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A contingency perspective

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Metatheory of Network Management: A Contingency Perspective

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Metatheory of Network Management: A Contingency Perspective

Abstract

This paper introduces a metatheoretical, contingency-based framework of interorganizational network management. This framework links together the discussion on the manageability of networks and extant literature on the functions, tasks, and actor roles in network management. The paper defines and discusses four basic network management functions – labeled tentatively as framing, activating, mobilizing, and synthesizing – that are suggested to be universal to all networks, including strategic nets, markets as networks or macro networks, as well as social networks. It is further suggested that management tasks, derived from the more general management functions and contingent upon the characteristics of the network, differ between different types of networks. Finally, the paper discusses the managerial roles that different actors in a network can adopt depending on their resources and capabilities. In spite of its preliminary nature the paper is seen to make a significant contribution in clarifying the extant discussion of management in a network context.

1 Introduction

The focus of network research has increasingly been shifting from trying to understand the functions and dynamics of networks in general to trying to understand their management (Jones et al. 1997, McGuire 2002, Möller and Svahn 2006, Ritter et al. 2004). Network management has been studied in several, often overlapping fields, including industrial and business networks (Ford et al. 2003, Ford and Håkansson 2006, Möller and Halinen 1999), strategic networks (Jarillo 1988, Möller et al. 2005, Möller and Rajala 2007, Gulati et al. 2000), innovation and development networks (Dhanaraj and Parkhe 2006, Heikkinen et al. 2007), health care networks (Provan and Milward 1995, Provan et al. 2004), and public policy networks (Kenis and Provan 2006, Klijn et al. 1995, Kickert and Koppenjan 1997, Agranoff and McGuire 2003, McGuire 2006). The broadness of the contexts where networks have been studied is matched by the variety of background disciplines applied. These include institutional economics, economic sociology, industrial

network theory, organizational studies, and strategic management (Araujo and Easton 1996, Ebers 1997, Grandori and Soda 1995).

The referred studies, among other, have contributed different ideas and viewpoints to network management. Some focus on networks with a limited number of actors – "strategic nets" – and argue for the ability of hub companies to exert relatively strong coordination over the actors (Jarillo 1988), while some argue that firms can only cope within a network (Ford and Håkansson 2006). Some look at the different levels of management, ranging from individual relationships to relationship portfolios, strategic nets, and more macro level networks (Möller and Halinen 1999). Some focus on the management of innovation networks (Dhanaraj and Parkhe 2006), while others identify differences in management in stable, renewal and emerging networks (Möller et al. 2005, Möller and Svahn 2003). Capabilities to manage networks have been under review (Möller et al. 2005, Möller and Svahn 2003, Ritter and Gemünden 2003) as well as the different kinds of roles firms can adopt in managing networks (Heikkinen et al. 2007).

While network scholars have generated valuable insights into network management, the research field remains quite fragmented. The problem in network management literature is that the various approaches are based on different underlying assumptions about the ontological characteristics of networks. This fragmented nature of theories pertaining to the evolution and management of networks creates several problems. We are facing:

- Multiple research approaches, which are partly independent and partly overlapping.
- Approaches that provide only partial theories or views of the network management phenomenon.
- Approaches that draw on different theoretical sources and employ different conceptual frames of reference.
- Approaches that often focus on issues at different aggregate levels and employ different units of analysis.

In brief, we argue that we do not yet have a developed theory of network management. What we have is a variety of partial descriptions and theories focusing on the broad content of the phenomena researchers have labelled network management or management in the network context. A number of key question thus still remain. How are the different studies, perspectives and models of network management connected to each other? Can one develop a unified theory of network management or are the characteristics of

different networks and their theories, for example the socially network theory and the emerging theory of strategic nets, so different that we need several theories of network management? In the latter case, can one identify certain contingencies that allow us to construct context specific theories.

In this paper our purpose is to address these questions by providing a metatheoretical analysis of the extant literature on network management. By doing this we aim to identify the linkages between different perspectives and bring clarity and structure to future studies and practice of network management. We will do this by introducing a contingency framework of network management, which conceptually describes and links together the basis, functions, tasks, and roles of network management.

We will follow analogically the metatheory approach presented by Tsoukas (1994) on general organizational management. Through this framework which we will reinterpret and reorganize the various perspectives and definitions of network management we have found in literature into a more coherent, logically organized understanding of network management.

A critical issue in this approach is can one apply a metatheory of general management to network management? Are these not separate concepts? And if they are, is it still possible to use the same framework to understand them both? We argue that intra- and inter-organizational management are fundamentally based on the idea of value creation. This allows us to extend the metatheory developed by Tsokas (1994) for intra-organizational management to a metatheory of network management. More specifically we presume that any value-creating system – including hierarchies, markets and networks (cf., Powell 1990) – can always be defined through the constructs of actors, resources and activities (Parolini 1999; Håkansson and Johansson 1992; Håkansson and Snehota 1995). Therefore the management of networks and the management of organizations are fundamentally comparable as the aim of management in both is to improve value-creation.

This paper, as one can note, has very ambitious goals. Taking into account the vast and diversified extant literature on networks (see the seminal review articles by Grandori and Soda 1995, Easton and Araujo 1996, Ebers 1997, Brass et al. 2004, Provan et al. 2007) we recognize that the paper is based on a limited set of reading. The goal is not to offer a comprehensive state-of-the-art presentation of the network literature in general but to focus on the core dimensions and constructs of network management. Our metatheoretical framework should be understood as an abstraction of the contingent linkages between its different sub-elements. Hence, while we do provide some basic discussion on each of its

sub-elements, the purpose of this paper is not to extensively review the literature on each specific sub-element but to introduce and discuss the overall framework itself.

The paper starts with a review of some basic definitions on networks and network management. In the next section we discuss general management as an area of research, and present a metatheoretical approach to this research field introduced by Tsoukas (1994). This metatheory will then guide section four, the core section of the paper, which presents our contingency framework of network management. We introduce and discuss each of the sub-elements of the framework: the basis, functions, tasks and roles of network management. The paper concludes with a discussion the implications and limitations of the framework.

2 Networks and network management

In its most abstract definition a network is seen as a set of *nodes* and *relationships* which connect them (Fombrun 1982, Brass et al. 2004, Håkansson and Ford 2002). This all-encompassing view of networks is very general. According to it all social life can be considered a network, or a network of networks. Grandori and Soda (1995), in their state-of-the-art article of network research, emphasize the role of networks as "...as modes of organizing economic activities through inter-firm coordination and cooperation" (p. 184). This is an important perspective as it provides networks an instrumental role; they are instruments of organizing activities and as such the behavior of actors is intentional and goal oriented. This view is obviously related to the notion of markets, hierarchies (organizations), and networks being the three fundamental governance modes of economic activities (Powell 1990), which gives a basic reference point for network management. If we accept that network management is distinctive from hierarchical or market-based governance, we need to be able to define the management mechanisms that are unique to a network organizing of economic activities.

There has been a long academic discussion of the similarities and differences between markets, hierarchies and networks as pointed out by Ritter (2007). In a nutshell two orientations or "schools" have emerged. Some see markets and hierarchies as extreme points on a continuum, and the relationships between actors and the resulting networks are treated as a hybrid form of governance. This view is prominent among the scholars related to institutional economics (cf., Thorelli 1986; Williamson 1975, 1980). This view has been questioned by economic sociologists (Bradach and Eccles 1989, Powell 1990), organizational researchers (Adler 2002), and scholars working in the industrial network

theory tradition (Håkansson and Johanson 1992) who regard networks as an independent governance form. According to this view, which we embrace, network governance is characterized by long-term, reciprocal relationships where mutual expectations, collaboration and trust are the dominant managing mechanisms. This differentiates it both from markets guided by price competition and negotiations between independent actors and from hierarchies characterizes by power and authority based contractual relationships (cf., Powell 1990).

There is, however, no unified view of business networks. In a simplified fashion these can grouped into the distinction, as pointed out by Achroll (1997) and Möller and his colleagues (Möller et al. 2005, Möller and Svahn 2006), between a network of organizations and a network organization. The former refers to any group of organizations or actors interconnected in reciprocal and enduring exchange relationships. This perspective is close to that of scholars in economic sociology and social networks (Burt 1992, Granovetter 1985, Knoke 2001, Uzzi 1996) and in the industrial networks school (Håkansson and Snehota 1995). Network organization is defined by Podolny and Page (1998, 59) as "…any collection of actors (N>2) that pursue repeated, enduring exchange relations with one another and, at a same time, lack a legitimate organizational authority to arbitrate and resolve disputes that may arise during the exchange." This form, as Oliver (2004) notes, excludes not only market transactions but is distinct from hierarchies that have a legitimate authority to resolve disputes.

The view is in line with Amit and Zott (2001), Gulati et al. (2000), Miles and Snow (1986) and Park (1996) who, adopting a term strategic network, emphasise the strategic relevance of the network relationships for the actors and the intentionality of the arrangement. Within non-profit sector, Alter and Hage (1993) have provided a similar definition. Strategic networks have been elaborated by Möller and his colleagues (Möller et al., 2005; Möller and Rajala 2007, Möller and Svahn 2006) who make a distinction between "networks" and "nets", the latter referring to strategic networks.

The distinction between "networks of organizations" and "network organization" is reflected in the views about the role and extent of management in business networks (Harland and Knight 2001, Ritter et al. 2004). Researchers interested in networks primarily as emergent structures argue that networks, as complex, adaptive systems in which all members are simultaneously and continuously pursuing their individual goals, cannot be managed by any single actor. At best individual firms can only try to "cope" within the

network (Håkansson and Ford 2002, Ford and Håkansson 2006). On the other hand, several writers interested in strategic nets (Jarillo 1988, Parolini 1999, Möller et al. 2005, Möller and Rajala 2007, Möller and Svahn 2003), argue that networks can have actors, "hubs" or "focal firms", that are able to exert considerable coordination over a strategic net, that is to manage them to a relatively great extent.

These two polar viewpoints to network management can be attributed to the differences of definitions and ontological views of networks. In other words, the answer to the question about the extent to which a firm can manage a network depends on what perspectives, background assumptions, and definitions we are willing to accept regarding "networks" and "management" (Harland and Knight 2001; Möller and Svahn. 2006). In reference to the background assumptions the seemingly contradictory "unmanageability" and "manageability" perspectives are in fact compatible (Ritter et al. 2004, Möller and Rajala 2007). The key issue, we argue, is not whether networks can or cannot be managed but what kind of governance or managerial solutions are most suitable for different types of networks. This viewpoint calls for a contingency type theory of network management. Möller and his colleagues have addressed this challenge concerning the strategic nets and suggest that network management is a function of the level of determination of the value creation system underlying a particular net (Möller et al., 2005; Möller and Svahn 2006; Möller and Rajala 2007).

Broadly conceived, network management can be defined as improving the ability of the network to operate towards accomplishing its varying objectives, or as the means by which network members influence each other and/or the network as a whole in order to improve network cooperation. At one level, network management involves restructuring the existing network, and at another level it involves improving the conditions of cooperation within the existing structure (Kickert and Koppenjan 1997, 46-53; Klijn et al. 1995). The former mode – restructuring – involves activities such as adding or removing actors, resources or value activities from the network as well as changing the ways in which the network relates to its environment. The latter mode – improving conditions of cooperation – involves various activities taken to facilitate cooperation between network actors so that the network would accomplish its goals. One should note that this description assumes an existing network. One should also address the issue of network construction, i.e., the development and mobilization of a new strategic net by a particular actor.

To complicate the notion of network management even more one should also take into account that management seems to differ also at different levels of management (Möller

and Halinen 1999, Ritter and Gemunden 2003). Yet another issue is that network actors can, in principle, range from individuals to organizations and even to networks (Håkansson and Snehota 1995). From this perpective an interesting aspect is to look at what kind of roles actors can take in network management and what factors condition this role taking (Heikkinen et al. 2007, Snow et al. 1992, Knight and Harland 2005).

In sum, although there exist many useful conceptualizations of network management, the contributions have remained fairly fragmented. Reading of the network management literature still leaves several important questions unanswered: How are the different conceptualizations connected to each other? What is the basis of what we call "network management"? Facing the different underlying assumptions of various network research traditions can one develop a unified theory of network management? Or do we need modified theories for different disciplinary schools or for different types of networks? The metatheoretical contingency framework that we create in this paper is an attempt to provide preliminary answers to these questions.

3 Management and its contingencies

3.1 General business management

Watson (2006, 167) defines the (organizational) management concept broadly as the "overall shaping of relationships, understandings and processes within a work organisation to bring about the completion of the tasks undertaken in the organisation's name in such a way that the organisation continues into the future". Managerial work is the "activity of bringing about this shaping", and managers are the people who are given the official responsibility for carrying out this work (Watson 2006, 167-168). The function of management can however be carried out also by people not appointed officially as "managers" (Watson 2006, 167-171). Management is thus a function that by definition has to be carried out in every organization that wants to exist in the future, but organizations do not necessarily have to have officially appointed managers to do this work.

The definition by Watson implies that strategy-making is an inherent part of managerial work, since the management should take the responsibility of completing the tasks "in such a way that the organisation continues into the future". The definition also assumes that the organization has undertaken the completion of some specific tasks. However, it is evident that sometimes these tasks may be neither self-evident nor

consciously chosen. In this case, we argue, it falls upon the managers to bring light to the "understandings" on what the tasks indeed are. In other words, it is also upon the function of management to vision and make clear what are the goals and tasks that the organization strives to achieve.

A famous categorization of five elements of management was introduced by Fayol in 1949 (ref. Watson, 2006, 172-173). According to Fayol, management consists of *planning* (devising a plan of action for utilizing the organization's resources to achieve the organization's objective), *organizing* (making sure that resources are available when needed), *commanding* (directing people so that they carry out required activities), *coordinating* (ensuring that all the activities support each other and combine to contribute to the overall fulfillment of the organizational objective), and *controlling* (checking that activities follow their planned course and correcting and deviations that are found). Since Fayol this account of management has remained fairly unchanged; it seems that virtually all relevant, contemporary textbooks of management can be summarized in terms of the four functions: *planning*, *organizing*, *leading*, and *controlling* (Toukas, 1994). The list may differ somewhat from one textbook to the other, but the essence of the categories remains the same.

The classical definition of management does not, however, embody the full richness of the phenomenon of management. Toukas (1994) has identified four major, and in many ways apparently unlinked, research perspectives to management that go beyond the traditional functions: the management functions perspective (including classical, systems and historical schools of management study), the management task characteristics perspective (building on sociological lines of inquiry), the management roles perspective (the famous work by Minzberg 1973), and the management control perspective (neo-Marxist approach to looking at the institutional structures of management). We will now briefly review these approaches, based mostly on Tsoukas's presentation.

The management functions perspective is based originally on the classical approach, which was already presented above. The systems approach (Daft 1988; Robbins 1991; Beer 1981) has further developed the classical approach. It studies organizational management through the objective organizational requirements for survival and effectiveness, and claims that "certain systemic functions need to be carried out in all organizations, which give rise to certain distinctive management functions" (Tsoukas 1994, 292). The historical school (Chandler 1977; Teulings 1986), on the other hand, looks at the functions of management through the historical developments or evolution of organizations. Teulings (1986), for instance, has identified that in modern large-scale corporations four functions of

management can be identified: the ownership, administrative, innovative, and production functions.

The management task characteristics perspective, which Tsoukas (1994) relates to Whitley (1989), follows a sociological line of inquiry that seeks to study the distinguishing characteristics of the tasks that managers have to do as well as the management skills that these tasks imply. The nature of these tasks arises from two fundamental premises: first, the organizational nature of management activities, and secondly, the discretionary nature of management in the allocation, control and use of resources. From these premises Whitley (1989) has suggested that the *nature* of management tasks is that they are highly interdependent and context-dependent, relatively unstandardized, developing and fluid, oriented towards both the maintenance and innovation of administrative structure, and characterized by the lack of visible outputs that can be directly linked to individual inputs. This perspective does not so much look into the *content* of the tasks, but into their characteristics. We acknowledge the relevance of these inherent characteristics of managerial tasks. However, in this paper we are interested more in the actual *content* of different management tasks in network management context; and further whether one can identify contingencies that give rise to particular divisions in the required management tasks. In other words we ask the question "what are the contingencies that differentiate required management tasks in different contexts?" Here we take Whitley's analysis as our basis: if the nature of management is context-dependent, then different management tasks (in terms of their differing contents) are required in different organizational contexts having certain contingencies. We will return to these contingencies later when we discuss the task-level contingencies of network management.

In the management roles perspective, Minzberg's (1973) work is especially prominent. He has criticized the functions perspective on management, and especially the classical school, arguing that its universal prescriptions for what managers *should* do not describe what managers *actually* do. Minzberg (1973) has indeed shown that the actual process, or activities, carried out by managers do not often follow the above categorizations. That is, at the micro level of analysis the managers do not seem to follow the classical categorization of managerial work, but are engaged in various managerial roles, falling under three major categories: interpersonal, informational and decisional roles.

Finally, the management control perspective takes on an institutional, macro-level analysis of management, building on the neo-Marxist approach (Armstrong 1989; Willmott 1984). This perspective looks at the institutional structures of managers and those that are

managed, and emphasizes "the centrality of management control in securing the transformation of labour power to actual labour in the context of capitalist relations of production" (Tsoukas 1994, 297). Looking at this perspective from a less critical stance, with lesser focus on control *per se* and more emphasis on also other "causal powers" of management, Tsoukas (1994) argues that this perspective is useful in that it conceptualizes the causal powers of management that makes the existence of certain management functions possible. Thus "[by] virtue of being part of the [socio-economic] industrial structure, management is vested with a set of causal powers that defines its nature" (Tsoukas, 1994, 297). These causal powers are, according to Tsoukas (1994), *control*, the ability to elicit *cooperation* from others, and the drive towards *efficiency* and *effectiveness*. One should note that this view is essentially informed by the critical realist perspective into management and organization theory (Bhaskar 1978, 1989; Dobson 2002; Easton 2002).

3.2 A metatheory of general business management

Tsoukas (1994), based on his review of the literature, introduces a metatheoretical framework of network management to draw linkages between the different, fragmented approaches to network management. He points out that there are apparent tensions between the four different perspectives – the management functions perspective, the management task characteristics perspective, the management roles perspective, and the management control perspective. These tensions relate, he argues, to their rather dichotomic conceptions of managers either in abstract and universal terms (the function and control perspectives), or through individual managerial activities (the task and role perspectives). Tsoukas (1994) futher argues that, while the universal approach studying what managers *should* do is evidently not enough, as e.g. Minzberg's work clearly presents, there is a danger also in focusing solely on what managers do, their micro behavior. Thus if we study only what managers *actually* do we may never know what they might be *capable* of doing. Hence there is a need to link the different approaches to each other.

Tsoukas (1994) draws linkages between the different approaches by building a four level framework (see Figure 1) of the different approaches to management, with linkages between the levels so that each upper level is made possible by the immediate lower level. Different levels "exhibit different dynamics (i.e. rate of temporal change): the closer to the surface, the more likely it is that changes occur (depending on changes of various contingencies"; these differences in dynamics are denoted with different shapes of lines in

Figure 1. Tsoukas's view corresponds to the description of social world as a layred system proposed also by Sayer (2000).

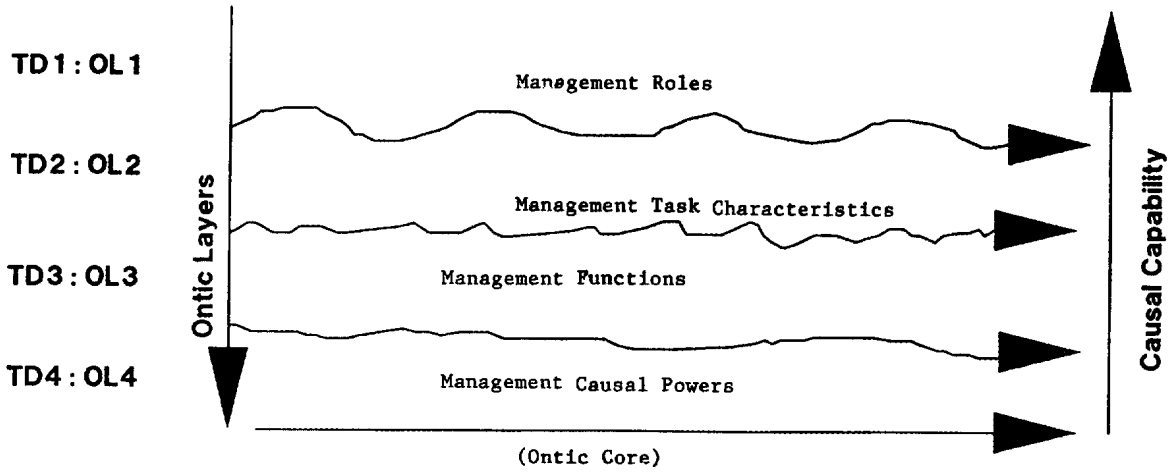

Figure 1. A metatheory of different perspectives to management (Tsoukas 1994)

The first level of management (TD1; OL1) denotes the theoretical description (TD) and the empirical phenomenon, or the ontological layer (OL), of management roles. Tsoukas (1994, 296) argues that at this level the key contingency question is "what are the contingencies (for example, type of job, hierarchical position, management strategy, type of industry, national features, etc) which are systematically associated with how particular managerial roles emerge, demise or gain importance?". This is the most fluid and context-dependent of all of the layers. But why are management roles what they are? Tsoukas further argues that to answer this question one needs to look for an explanation at a deeper layer of management, in this case the second level.

The second level of management (TD2; OL2) looks at the nature of management tasks, and has the power to explain differences in roles at the first level. For instance, the interdependence of some managerial tasks gives rise to certain managerial roles. In other words, the reasoning behind this analysis is that "for particular management roles to be possible a certain configuration of management task characteristics must be in place" (Tsoukas 1994, 296). Then why are certain configurations of management tasks characteristics the way they are? Again, to look for the answer, we need to go to a deeper layer.

The third level of management (TD3, OL3) goes into the specific management functions, whose existence is a necessary condition for the existence of a configuration of

management task characteristics at the second level. As Tsoukas (1994, 296) explains, "it is by virtue of the fact that managers are organizationally compelled to make a difference to the resources they combine via performing the functions of planning, organizing, leading, controlling, etc that certain characteristics of management tasks are possible".

Finally, in the same vein, the fourth level of management (TD4, OL4), the causal powers of management deriving from the socio-economic context or the national and global industrial/institutional structure of managerial work, gives rise to the management functions, by "locating management into its wider socioeconomic context and conceptualizing the manner in which this context endows management with a set of causal powers (namely, it imparts to management a necessary way of acting)".

At the fourth level, the wider industrial/institutional structure gives management the following three (organizational-level) "causal powers" (Tsoukas 1994):

1. The ability for managers to *control* an organization through superior-subordinate relationships.
2. The ability for managers to elicit active *cooperation* from subordinate members through the provision of rewards.
3. The managerial drive, or imperative, towards seeking *efficiency and effectiveness*, i.e. the "managers are organizationally compelled to 'make a difference' to the resources they manage, so that their integrated utilization generates more value than their separate use" (Tsoukas 1994, 298).

These three causal powers are inherently related to the fundamental nature of management in market economics, and they are in themselves a contradictory set (e.g. control and cooperation may sometimes be at odds with each other, and seeking efficiency and effectiveness simultaneously may sometimes not be possible). Furthermore, these causal powers can change in strength depending on shifts in societal power relations and other contingent organizational, national or global factors. (Tsoukas 1994).

The levels TD1, TD2, TD3 and TD4 thus correspond to the four theoretical perspectives (roles, task characteristics, functions, and control, respectively) of management. Each layer constitutes a relatively autonomous area of study, but the framework by Tsoukas causally links them together. The power of the framework thus lets us understand how the different concepts of management at different levels of analysis can be conceived as a coherent set of "management work".

In this paper, we will adopt the Tsoukas's (1994) framework to analyze the corresponding contingencies and levels of management in *networked* settings, thus extending

the Tsoukas's framework from its intra-organizational level of analysis to the inter-organizational level. This is the topic of the next section.

4 A metatheoretical contingency framework of network management

In this section we will synthesize the discussion of networks and their management on the one hand, and intra-organizational management and its contingencies on the other hand. In order to do this we will first discuss how the two discussions are fundamentally connected to each other through the concept of value-creation. Then, we will continue to amalgamate the contingency framework by Tsoukas (1994) with the ideas on networks and their management. Through this discussion we will present our contingency framework of network management (see Figure 2).

We will discuss our framework under four headings, corresponding to the four levels of management (TD1 - TD4) outlined in the framework; however, we will start with fourth level (TD4) and continue from there upward.

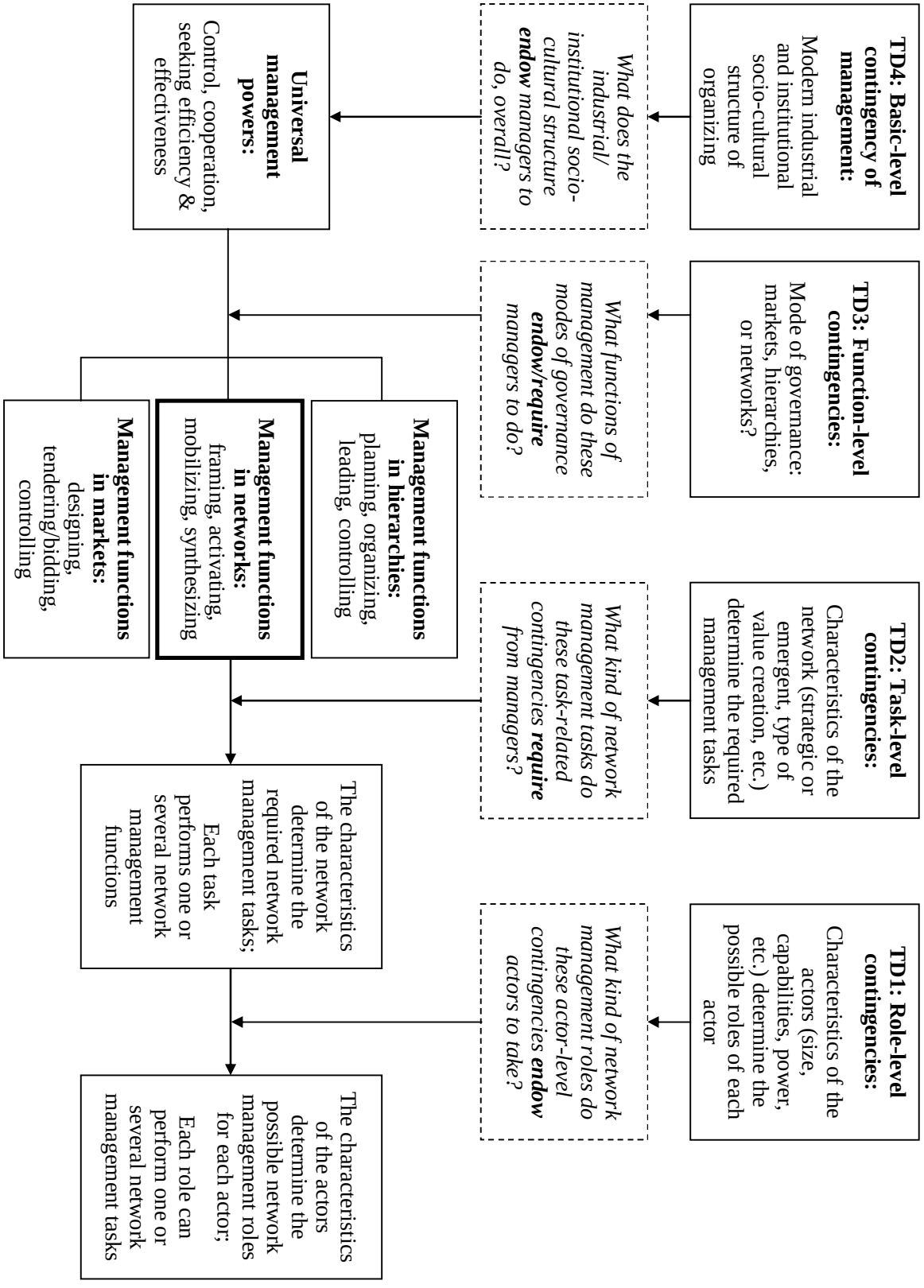

Figure 2. Contingency framework of network management.

4.1 Basic-level contingencies of management – Level Four

Studies on both network management and intra-organizational management are fundamentally based on the idea of value creation. To start with, any value-creating system (including hierarchies, markets and networks) can always be defined as a set of actors, resources and activities (the ARA model, see Håkansson and Johansson 1992; Håkansson and Snehota 1995; Parolini 1999). Within this definition, actors are those who perform activities and control resources, and activities are the usage of resources to change other resources. Value is thus created through the interplay of the activities, actors and resources, and it is possible to observe this at any level of analysis, including intra- and inter-organizational settings.

In these terms, value may be perceived through the benefits and sacrifices incurred in a system (Flint et al. 1997; Eggert et al. 2006; Ulaga 2003; Möller 2006). Thus, value can be determined as the (desired or actual) benefits received by an actor minus (perceived or actual) sacrifices that went into producing and/or receiving the benefits (Eggert et al. 2006; Flint et al. 1997). Within this definition of value, effectiveness improves along with the increase of benefits, all other things being equal, and efficiency improves along with the reduction of sacrifices, all other things being equal.

This brings us back to the very basis of the contingency framework by Tsoukas (1994). As it has been discussed, intra-organizational management is, at its very core, fundamentally based on the drive to improve *effectiveness and efficiency*; in other words the fundamental drive of management is to improve value-creation (Pfeffer and Salancik 1978). We argue that this is true in any value-creation system, including also networks, not merely intra-organizational settings, insofar as managerial action is directed to understanding and developing value-creation at a network level of organizing. Therefore, along the lines of the framework by Tsoukas, we argue that at the basic level of the framework (level TD4; OL4), our socio-economic industrial/institutional structure drives managers towards improving value-creation by seeking improved effectiveness and efficiency.

In addition to efficiency and effectiveness, Tsoukas argues that the other two basic "causal powers" of (intra-organizational) management are that managers are endowed with the ability to *control* and elicit the active *cooperation*. This is where we need to be clear when we link intra-organizational management to inter-organizational management. We propose that *when these terms are defined in their broadest, i.e. their most abstract, sense*,

control and cooperation elicitation are the most fundamental abilities of management not only to hierarchies, but also to networks and market-based organizing.

Tsoukas (1994) defines control and cooperation in terms of superior-subordinate relations, but in networks and markets there are no such authorial relations but relations between autonomous actors. Hence for networks and markets we need to look more closely at the concepts of control and cooperation. Among superiors-subordinates, control can be authorial and cooperation induced with rewards. In network relationships power and authority may be relevant to control as well, although not based on superior-subordinate relations but based on e.g. differences between actors' resources and competences. Likewise, both cooperation and control in networks may also be induced with rewards. Further, it has been shown that in networks control may also be based on e.g. "reputational control" (Kenis and Provan 2006) and cooperation may be based on trust (Morgan and Hunt 1994). In market-based, transactional relationships both control and cooperation may be defined through price-based contracting (Powell 1990). In sum, we argue that control and cooperation in their broadest sense are the most fundamental capacities of management not only for hierarchies, but also for networks and markets. These capacities or causal powers are fundamentally based on the socio-economics industrial/institutional structure we live in.

There are, however, contingencies which augment or reduce the ability of managers to control and elicit active cooperation in different intra- and inter-organizational settings (i.e. in hierarchies, networks, and markets). Utilizing the framework by Tsoukas, we argue that there are distinct, interrelated levels of such contingencies (TD1-TD3) above the basic, "causal powers" level (TD4). The *function-level* contingencies belonging to the third level (TD3) of the framework are the subject of the next section.

4.2 Function-level contingencies: markets, hierarchies and networks – Level Three

It has been well documented that different contexts require or endow different governance modes (Jones et al. 1997, Powell 1990). As pointed out the three fundamental modes of governance are hierarchies, markets, and networks (Adler 2001, Powell 1990). In an ideal representation of these, hierarchical governance is based on authority, markets are based on governance through pricing, and network cooperation is based on trust. Naturally, these ideal modes may perhaps never exist in their purest forms. In reality we will witness mixed or hybrid modes, with different degrees of hierarchy-, market- and network-like organizing (see e.g., Bradach and Eccless 1989, Powell 1990).

There are certain contingencies that determine which of the three governance modes functions best in a certain situation. For instance, Jones et al. (1997) argue that demand uncertainty, task complexity, human asset specificity, and frequency lead to structural embeddedness among actors, which calls for a network form of governance as opposed to hierarchical or market-based governance. Similarly, Park (1996), based on transaction cost economics, argues that differences in actor autonomy, task complexity, opportunistic threat, and bureaucratic costs condition the type of governance. Within the network form of governance, there exist in fact different sub-types of governance; for instance Park (1996) identifies four network governance modes each suitable to specific contingent contexts: mutual adjustment, alliance, voluntary-trilateral, and mandatory-trilateral governance. Although Park's suggestion is useful, we feel that the tasks or goals that the network aims to achieve, and especially the underlying system through which it attempts to do this and produce value, are more fundamental. The task and the related value system are assumed to influence both the type of member interdependence and the effective 'governance form', not vice versa (Möller and Svahn 2003).

Along these lines we argue that there are specific contingencies (which we will call function-level contingencies to keep the terminology straightforward) that determine which type of governance (market, hierarchy, or network) is the most suitable in a specific setting or context. In reality it may be that any specific situation may allow different types of governance, or mixed types governance, but the general argument nevertheless stands that there are specific function-level contingencies that give rise to specific governance modes.

We further argue, based on the framework by Tsoukas (1994), that in each specific type of governance managers are endowed with, or required to take on, distinct types of management functions. In intra-organizational (i.e. hierarchical) settings these management functions can be summarized as planning, organizing, leading, and control (Tsoukas 1994). These functions are key, because they constitute the required management work that organizations need in order to (1) know where to go and how to go there (planning), (2) to build the structures, resources and coordination it needs to get where it wants to go (organizing), (3) to direct and energize people to carry out needed activities (leading), and (4) to follow-up that the organization ultimately achieves its established goals (controlling). (Note that the word "controlling" is used here differently from the level TD4.) Thus, these functions answer to the question what do managers *need* to do in order to "bring about the completion of the tasks undertaken in the organisation's name in such a way that the organisation continues into the future" (Watson 2006).

We can describe the four key functions described above also in terms of a *value-creation system*: Managers need to make sure that the organization knows what value it targets to make and how it can bring about this value (planning), structuring and coordinating resources and activities to bring about the value (organizing), directing and energizing people to carry out the value-creating activities (leading), and checking that the value is indeed created as planned (controlling).

Intra- and extra-organizational forms of organizing (hierarchies, networks, and markets) are fundamentally analogous in the sense that both are value-creation systems, consisting of actors, resources and activities. Through this basic analogy we can extend the four key managerial *requirements* from the inter-organizational level to the inter-organizational level. In other words, the argument made here is that *in any value-creating system, including hierarchies, networks and market-based organizing, there are certain fundamental* requirements *for managerial work, which are then manifested as certain managerial* functions*, without which the system will not be able to create value successfully*. In other words, analogous to the argument by Tsoukas (1994), the requirements for management are the same for all value-creating systems (these requirements derive from level TD4), but the manifestation of them as management functions may differ between different systems, dependent on their differing contingencies (at level TD3).

The required management functions in market-type organizing that correspond to planning, organizing, leading, and controlling, could be labeled as “designing” (planning the structures and processes that are able to create a targeted value), “tendering/bidding” (the processes of transactional relationships that make it possible to organize price-based market systems), and “controlling” (the processes of ensuring that value is created according to the original design). However, in this paper market-based forms of organizing are out of the scope of our analysis.

In the same way as in hierarchical value-creating systems, also in networked value-creating systems the key *requirements* of management is to ensure that:

1. The value-creating system targets to create some value (at least at some level of the system) and identifies how the system can bring about this value; these targets then need to be made known to (at least some of the) actors within the system.
2. Required actors, resources and activities are structured, recruited and coordinated to bring about the value that is targeted.
3. The actors are mobilized and energized so that they carry out the needed value-creating activities.

4. It gets checked that the value that the system targets is indeed created, and if not, that corrective measures to improve action within the system are taken.

We thus argue that without these basic requirements of managerial work, neither hierarchical nor networked value-creating systems will not produce any value. We do not propose that all networks do or even should have an explicit unified purpose, or a unified and consciously set view of the targeted value, but we argue that *at least at some level of organizing within any value-creating system* there has to exist at least two actors between whom there is at least some mutual idea of what kind of value they are targeting to work on together. For if there would not be any such mutual idea, then there would not be any possibility of cooperation; thus no hierarchies and networks would exist.

However, because network relationships are based on relationships among *autonomous* units, unlike hierarchies, the four fundamental requirements of management cannot be carried out in networks through hierarchical functions such as "planning", "organizing", "leading" and "controlling". The industrial network perspective has indeed well shown how any single firm has only limited control over the network(s) it participates (see e.g. Håkansson and Ford 2002, Ford and Håkansson 2006). The fundamental point is that no organization can fully control, or manage, its resources in isolation, since part of the resources available to a firm are under the direct control of other actors in the network and can only be controlled or managed through the medium of interactive relationships between the actors (Pfeffer and Salancik 1978; Ford and Håkansson 2006).

Therefore, although the basic *requirements* for management in networked value-creating systems are the same as in hierarchical value-creating systems, we need to redefine our understanding of the key management *functions* in networked settings. Despite the differences, since hierarchies and networks are based on the same fundamental requirements for managing value-creation, the basic functions of management in networks are also analogous among them. We thus propose that in contexts of network governance, through an understanding of the nature of networks, the intra-organizational management functions may be re-conceived in networked settings through a comparison management functions in hierarchies and networks.

Network management functions: framing, activating, mobilizing, synthesizing

We suggest, in line with Järvensivu and Nykänen (2007), that the basic network management functions could be labeled as *framing* (corresponding to planning in

hierarchies), *activating* (organizing), *mobilizing* (leading), and *synthesizing* (controlling). These concepts or their labels are not new; they were first coined by Agranoff and McGuire (2001) and further developed by McGuire (2002, 2006). It may well be that it would be sufficient to keep with the conventional labels (planning, organizing, leading, and controlling) and merely re-define these to fit the network context. However, we will tentatively use this new terminology in this paper in order to emphasize that network management functions are somewhat different from hierarchical management functions in their nature.

Agranoff and McGuire (2001, 298-300) define framing as involving "establishing and influencing the operating rules of the network", "influencing its [the network's] prevailing values and norms", and "altering the perceptions of the network participants". Activating, in turn, "includes the process of identifying participants for the network… and stakeholders in the network… as well as tapping the skills, knowledge, and resources of these persons. Mobilizing involves inducing "individuals to make a commitment to the joint undertaking - and to keep that commitment", or briefly "motivating, inspiring, inducing commitment". Finally, synthesizing involves "creating the environment and enhancing the conditions for favorable, productive interaction among network participants" and "preventing, minimizing, or removing blockages to cooperation".

We will next re-produce the definitions of the four network management function concepts especially in relation to the key requirements for network management functions. The following discussion is strongly based on Järvensivu and Nykänen (2007), although originally inspired by Agranoff and McGuire (2001) and McGuire (2002, 2006).

Framing in networks corresponds to planning in hierarchies, and answers to the first requirement of managing value-creating systems. This function can be defined as the managerial work on creating an understanding, or vision, about the value that the network creates and how the network may approach creating this value, and then communicating this understanding among the actors in the network. This is not a "planning" function, since no actor by itself can plan the value to be created; in contrast, creating this understanding is a mutual endeavor, a process of interaction and negotiation, among the actors. To be sure, the actors may never fully grasp the "whole" understanding of the value to be created, but there will always remain competing and even contradictory visions of it. Nevertheless, there is a requirement for such a function as framing, since without this there can be no value creation; if there is no such understanding at all between any of the actors in a network, then there cannot be any activities towards any kind of mutual value creation.

Activating is the managerial work focusing on realizing the structure or the patterns of actors, activities and resources that are needed to create the value that is targeted. This activity answers to the second requirement of managing value-creating systems. Again, this is not simply "organizing", since organizing connotes the idea that an actor would be able to organize things through a direct, hierarchical control. Activating is rather the work of identifying and recruiting the actors, resources and activities, and interacting and negotiating with the actors that possess the resources and capabilities so that they take on the activities needed for the value creation, with the ultimate goal that the actors will activate themselves as a part of the value-creating network.

Whereas activating aims at identifying and recruiting required actors, resources and activities in a network, *mobilizing* aims at energizing and building commitment among activated actors towards mutual value creation. Thus if activating is about building the structures and patterns of actors, activities and resources, and mobilizing is then about building commitment among the actors so that they realize the potential of the activated structural patterns. To sum, activating is about building the structure of the network, and mobilizing is about ensuring that the actors commit to the processes of utilizing the structure. This corresponds to leading in hierarchies, where the work of leading aims at finding commitment from the people working in the organization. Mobilizing thus relates to the third requirement of managing value-creating systems.

Finally, *synthesizing* is the managerial work that aims to monitor and facilitate interaction patterns among the actors, resources and activities, so that the full potential of the network to create value is realized through measuring the success in mutual value creation and facilitating interaction by detecting and removing its barriers. This again corresponds to controlling in hierarchies, relating to the fourth requirement of managing value-creating systems. Whereas hierarchical controlling aims at authorial controlling that the organization does what it is supposed to do, synthesizing in networks is manifested as a more negotiated process of monitoring and facilitating network cooperation and its outcomes.

To sum up, we argue that based on the fundamental managerial requirements of value-creation systems, the four network management functions described above are critical to the success of *all kinds of networks*; whether extensive or limited in size, strategic or emergent. However, we contain that there is no generic "network management". The way these management functions are manifested as management *tasks* in different types of networks is contingent upon several factors, relating to the characteristics of the particular network. For instance, management tasks can be expected to differ in networks that have

several equal partners to those that have only one or two key players and several smaller companies, in networks with a clear network horizon and unclear horizon, and in stable, renewal and innovation networks. These contingencies are the topic of the next section.

4.3 Task-level contingencies: characteristics of the network – Level two

Management functions, the level three in the Tsoukas's framework, are the basic building blocks of management in all networks. There are, however, certain contingencies that influence the required management tasks at level two. Different types of networks are argued to require different compositions of management tasks. The contingent factors that determine the needed managerial tasks relate ultimately to the characteristics of the network; its structural patterns, how it is related to its environment, and what type of value-creation it pursues. Based on our literature review, we argue that some of the most important such contingencies are: (1) the distribution of power in the network, (2) the clarity of the network "picture", (3) the level or degree of strategic intent in the network, (4) and, fundamentally, the type of underlying value creation logic of the network. The last contingency is most fundamental as it influences, through the inherent characteristics of the goals and the required tasks to pursue these, the other postulated contingencies (Möller and Svahn 2006).

The *distribution of power in a network* differs from one network to the other, and this influences the way the network can be managed (Wilkinson 1973, Boyle and Dwyer 1995). Some networks consist of more equal-sized players, with more or less equal power of influence over the other players. In such networks the four network management functions must often manifest in more or less subtly negotiated management tasks. However, in networks that have a powerful hub company, the power-position driven e.g. by the company's superior resource-base, and several smaller-sized followers, the hub may well adopt a more power-driven, hierarchical-type managing style. In this case it may well be that the management style of the network resembles close to a "planning, organizing, leading, and controlling" type of management, with the hub company taking a superior role and the other going into a sub-ordinate role, despite the fact that the sub-ordinates here are still (ownership-wise) autonomous.

The *clarity of the network picture* – or cognitive frame in more theoretical terms – in the network refers to how well the actors in the network are, individually and/or collectively, able to make sense the current, potential, and future patterns of their immediate network and how the network is connected to its environment (Ford et al. 2003, Öberg et al. 2007,

Håkansson and Waluszewski, 2002, Henneberg et al. 2006). When the network picture is reasonably well formed, the network members are likely to need less managerial effort to negotiate the framing of the network and more managerial effort can be invested in activating, mobilizing and synthesizing the network. Conversely, the more ambiguous the picture is, the more managerial effort is needed in framing the cooperation.

The *degree of strategic intent* relates to the manageability of networks in general. Some networks are, at the network level, based on more emergent cooperation whereas some networks are based on a more consciously set strategic intent. The INA perspective on network studies the former, whereas the strategic or value networks (or "nets") perspective studies the latter (Möller and Svahn 2003; Ritter et al. 2004). The argument is that emergent networks cannot be managed at the network level, whereas strategic networks are by definition managed. Our position here is rather pragmatic; based on our earlier position that all networks require certain management functions, we argue that all networks can – and actually have to be – managed at least to some extent, and this varies from a low degree of manageability to a higher degree. This perspective has earlier been suggested for instance by Harland and Knight (2001) and Möller et al. (2005). From this pragmatic perspective, there exists "some degree of mutual interdependence [within the network] such that each party has some ability to influence the other" (Ritter et al. 2004, 177). The role of an individual member firm is to operate "as one of many having an influence on the structure and functioning of the network" (Ritter et al. 2004, 178). Naturally, the more emergent the network is, the less it is *intentionally* managed. But still also emergent networks are managed, we argue, at least at the level of micro-level of interactive activities. Möller and Rajala (2007), for example, provide several examples of actors that try to influence the formation of a new network, such as the Bluetooth coalition and the current Blue-Ray coalition.

In this respect the level of strategic intent does not have to be directly connected with the character of the network. High strategic intent can be identified both in broad emergent networks and in more closed strategic nets. Its probability is, however, much higher in the latter type of networks. Moreover, the managerial tasks can be expected to vary a great extent between these different network contexts; see Möller and Rajala (2007). The degree of strategic intent is also seen to be related also to the other task-level contingencies already discussed: networks having one or few strong players are more likely to set clearer strategies based on the strategy/strategies of these strong players; and networks able to vision the network pictures more clearly are more likely to be able to also construct mutual strategic network intent.

Here we argue, again, that the basic managerial functions are in principle the same both in emergent and strategic networks, but the tasks of management may be different. In emergent networks the tasks of management are defined more by constant, on-going negotiation and re-negotiation, adaptations and re-adaptations, than in strategic nets. Further, in emergent networks there are more likely than in strategic nets to simultaneously exist multiple different and even contradictory ideas and formulations of the vision and structure of the network, thus necessitating different patterns of management tasks.

Finally, the type of value creation is related to *the value-creation type of the network*. This view is put forward especially by Möller et al. (2005), Möller and Svahn (2003), and Möller and Rajala (2007), who formulate and discuss a powerful theory-driven framework for classifying different types of networks and their management. Referring to notions of value-creating systems (e.g. Parolini 1999), they argue that the underlying characteristics of the value system and its level of determination provide a key to an understanding of different business networks and the managerial capabilities they require. The level of determination is essentially related to the kind of knowledge actors have about the resources, activities and actors forming the value-system; as such it is an ontological condition of the networks and informs also the ways of knowing, or epistemology, about the network (Möller and Svahn 2007). In simple terms, there are *stable value systems* with well-known and well-specified patterns of activities and resources; one the other hand, there are *emerging value systems* characterized by radical changes and inherent uncertainty. In between these two polar types, there are *renewal value systems* producing incremental local changes in existing value systems. These are clearly ideal types and some actors can be involved simultaneously in all of them. Based on their work on this framework, Möller and his colleagues have clearly shown that management tasks are different in each of these types of networked value-creation.

To sum up, there are several contingencies that determine the task environment for network management, and these contingent factors are related to the characteristics of the network. An apparent question is how the contingencies identified in the extant literature are interrelated. In other words, we need a theory explicating the joint influence of contingencies on network management. So far the proposition by Möller and his collegues, the level of determination of the value-system underlying a network, seems most promising. It links together the goal a network tries to achive, and the tasks (value activities), resources and actors involved. As a highly abstract notion it needs further articulation though.

In each different network actors may try to achieve different roles of network management. This depends on the characteristics, e.g. resources and capabilities, of these actors; this is the role-level of network management that we will briefly discuss next.

4.4 Role-level contingencies: actors and their characteristics – Level One

Whereas the network characteristics determine the required management tasks in each network, we argue that the characteristics of the actors determine the roles each actor *may* take in managing the network. Based on our literature review, we suggest that these roles are fundamentally related to the resources and capabilities of the actors.

For instance, Snow et al. (1992) define three managerial roles: architect, lead operator, and caretaker. Knight and Harland (2005) identify six roles (advisor, information broker, network structuring agent, innovation facilitator, coordinator, and supply policy maker), partly overlapping with the roles identified by Snow et al. (1992). Recently, Heikkinen et al. (2007) have studied mobile service development nets and identified in them twelve distinct roles of managing: webber, gatekeeper, instigator, advocate, producer, entrant, planner, auxiliary, facilitator, aspirant, compromiser, and accessory provider. The space of this paper does not allow us to review these network management roles more thoroughly. It seems that we need urgently more studies of the network roles. The limited literature suggests two possible routes forward. One is to continue conducting empirically oriented studies where the context specific roles are indentified. This will provide further information on the richness of roles and their context dependence. The other possibility is to try to identify possible generic or "meta" roles which would be present in most networks, but with varying characteristics. These approaches can, of course, support each other.

Based on these studies it seems clear that network management roles are context-dependent (i.e. dependent on the characteristics of the specific studied networks) and that certain actors can take on certain roles only if they possess the appropriate resources and capabilities. The point we are stressing here (at level TD1) is that only based on their resources and capabilities can certain actors adopt one or several network roles to handle the network management tasks required in a certain network.

5 Conclusion and discussion

In this paper we have reviewed intra- and inter-organizational management, made connections between them, and presented a metatheoretical contingency framework of network management. This framework outlines the origins of certain powers of management (the ability to control, to ability to elicit cooperation, and the drive towards efficiency and effectiveness) deriving from our socio-economical institutional/industrial structures; the requirements of network management in all kinds of networks and the related network management functions (framing, activating, mobilizing, and synthesizing); how different types of networks require different managerial tasks; and how the characteristics of the actors empower them to take on different management roles within their networks. Most importantly, the framework shows how these levels of network management are contingent upon each other.

This framework is an abstract, metatheoretical tool to understand network management. Our intention is not to say that there is a "grand theory" of network management that every researcher and manager should follow. Rather we emphasize, much in line with Tsoukas (1994), that each level of the framework constitutes a separate and interesting layer of research. Accordingly, our framework does not make previous studies of network management useless. On the contrary, we believe that the framework will open up new possibilities to synthesize and utilize the earlier studies, and to connect them to form stronger research designs in the future studies of network management.

A clear implication of our framework is that it is fundamentally useless to argue that "networks cannot be managed", as some of us network researchers sometimes tend to argue. Networks *are* being managed, all the time. The management consists of a complex pattern of managerial activities – be they conscious or unconscious, strategic or non-strategic – of framing, activating, mobilizing, and synthesizing. If these activities did not exist, networks would not function and we would see only markets and hierarchies.

However, and this is a major however, we agree that *the extent* to which networks can be managed is different from one network to the other. This difference is especially evident between intentionally created and maintained strategic networks versus more emergent "markets-as-networks" types of networks. The different extent to which networks can be managed thus is contingent upon the characteristics of the networks, especially on their relative closure. The key point is that in all networks there exists at least some level of framing, activating, mobilizing, and synthesizing. To be sure, in markets-as-networks

managing is more coping in the networks, whereas in strategic networks we can conceive the management of networks in a more strong sense.

How are then network management capabilities and mechanisms related to the framework presented in this paper? We suggest that we can study and distinguish different types of management capabilities and mechanisms at each level of the framework. With the existing knowledge base we are also able to make propositions about the potential, and even effective, combinations of these. Thus it is likely that we can identify different function-level management capabilities and mechanisms for networks, markets, and hierarchies. Likewise it is likely that each different network requires different task-level capabilities and mechanisms, as well as different actor-level capabilities and the mechanisms under their control empower different network management roles.

We recognize the abstract and complex nature of the proposed contingency framework. There are several propositions that are tentative and require more work. In this respect we would like to invite comments and criticism towards our network management proposals. In sum, we hope that the paper will encourage research and more rigorous research designs on network management

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