 2000).

The ambiguity regarding the members pertaining to the network also depends on the information flows. It may be unclear which organisations are involved in the network or whether the individual or the organisation is in it. Hence there may be variations in the way that people conceive the collaboration (Huxham and Vangen, 2000). Another important factor regarding information flow is the understanding of the context and the extent this is shared among participants (Hay, 1998).

Factors that increase the challenges to strong information flows are differences in the organisational cultures (Huxham and Vangen, 2000; Doz, 1996), if major power discrepancies are perceived (Huxham and Vangen, 2000), accountability of participants

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to their own organisations (Huxham and Vangen, 2000; Doz, 1996) and if relationship between parties are not wholly trusting (Huxham and Vangen, 2000; Mohr and Spekman, 1996). Regarding the relationship between information flow and trust, the quality of the information, understood as timely, accurate, adequate and complete (Mohr and Spekman, 1996) is fundamental. Hence, there seems to be a vicious (or virtuous) circle relationship between trust and communication flow.

Mutual expectations flows are again fundamental in networks since uncertainty due to moral hazard and adverse selection requires social control (Larson, 1992) or trust to overcome it. Ring and Van de Ven (1994) define trust as the confidence in another's goodwill and which is a product of interpersonal interactions that lead to social-psychological bonds of mutual norms, sentiments and friendship. This type of trust is defined by Ring (1997) as resilient trust, while he refers to trust dependent on contracts as fragile trust. Furthermore, strong trust relations may only be maintained with a limited number of actors, hence, within a network different degrees of trust will be present between actors.

Other structural and contextual aspects

Networks require endogenous conflict resolution mechanisms (Ring and Van de Ven, 1994; Mohr and Spekman, 1996; Weiss and Visioni, 2003; Huxham and Vangen, 2000) as well as other governance mechanisms serving as channels through which the different actors interrelate, such as the inter-partner interface (Doz, 1996). Such mechanisms will depend on the complexity, due to differences in procedures and culture and the number of organisations (Huxham and Vangen, 2000; Grandori and Soda, 1995; Kickert and Koppenjan, 1997; Ebers and Grandori, 1997), and the type of interdependence between organisations (Grandori, 1997) and may be legal and hierarchic, economic and financial, and/or social and communicative (Bruijn and Heuvelhof, 1997). Also, these may be formalised at different degrees (Ebers and Grandori, 1997) and will affect the networks centrality.

The network's internal and external context

According to multiple authors, and as we mentioned earlier, the context plays an important role when managing networks. Therefore, context must be added (Agranoff and McGuire, 2001) as a sixth management dimension in order not to under-estimate external changes (Ariño and de la Torre, 1998).

The neo-institutional approach finds that institutional embeddedness determines the ease and relative effectiveness of network formation (Grandori and Soda, 1995). Hence, the political and social contexts are determinant variables when managing networks (Kickert and Koppenjan, 1997). For example, public support and infrastructure is a fundamental mechanism in those networks where the autonomous parts will hardly cooperate due to the so-called "tragedy of the commons" (Bruijn and Heuvelhof, 1997). The above mentioned context refers to the external environment (Doz, 1996) or the strategic context (Hay, 1998). The internal environment (Doz, 1996), on the other hand, is the organizational context inhabited by the individuals active in the inter-organisational network.

Relations along the dynamic linear stages

Hereon, in order to compare the linear sequential models we focus on the evolution of these relations along the three stage linear dynamic model previously introduced.

Emergence

During the emergence stage, prior relations and firm reputations play important roles (Lowndes and Skelcher, 1998; Larson, 1992; and Kanter, 1994), the former indicates personal trust while the latter economic trust (Larson, 1992). However, according to Huxham and Vangen (2000) and Ring and Van de Ven (1994), at the start of the relationship, mistrust is still present among the partners. At this stage, network managers must identify the potential participants (network activation) and influence the procedures and values the network will adopt (network framing) (Agranoff and McGuire, 2001).

As the conditions are set and the relationship is established, mutual economic advantages must be recognisable by the parties and a period of trial and trust-building is initiated (Larson, 1992). However, quick returns should not be among the criteria used to initially evaluate and negotiate an alliance (Kanter, 1994), the relationship must be focal (Weiss and Visioni, 2003). During the initial phase, process is far more important than results since it facilitates mutual learning (Doz, 1996), and sense making (Ring and Van de Ven, 1994). Hence, evaluation should be carried out on equity and adaptability terms.

Sense making is carried out through communication, increases through time and is necessary in order for the different actors to have a sense of identity of self with respect to the others and to construct a shared mechanism of interpretation (Ring and Van de Ven, 1994). During this stage, the network takes incremental steps towards a closer atmosphere, in a back-and-forth risk-taking reciprocal pendulum, which resembles Axelrod's (1984) tit-for-tat, where mutual expectations evolve and procedures are institutionalised (Larson, 1992). However, Huxham and Vangen (2000) conclude that, just as sometimes it is necessary to start the network before trust is totally present, sometimes it is best to get started with something without totally agreeing on the aims.

At this stage, according to Ring and Van de Ven (1994) mechanisms start formal and gradually become informal, as fragile trust becomes resilient trust (Ring, 1997). Similarly, relationships are first based on role and gradually become personal. Contrary to this trend, Kanter (1994) and Larson (1992), declare that the relations are first personal and informal and later become formal and based on role. Nevertheless, all authors agree on the fact that resource flows are low at this stage and that information flows must be high.

Evolution

During the integration and control stage the network relationship solidifies through operational integration, strategic integration and social relations integration and control, which includes trust, moral obligations, reputation and identity (Larson, 1992). However, the organisations involved face the problems of the continuous operational functioning of the alliance (Kanter, 1994). These problems are due to a broader involvement in the alliance of people and roles, and to the discovery of organisational differences (Kanter, 1994). Differences, according to Kanter (1994), are managed through developing mechanisms for bridging interpersonal and inter-organisational

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differences in structures, processes and skills by involving as much people as possible. In contrast, Huxham and Vangen (2000) conclude that complexity must be kept low and hence membership numbers.

According to Kanter (1994), the "changes within" take place through empowerment of relationship managers and through the construction of infrastructures for learning. In the former, managers involved must be able to vary their own company's procedures, while the latter requires strong communications structures and widely shared information in order to have better external relationships. Network managers must focus both on the human relations component (mobilizing) as on the internal environment (synthesizing) (Agranoff and McGuire, 2001).

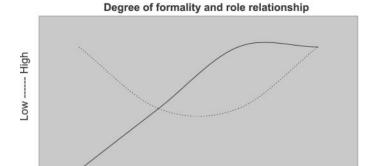
Internal network dynamics may be caused by the diagnosis of a network crisis (Hay, 1998). This may be due to the subversion of the general interest by network core, failure of strategies formulated within network or failure, strategic agenda or, finally, due to the failure because of inappropriate constitution of the network.

As we mentioned for the emergence stage, during the evolution stage there seem to be contradictory conclusions from different authors. Ring and Van de Ven (1994) identify at this stage first a decrease in formal mechanisms, as resilient trust emerges and the network consolidates (Ring, 1997), followed by a subsequent increase. Similarly, they identify this pattern regarding personal and role relationships. According to these authors, once in the evolving phase, the network starts to institutionalise. This is a socialising process that objectifies and internalises the objectives, mission and procedures of the network. Institutionalisation is evident when personal relationships supplement role relationships, when psychological contracts substitute formal contracts and when formal agreements increasingly mirror informal commitments and understandings. However, as the network continues to evolve through time, organisations formalise informal contracts in order for the network to survive the individuals (since the principal parties are organisations not individuals), in order to achieve legal and external recognition of network and since informal psychological contracts can become highly resistant to change (Ring and Van de Ven, 1994). In line with this trend, Das and Teng (2002) find that inter-partner conflict decreases as the network evolves (Figure 2).

Kanter (1994), Lowndes and Skelcher (1998) and Larson (1992) find the opposed trends. Lowndes and Skelcher (1998) identify at this stage an all-time low of trust in the network. According to them this is due to the presence of higher levels of market mode governance since bidding and contracting takes place. However, their observations, which refer to partnership in the urban-regeneration field, where substantial contracting is present, may well not be generalisable to other types of networks where bidding and contracting do not take place or are less relevant. Similarly, Huxham and Vangen (2000) and Kanter (1994) do not agree on whether the membership of more people should be limited or enhanced. However, what does seem shared by all authors is that flows in information, resources, and mutual expectations should be high.

Dissolution

Finally, when "managing the trade-offs", a balance between how much to change and not to change must be stroked. Sometimes organisations must terminate an alliance. This may be either because an alternative arrangement is more efficient or a serious violation of equity is perceived (Ariño and de la Torre, 1998), or, according to Das and

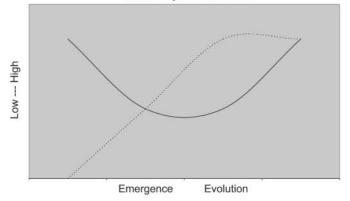


Emergence

--- Kanter 1994, Lowndes & Skelcher 1998, Larsson 1992 ---- Ring & Van de Ven 1994, Huxham & Vangen, 2004

Evolution

Mutual expectations flows



Information flows

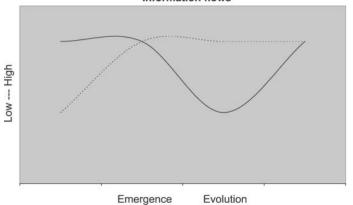


Figure 2. Flow evolutions according to different authors

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Teng (2002), there is a decrease in collective strength, an increase in inter-partner conflict and a decrease in interdependence. Network termination is a difficult task that must be done with political and diplomatic skills (Kanter, 1994). When significant imbalances between formal and informal processes arise in repetitive sequences of negotiation, commitment, and execution stages over time, the likelihood of dissolving the cooperative inter-organisational relationship increases (Ring and Van de Ven, 1994).

Excessive formal structuring creates mistrust since it curtails independence of parties and it does not allow for personal relationships to develop, which complements the role relationships. When, on the other hand, the structuring relies heavily on informal mechanisms, the potential for opportunism is much greater, both at the individual and at the group level, parties may expect too much from each other without any formal agreement and the network may be furthered because of interpersonal relationships although it may have become inefficient and ineffective (Ring and Van de Ven, 1994).

Moreover, network termination tends to be a long process: involving the decline of influence of the network and the gradual abandonment of partners (Hay, 1998). Lowndes and Skelcher (1998) identify three different options present to the partners during the termination stage. These are: to keep the partnership going, let it die peacefully or support what lasts by keeping the momentum.

Conclusion

This article has compared linear sequential models of network process and found that all the analyzed models are sequentially coherent with each other and differences with respect to the stages seem to arise solely at the terminological and stage aggregation level. The article also compares the evolution of the network along the different stages as predicted by the different models. The models are compared by focusing on relations among organizations in the network, namely information, resources, and mutual expectations. We conclude that different authors expect contradictory evolutions of the relations between actors.

Research on inter-organizational networks, partnerships, and alliances in general, and in the public sector in particular, has overlooked process and management, dwarfed by investigations on the rationale for and formation of these networks. In turn, the little research on network process has been done using linear sequential models. Not only is more research on process necessary, but the more common linear sequential approaches should be complemented by other approaches.

Although these linear approaches are undoubtedly necessary, other types of approaches, such as dialectical, for example, seem complementary and could prove useful in synthesising some of the apparent contradictions predicted by the linear models. Public network management researchers may do well in following other organizational scholars in adding to their perspectives some which go beyond the traditional, rational, linear episteme. Given the increasingly complex and changing interest of study, we may do well in opening our vision.

Note

1. Hay (1998), using a cyclic approach, is an exception among PPP scholars.

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Further reading

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