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## Institutional change and regional transition

# “There is no way of speaking logically about this mess”: The impact of actor-relational dynamics on integrated planning practice

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**Abstract:** The non-linear complexities of urban development processes exceed the understanding of any individual. Consequently, more actors are entering planning processes for enabling the synergy of multiple knowledges, simultaneously increasing their internal complexities. These complex dynamics contest the everyday planning practice from within, requiring increased awareness of their possible consequences. Planning research has acknowledged that the actor-relational aspects of planning processes are not yet adequately understood, calling for methods to reveal the often invisible dynamics and their possible effects over time. This research aims at revealing the social complexities of integrated planning processes and recentering the understanding on the actor-relational level by focusing on the aspects of knowledge co-creation and process memory development. A practice-based example of the actual actor-relational dynamics is explored with mixed methods and detailed longitudinal data of an actual four-year strategic spatial planning process in the Nordic context. The findings indicate that a range of actor-relational dynamics affects the level of sectoral and scalar integration over time, and social complexities carry an essential role for enabling knowledge co-creation and process memory development within integrated planning practice. Unveiling the actor-relational dynamics is a promising research direction, requiring new methods for bridging research and practice.

**Keywords:** planning practice; organizational learning; strategic spatial planning; integrated planning

### Introduction

The growing complexity of cities is a widely discussed theme (Batty, 2005, de Roo and Silva, 2010, Portugali, 2012, Boonstra, 2015, Sengupta *et al.*, 2016). The nonlinear complexities of urban development are claimed to be incomprehensible to any one individual with regard to the often invisible interrelations (Innes and Booher, 2010). For responding to the growing complexities, and the need of more holistic planning, integrated planning has been discussed (Bertolini, 2017). Even though the exact definition of integration is not fixed sectoral and scalar integration are typically included in all frames (Healey, 2006, Vigar, 2009, te Brömmelstroet and Bertolini, 2010, Holden, 2012), complemented with organizational integration (Kidd, 2007). In the context of this paper, integrated planning is understood as the communicative practices over time, which enable the crossing of thematic and scalar boundaries for reaching systemic and holistic planning solutions. Consequently, for supporting the understanding of the nonlinear complexities, more actors enter into the planning processes to share their knowledges, simultaneously increasing the complexities from within due to their values and views, which contradict in the institutional settings. Thus, complexity is not only a feature of the environment, but also

of the collaborative processes themselves. For understanding the actor-relational complexities, the relational level needs to be explored, as the social interactions produce properties that are not present in the individuals. Moreover, a procedural focus supports the temporal understanding of their dynamics over time (Pettigrew, 1997, Langley, 1999). Discussion of planning processes is critical for understanding how our urban futures are developed in these collaborative and value-laden processes, as there is a relation between processes and substance (Innes and Booher, 2015). Planning research has acknowledged that the actor-relational aspects of planning processes are not yet adequately understood, calling for methods to reveal their often invisible dynamics and effects over time. Thus, methodological contributions are needed to understand the nonlinear and emergent nature of the actual social realities, and their impacts on knowledge co-creation and process memory development in the integrated planning processes. However, there has been a lack of established methods for systematic longitudinal analysis of the collaborative realities of planning processes, mainly due to the challenges in acquiring applicable data.

The aim of the research is to develop methodological contributions for understanding knowledge co-creation and process memory development in these collaborative processes over time. To illustrate the actual relational dynamics, the paper presents an example of the actual social dynamics over a four-year statutory strategic spatial planning process in the Nordic context. Social network analysis is used for identifying the networked dynamics over time, and the possible reasons and impacts of the networked structures are explored through interviews with practicing planners. Moreover, the applicability and relevance of the findings for planning practice are discussed with practitioners. The Finnish planning system works in the context of a Nordic democracy, where planning is a central element of the urban development system (Puustinen *et al.*, 2017). Municipalities hold a planning monopoly, even though the processes involve various private and public actors (Mäntysalo *et al.*, 2011). Planning is mostly regulated by the Land Use and Building Act (132/1999), which is currently re-evaluated. Consequently, the selected case serves as a relevant example for exploring the dynamics that emerge due to the collaborative nature of processes. In the next section, background on organizational learning and process memory development are discussed in the context of planning. Thereafter, the utilized data and methods are presented, followed by the findings concerning the networked structures, and their possible reasons and impacts. Finally, the answers to the research questions are discussed, and the paper is concluded.

### **Process memory development as a prerequisite for organizational learning**

The significance of knowledge and learning in the context of public administration and planning organizations has been widely discussed (Rydin, 2007, Campbell, 2012, Tennøy *et al.*, 2016), and public sector organizations have been criticized due to their inefficiency of learning (Moynihan and Landuyt, 2009). Organizational learning capacity is essential for an organization's development, influencing its capacity to adapt to the changing societal needs (Senge, 1990, Prahalad and Hamel, 2000). Knowledge influences the learning capacity of organizations (Argote, 2013), and learning is not possible without memory (Lehner and Maier, 2000). Various concepts regarding memory in organizations have been suggested, including organizational memory, network memory, systems memory, and transactional memory (e.g., Wegner, 1987, Walsh and Ungson, 1991, Spender, 1996, Olivera, 2000, Soda *et al.*, 2004, Innes and Booher, 2010). Despite of the various descriptive concepts, it is widely agreed that through the iterative utilization of memory, organizations may consciously unlearn and forget, as the original memories develop further (Holan and Phillips, 2004, Fernandez and Sune, 2009, Easterby-Smith and Lyles, 2011, Martin de Holan, 2011). This kind of intentional unlearning has been considered important for developing organizational processes (Martin de Holan, 2011). However, unconscious forgetting may have surprising impacts when valuable knowledge is unintendedly lost (Holan and Phillips, 2004). Hence, knowledge, learning, and memory are interdependent parts of organizational processes (Spender, 1996). Previous research has suggested that learning in public sector organizations occurs in structural settings, which encourage interaction (Moynihan and Landuyt, 2009, Siciliano, 2016).

Planning processes are an example of knowledge-intensive settings, in which a variety of specialized knowledges is applied. As new knowledge in planning is typically generated in interaction rather than through value neutrality (Healey, 1992, Rydin, 2007, Rydin *et al.*, 2007), discussion of social processes in planning has emerged (Davoudi, 2015). In the social constructionist view, knowledge evolves in social processes, and is continuously purposefully and unconsciously filtered, selected, and post-rationalized on the way. There has been considerable discussion about whether organizational learning and memory resides on the individual or organizational level (Senge, 1990, Walsh and Ungson, 1991, Nonaka and Takeuchi, 1995, Lehner and Maier, 2000). According to Senge (1990), individual actors learn, but learning itself happens through interpersonal dialogue as a relational activity. However, part of the knowledge may be integrated into organizational structures, routines and traditions (Fiol and Lyles, 1985, Argyris and Schön, 1996). Memory in organizations resides on the level of individuals and their relations (Argyris and Schön, 1978), and is distributional in nature (Walsh and Ungson, 1991). What is not encoded in information systems, resides in the individuals, and transfers through their interaction.

Knowledge co-creation is specifically important for integrated planning, in which multiple perspectives should be adjusted with each other. Integration is challenged by differences in values, ideologies, epistemologies, and policies, which may stem from conflicts between actors (Waddell, 2011, Holden, 2012). Integration may be understood as a hierarchy from co-operation (functional relationships to avoid duplicating work) through coordination (adjusting functions not to leave gaps) to integration (joining efforts for creating a policy owned by multiple actors) (Stead and Meijers, 2009), which may be thought to have different networked structures (Curtis and James, 2004). Coordination refers to a single-core structure, whereas integration entails a more equally connected structure with actors linked to each other.

Coughlan and Coughlan (2011) have referred to the importance of network action in inter-organizational learning. According to them, learning is both a capacity and a process, requiring also conscious and intentional actions to be achieved. In order to enable learning and process memory development, an organization has to be aware of its structures, which affect the learning capabilities. Thus, the analysis of organizational learning should deal with the dynamic processes of organizing (Argyris and Schön, 1996) in social settings. Hence, social network perspective is important for the relational understanding of organizational knowledge, learning and memory as it makes the social processes more explicit (Borgatti and Cross, 2003, Oh *et al.*, 2004, Cummings and Higgins, 2006). Through the identification of their social networks, planning organizations may become more capable of answering to the challenges they face. Thus, understanding of the relational dynamics in planning processes are an important element for enabling organizational learning and memory development. In the understanding of this research, organizational learning is enabled through the knowledge flows and memory development in various social networks. In order to enable the understanding of planning as socially constructed and knowledge-intensive process, this research focuses on the actor-relational process structures, which enable knowledge transfer, and affect process memory development over time. Based on the current research of organizational memory, the characteristics of process memory development in networked planning processes are not yet well understood. Consequently, building on the current understanding, this research approaches the organizational learning processes by moving the unit of analysis to the relational level and longitudinal view of the complex adaptive systems (Innes, 2005, Innes and Booher, 2010) that reproduce the knowledge over time.

## **Methodology**

The lack of process memory poses a critical challenge for learning in planning organizations. In order to understand the development of process memory during planning processes, this paper focuses on an example of social dynamics in actual practice-related planning context. The aim here is to develop methodological contributions for understanding knowledge co-creation and process memory development in the collaborative processes over time. The topic is approached through answering to more detailed questions: How the social

network structures unfolded during the process, when measured with betweenness centrality? Why the dynamic patterns of interaction emerged over time, and what were their impacts on knowledge co-creation and process memory development? And what is the relevance of the findings for planning practice?

Utilizing mixed methods and detailed longitudinal data of organized actor interactions during a four-year statutory strategic spatial planning process in one of the cities in the Helsinki Capital Region, Finland. The raw data included the documented process data, which was available still after the process was finished, including over 10,500 pieces of process documentation (see Eräranta, 2019 for a more detailed description of the data). The raw data was processed into a standardized time series of approximately 400 organized actor interactions during the process. The analyzed process was classified into four periods of time: goal phase (G), draft phase (D), proposal phase (P), and ratification phase (R), which were further divided into intervals of two months, for increasing the resolution analysis. Resident information was not individualized during the process, and was limited out of the analyses.

With the data, social network analysis (SNA) was used for identifying the everyday reality of the networked dynamics over time. Instead of focusing on the individual actor characteristics, SNA considers the relational attributes for exploring the dynamics of nodes (actors) and their ties (interactions) over time (Wasserman and Faust, 1994). As an established methodology, SNA includes a variety of network- and node-level measures for understanding the relational structures of interactive processes. In this paper, analyses of the socio-temporal network structures were elaborated through the measure of betweenness centrality, which was selected for understanding the potential information flows in-between the social actors in the process. Betweenness centrality can be interpreted as an indicator of an actor's ability to control the other actors' access to all parts of the network, measuring how often a node is positioned on the shortest path between two other nodes with the ability to manipulate the information (Freeman, 1978). For example, central actors may be considered as gatekeepers, by being able to manipulate or bias communication in the network due to their relationally strong position (Rowley, 1997). Borgatti (2005) has suggested an equation for the betweenness centrality (Equation 1) to measure the number of times that the information reaches a specific node. In the equation  $b_k$  is the betweenness of node  $k$ ,  $g_{ij}$  is the number of geodesic paths from  $i$  to  $j$ , and  $g_{ikj}$  is the number of shortest paths from  $i$  to  $j$ , passing through node  $k$ .

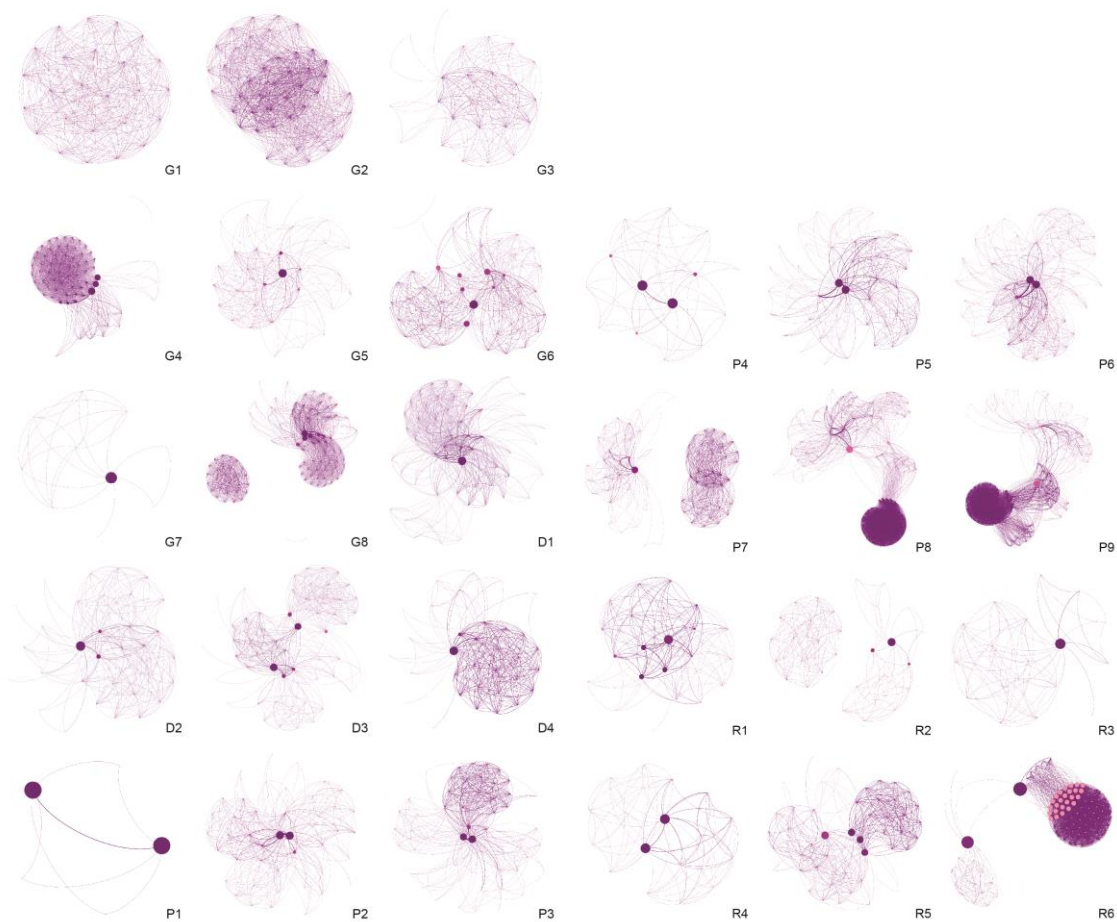
$$b_k = \sum_{i,j} \frac{g_{ikj}}{g_{ij}} \quad (1)$$

As SNA has not been applied before for understanding the dynamics and process memory development over time in planning processes, the findings were validated through individual interviews (Symon and Cassell, 2013) with participants of the analyzed process. The applicability and relevance of the findings for planning practice were analyzed through focus group interviews (Morgan, 1996) with practicing planners. All research data was anonymized to avoid harm to the research subjects.

## Findings

### *Overall dynamics of the network structures*

The social network was in constant change during the process. In Figure 1, the network graphs have been illustrated by measuring the betweenness centrality of the individuals, describing their relational positions for influencing the information flows between other actors. In most of the graphs, the structure is strongly centralized with a clear core actor or a team of actors, suggesting that the relational power was highly centralized. The fewer central actors there are in the network, the greater their relational power may be, giving them a possibly stronger relational position considering the information transfer.



*Figure 1: The networked dynamics of a four-year process were continuously changing. Over time, there were usually one or two actors having considerably high betweenness centrality in the network. Consequently, the information flows were strongly centralized.*

### ***Factors behind the dynamic patterns of interaction***

The emergence of the networked structures was nonlinear. The structures were not tied to specific phases, but were influenced by a variety of factors on multiple levels (e.g., individual, actor-relational, institutional) over time. Some of the network dynamics were explained through institutional rules and routines, such as decision-making procedures, but also by emergent actor-relational factors, such as escalated arguments between some actors. Alongside the institutional framing of collaboration, emergent social dynamics affected the interaction over time. According to the interviews of the process participants, the social dynamics had effects on their intensity of involvement in the process. These actor-relational dynamics were typically not bound to the specific process, but originated in or had consequences also on other processes.

Based on the findings, the institutional framework did not support the longevity of network ties between processes. Planning processes are traditionally separated into different sub-projects led by different individuals, challenging learning between the processes. As the processes are dependent on the same scarce organizational resources, the situation is vulnerable to disturbances. The administrative division of the processes is typically due to a large number of simultaneous processes, and may challenge the actors' ability of focusing on individual processes. According to the interviews, when the participants see only disconnected snapshots in time, their commitment in the individual processes may decrease. Some process participants did not have enough time for

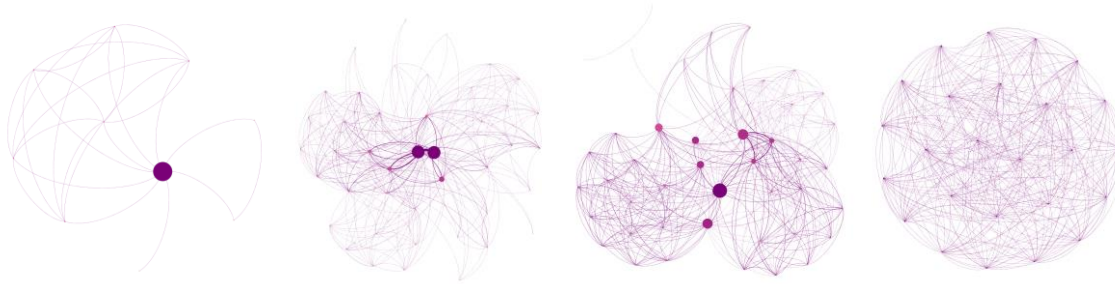
active participation, thorough consideration, information acquisition or collaboration in the analyzed process. As the participants visited the process only rarely, and only related to their own sectoral expertise, their overall understanding of the process remained unclear. Moreover, their awareness of how their own input affected the plan solution, or the subsequent parts of the urban development process, remained low.

Based on the interviews, centrality tempted more centrality, leading into strongly centralized network structures. According to the interviews, when the central actors were well-known by other actors, they were used for information acquisition in the process, leading them into an even more centralized position. For example, all actors referred to one specific actor as focal for information transfer in the process. The polarized positions between the few central actors and the others was intensified by intentional information withholding. The decision to not inform of changes in the process was aimed to protect the actors from information overflow by giving them an opportunity to focus on their own responsibilities. However, some participants explained that this decision decreased their ability to form an overall understanding of the process, challenging their ability to develop understanding of the interrelations between various scales and sectoral themes. Additionally, the sectoral themes were kept separate from each other, and were mainly handled among the few central actors, and the assigned sectoral experts. In case an actor had a tight sectoral responsibility in the process, a holistic view of the plan solution was typically decreased. Moreover, the adhocracy of communication challenged the generation of an overall understanding over time.

In addition to the aspects above, the emergent structures were influenced by the actors' own activity, as well as the actual subnetworks in which the actors participated. In the interviews, support from other actors with similar backgrounds was named as an important reason for forming subnetworks during planning processes in general. The support structures were explained to be dependent on personal relations, which take time to establish. Some of the participants described that their collaboration patterns were influenced by arguments, which led to their lack of input in the process. The participants explained that sometimes the plan solutions could have been different, if they had not quit collaboration due to the actor-relational reasons. The confrontations were intensified by the strongly centralized structures, which caused distrust between actors, as the actors were not aware of each other's opinions. Due to previous experiences, some actors tried to avoid confrontations, which reduced the information transfer and knowledge co-creation even more. The emotional side of the collaborative dynamics may have long-lasting impacts on the processes and plans. Furthermore, some participants described that due to the challenges in the overall awareness, the process seemed occasionally irrational. In addition, the emergent factors affected the process strongly, when some participants left the process and their tacit knowledge was lost, and ways of working were changed. Changes on the individual level affected also the collaboration patterns, as actors holding the same administrative position had different ego-network structures.

### ***Impacts of the network structures on knowledge co-creation and process memory development***

The network structures during the process can be classified into four main categories: single-core structures (e.g., phase G<sub>7</sub> in Figure 1), dual-core structures (e.g., phase P<sub>2</sub> in Figure 1), multi-core structures (e.g., phase G<sub>6</sub> in Figure 1), and complete structures (e.g., phase G<sub>1</sub> in Figure 1). In addition, disconnected structures (e.g., phase G<sub>8</sub> in Figure 1) may be formed through combinations of two or more simultaneous networks without a direct connection with each other, leading into challenges when the networks do not communicate. Here, the four basic structures are explored (Figure 2), focusing on their possible advantages and challenges for information transfer and process memory development. The possible advantages and challenges were discussed in focus group interviews with practitioners, who work in and around strategic planning processes.



*Figure 2: The four main categories of network structures (from left: single-core, dual-core, multi-core, complete) had different impacts on knowledge co-creation and process memory development during the process.*

Single-core networks had one central actor. According to the interviews, a single-core structure can be effective for information transfer with one clear coordinator, but has few possibilities for wider discourse and integration due to the scarce connections between actors. Integration of the various views is done by one central actor, and the underlying reasoning remains unclear to the other participants. Moreover, the central actor can dominate the information flows, as was suggested by some interviewees. Considering process memory and knowledge co-creation, the single-core structure is risky, as it is focused on one key actor. The structure may lower the quality of the substance, as was suggested by some of the interviewees, because it is not possible for any actor to consider the variety of interrelations thoroughly alone. If the central actor leaves, the rest of the network may be severely disturbed. According to the interviewees, too centralized responsibility is not beneficial for the individual, for the organization nor for the substance of the process.

Dual-core networks had a pair of central actors. As was suggested in the interviews, a dual-core structure allows either of the central actors to be replaced without a total process memory loss. If one of the central actors leaves, the other still remains, and a new one can be trained by the remaining actor. According to the interviewees, dual-core structure is similar to single-core, as it does not enable diverse enough discussion and ideas to emerge, and does not allow holistic consideration of the various sectors and scales. The process may end up having highly personalized views of the central actors, as was suggested by the interviewees. The benefit of the dual-core is that the actors can support each other, and discuss the issues at least with each other. Some interviewees pointed out that for this structure to be efficient, both of the central actors should build their own subnetworks.

Multi-core networks are built around multiple cores, which are connected with each other. In particular, the core team can be formed by various experts, supported by their own subnetworks as mentoring structures. They central actors can integrate the knowledge of the subnetworks in the core team, bringing added value into the process. According to the interviews, a multi-core structure allows all of the actors to proceed quite independently. When the central actors are strongly linked, and their subnetworks are known, they can be also replaced with a lower risk. A multi-core structure enables easily the utilization of shared expertise, as was suggested by some interviewees.

In complete networks, all actors are connected with each other. When actors represent different expertise or scales, the structure supports the testing and integration of various views. According to the interviews, a complete structure has low risk of changes, as all actors hold similar meeting-based knowledge. From process memory perspective (not considering the differences in expertise), any actor can be replaced without a risk for process memory loss. Thus, when everyone is equally informed of everything, the risk of memory loss in case of personnel turnover is low. According to the interviews, a complete structure has good possibilities for effective information transfer within the network. However, the structure can also be considered ineffective and resource-consuming.



### ***Relevance of the process analysis to planning practice***

In relation to process memory development, the interviewees stated that statutory strategic spatial planning processes typically occur rarely in planning organizations. When the process experiences are not documented and actors change, much of the memory is lost, and subsequent processes have to start from zero. Thus, processes can become inefficient, when time is utilized on testing through trial and error, and on re-establishing networks. Process memory supports organizations in situations when personnel turnover is high, as was suggested in the interviews. Much of the memory and knowledge is attached to the actors, which is a risk in case of personnel turnover or voluntary withholding of information. However, some interviewees pointed out that personnel turnover and unintended forgetting are not always a challenge. It was suggested that organizations can also learn through personnel turnover by adapting new practices from outside. Moreover, when people change, process memory is dispersed to other organizations, and is not situated only in the originating organization. According to the interviews, process memory supports also organizational learning between processes.

Based on the interviews, network and process thinking in municipal planning organizations is diverse, and changing the established practices is difficult. Many interviewees stated that planning processes are not understood well enough due to their nonlinear and complex nature. Consequently, generating more understanding of the process structures is important to understand the reasons behind the actors' involvement in the processes. According to the interviews, discussion of planning processes is strongly focused on digital methods instead of the collaboration structures. Thus, it was suggested that improving awareness of the actual networked structures and their possible impacts on knowledge co-creation and process memory development is important. Moreover, the interviewees pointed out that SNA, as a method, is usable for analyzing the processes by making them visually understandable. In the interviews, the analyses were considered important for learning new ways of thinking about process development in planning practice, and for visualizing process development needs. Improved process awareness may enable better utilization of shared expertise, as actors become more aware of the phases in which they could share their expertise.

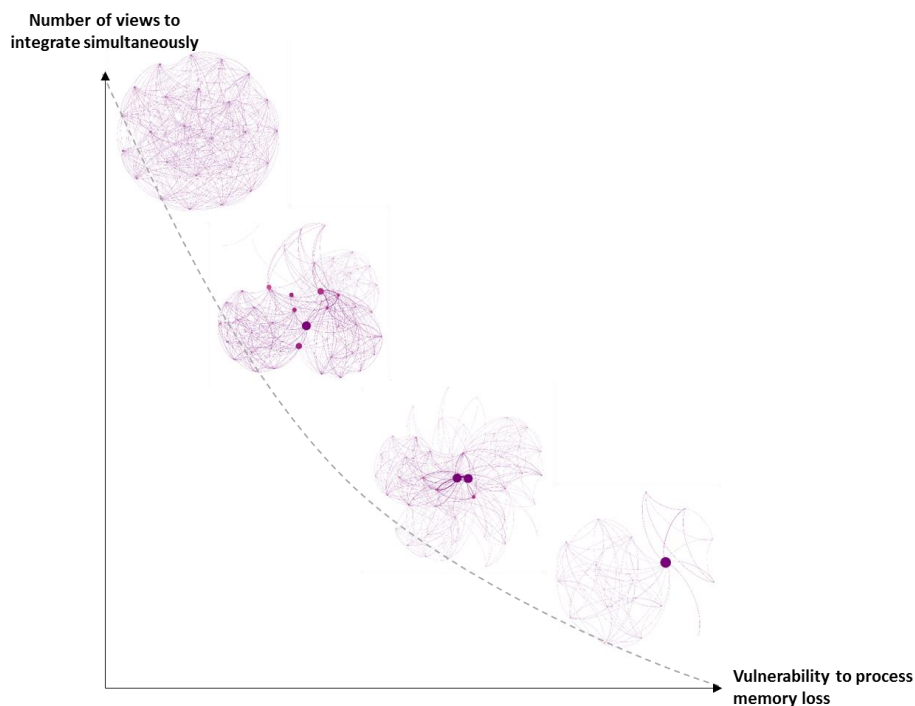
### **Discussion**

Based on the findings, knowledge and memory in the analyzed process were strongly concentrated on few central actors, who were trusted as information sources, acting as knowledge brokers in a way described by Rydin *et al.* (2007). Previously established networks were primarily utilized for information acquisition and the actors turned more easily to someone whose expertise they already knew in advance. Previous research has identified that core networks represent ties, which provide support over time, whereas the peripheral network assists at specific moments in time (Cummings and Higgins, 2006). This seems to be the case also in the analyzed process. The more central actors, and their ties, endured over time, whereas the more peripheral actors typically changed from one phase to another. Combined with the views of social capital (Oh *et al.*, 2004), two types of ties can be suggested to exist. The core ones offer more homogeneous social capital and constant support due to the strength of ties. The more peripheral ones provide ad hoc support through access to diverse social capital, offering access to other ongoing processes and transferring process memory between processes. Although the exact memories of the process were generally scarce, multiple participants visited the process for varying periods, carrying parts of the process knowledge forward to their own organizations. Consequently, memory in the process was not only located in the specific responsible unit, but was dispersed widely through the network.

The findings indicate that social dynamics carry an essential role for enabling knowledge co-creation and process memory development within integrated planning practice, affected by the actors' ability and willingness to collaborate. The findings suggest that memories of planning processes are vulnerable to accidental and intended forgetting, affected by the social dynamics of the processes. The findings imply that process memories are typically saved as patterns of activities, which are detached from time. Thus, memories are affected by post-

rationalization, decreasing the possibilities of tracing process dynamics with traditional methods. Moreover, the intensity of involvement in the process influenced the randomness of the memories. The memories were strongly related to the actual networked structures, and their information transfer capabilities in the process. Differences in the process memory were considerable, and typically related to the actor's thematic responsibilities and position in the network. The more an actor attended in the process, the more exact the memories, and the wider the overall awareness of the process, tended to be. The interview findings suggest that this was partly because information transfer for supporting holistic understanding of planning processes was insufficient, and the interdependencies between the various themes are typically handled by few. The centralized structures affected the possibilities of aiming for integrated solutions.

In addition, findings imply that different networked structures can have various impacts on the possibilities for integrated planning, and on the vulnerability to process memory loss (Figure 3). In the structures which allow the simultaneous integration of a multiplicity of views the vulnerability to process memory loss is decreased, as many actors know the rationalization behind the plan solution, and the made decisions during the process. However, the collaboration and reflection of various views simultaneously takes time, and the structure may be resource-intensive. As the number of central actors decreases, also the possibilities for integrating multiple views simultaneously declines, and the integration is done by the few central actors, who coordinate the discussion between various separate thematic groups. Simultaneously, vulnerability to process memory loss increases. Based on the findings, there is no one optimal solution for all processes, but various structures may serve various phases and purposes during planning processes. In case of high personnel turnover, holistic memory held only by one or two individuals is not a resilient strategy, as it is vulnerable to actor-level changes.



*Figure 3: The different networked structures have various impacts on the possibilities for integrated planning, and on the vulnerability to process memory loss. The more views there are to integrate (complete), the less vulnerable the structure is for process memory loss, but the more resource-intensive the structure is, as well. The less views there are to integrate through collaborative*

*dialogue (single-core), the more vulnerable the process is to memory loss, and the less resources are required.*

Based on the findings, utilization of longitudinal time-series data allows the analysis and evaluation of evolving phenomena, such as process memory. SNA may support the identification of structures, which may cause sectoral siloing or process memory loss in the processes. SNA supports the exploration of process memory development, which is influenced by different relational dynamics, which enable or restrict information transfer during the processes. Currently the related factors, such as organizational memory or experience (e.g., Wegner, 1987, Walsh and Ungson, 1991, Spender, 1996, Olivera, 2000, Soda *et al.*, 2004, Innes and Booher, 2010), are mainly utilized in a descriptive manner without methods for analyzing their relation with various process structures. The findings show that SNA has capacity for generating visual and statistical criteria for analyzing such concepts, suggesting a methodological contribution for studying integrated planning processes.

## **Conclusions**

Based on the findings, we can conclude that planning processes are dynamic and continuously changing social systems. Memories of such a system serve as a basis for learning, and consequently, for process development practices in planning organizations. At least two types of memories develop during planning processes: content-related and procedural. Content-related memories are more context-dependent, spatially bound, deal with the rationalization and justification of the plan solution. They are primarily applicable on various scales in a certain spatial context, giving answers to questions like what and why. Procedural memories are more structural, and serve various processes on various scales and contexts, assisting in process development aims, and answering to questions like how, why, who, and when. Especially the procedural memories are an essential factor for organizational learning and process development. Thus, planning processes can have generalizable and repetitive structures that go beyond the unique nature of processes. Learning from the past experiences may consequently support the organizations in developing their everyday practices. In conclusion, unveiling the social dynamics of planning processes, and their relations with process memory development and organizational learning, is a promising research direction. This research stream may be supported with longitudinal and relational methods, which enable the visual-analytical understanding and evaluation of the various networked process structures and their impacts.

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