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The Use of Collaborative Space and Socialisation Tensions in Inter-Organisational Construction Projects

Kirsi Aaltonen (University of Oulu, Industrial Engineering and Management; Oulu, Finland) and Virpi Turkulainen (Haaga-Helia University of Applied Sciences; Helsinki, Finland

11.1.　　Introduction

Inter-organisational construction projects face the challenge of aligning objectives, facilitating trust, and integrating the resources and knowledge of various autonomous organisations and project team members with differing backgrounds and objectives in a timely manner so that the planned project outcomes are realised (DeFillippi and Sydow 2016; van Marrewijk et al. 2016). Physical co-location of project team members in a shared workspace is suggested as an important mechanism for managing the organisational boundaries and the typical challenges of disintegration in construction project settings (Baiden et al. 2006). Recently, the use of co-locational spaces in construction projects has increased significantly; the so-called Big Rooms fostering the team's collaborative behaviour has been promoted as an efficient means to facilitate cross-disciplinary work, interaction, and integration of diverse knowledge among professionals, particularly in integrated project deliveries and alliances (Kokkonen and Vaagaasar 2018; Walker and Lloyd-Walker 2015). Research on collaborative spaces has primarily focused on describing and assessing the positive outcomes of co-location, for example, on socialisation, referring to the interaction and communication between different organisations. Socialisation facilitates the development of personal familiarity, improved communication, and problem-solving (Gupta and Govindarajan 2000; Van Maanen and Schein 1979) and is considered fundamental for the performance of and value creation in project teams (Aaltonen and Turkulainen 2018).

In reality, the relationship between space and the actual collaborative behaviour of individuals and socialisation is a highly complex and dynamic issue, filled with tensions and struggles and

situated in space and time. Consequently, the co-location of project personnel representing different organisations in the same physical space does not automatically produce positive outcomes (Bresnen 2007). Rather, managerial practices play an important role in realising the benefits of collaborative spaces and facilitating favourable social processes (Bosch-Sijtsema and Tjell 2017). Moreover, conflict and cooperation have been suggested to co-exist among actors working in the same collaborative space of an inter-organisational project (van Marrewijk et al. 2016), implying that although physical co-location in a collaborative space may bring significant benefits, it may also pose struggles and tensions in construction projects.

Organising in inter-organisational construction projects can be viewed as a problem-solving process (Weick 1974), where the universal challenges of task division, task allocation, provision of reward, and provision of information are continuously addressed throughout the project lifecycle (Lehtinen and Aaltonen 2020; Puranam et al. 2014). Socialisation processes and the management of socialisation tensions taking place in the collaborative space are a significant part of project organising in this context: the development of interaction and communication among project participants during a project has impact on how roles and responsibilities are shared within the team, how motivated project actors are to work toward the common goals, and how actively actors share information with each other so that they can execute tasks in a timely fashion (Puranam 2017). Understanding socialisation dynamics and tensions in collaborative spaces is, therefore, crucial for managing inter-organisational project organising, characterised by the contradictory requirements of the project actors that need to be mastered. This view on organising, therefore, also implies a shift from the linear and static logic of designing project organisations to focusing on non-linear organising processes that allow for capturing and conceptualising contradictions and countervailing processes (Schreyögg and Sydow 2010).

In practice, developing socialisation may be a more complex process than understood in research. In this chapter, we are interested in tensions that may be produced by the use of collaborative space during socialisation processes in inter-organisational construction projects. To demonstrate tensions in the socialisation process produced by the use of

collaborative space, we elaborate research on socialisation in the context of inter-organisational construction projects, focusing on co-locational spaces and using illustrative cases of four alliance projects implemented in a Northern European country during 2011–2018. All the case projects used collaborative spaces as a key strategy in their project integration efforts. We illustrate the emerging socialisation tensions related particularly to (i) the spatial design of the collaborative space (ii) the facilitation of collaborative work in the collaborative space, (iii) the emergence of boundaries between full- and part-time members of the collaborative space, and (iv) the development of a shared identity in the collaborative space. The findings increase the understanding of the salient role of space in socialisation processes in inter-organisational construction projects.

11.2. Theoretical Background

11.2.1. The Origins of Co-Locational Spaces and Their Use in Construction Projects

Co-locating a team in the same physical space has become a popular workplace practice in the global landscape that has been identified as a salient factor in managing integration and coordination in different operational contexts and industries (Khanzode and Senescu 2012). In general, co-location refers to the use of a shared space where members, for example, from different units or organisations, are physically co-located and can interact in real-time face to face (Bosch-Sijtsema and Tjell 2017). In practice, co-location can take different forms, ranging from full-time co-location to recurring or staged co-locational activities. The concept of collaborative space is considered to consist of the physical space and socialisation and collaborative practices that take place in that space (Kokkonen and Vaagaasar 2018).

The origins of co-location can be traced back to the rise of lean thinking at Toyota in the 1990s. An 'Obeya' was set up to co-locate team leaders from different engineering areas to discuss problems, innovate, and make joint decisions with the objective of cutting lead times in automobile production and product development (Morgan and Liker 2006). Since then, the

value of co-location in increasing knowledge sharing has been particularly emphasised in the new product development context (Coradi et al. 2015). In the space industry, the Jet Propulsion Laboratory of the National Aeronautics and Space Administration is famous for co-locating an experienced design team, Team X, to complete extremely rapid designs with interdependent tasks routinely (Mark 2002). Lean thinking ideals have also affected the use of co-locational space and the emphasis on face-to-face interaction in agile projects, which have become the dominant form of delivering working software in the information technology (IT) industry (Hobbs and Petit 2017). In this context, fast communication and interaction between team members from different organisations are essential for quick responses to changes in the software.

The use of co-locational space has also spread to managing construction projects, particularly due to the use of collaborative procurement forms such as integrated project deliveries and alliance projects (Mosey 2019; Walker and Lloyd-Walker 2015). The rise of physical co-location in construction projects has also produced various concepts, including interactive workspace (Johanson et al. 2002), Big Room (integrated Big Room, intensive Big Room, virtual Big Room; Khanzode et al. 2008), and collaborative space (Kokkonen and Vaagaasar 2018). Each emphasises the role of face-to-face communication, the use of virtual technologies, the use of collaborative practices, and the frequency, intensity, and temporal orientation of physical co-location.

11.2.2.   The Use and Outcomes of Collaborative Spaces in Inter-Organisational Construction Projects

Research on the role of collaborative spaces in construction projects is dominated by studies focused on identifying the benefits that the co-location of inter-organisational project team members may produce. Researchers have advocated that the activities carried out in a mutual work environment enhance collaboration between the project parties through increased interaction and communication (Khanzode and Senescu 2012). Some scholars have also presented co-locational teamwork as positively impacting negotiation behaviour (Raisbeck et

al. 2010). Similarly, the development of mutual trust has been discovered to influence people's willingness to share knowledge and collaborate and, thus, have positive effects on project outcomes (Baiden et al. 2006). Working as a co-located team has been reported to promote team integration in multi-party construction projects, particularly between designers and constructors (Ibrahim et al. 2013). Furthermore, a team's co-location is presented as supporting design integration, such as the use of building information modelling and integrated concurrent engineering methods (Khanzode et al. 2008). Working collaboratively in a Big Room environment has been found to lower barriers to working with the latest information and more concurrently, which, in turn, speeds the project's progress (Khanzode and Senescu 2012).

Different kinds of collaborative project space set-ups have also been found to produce different types and degrees of collaborative behaviours and interaction outcomes: while interactive workspaces and intensive Big Rooms foster occasional but intensive cooperation through interactions with the virtual content and face-to-face collaboration of project members (Leicht et al. 2009), collaborative spaces and permanent Big Rooms can enable more in-depth formal and informal collaboration as the joint space facilitates continuous relationship building and collaborative working between the different disciplines (Kokkonen and Vaagaasar 2018; Lehtinen and Aaltonen 2020). Seeing other project members every day, organising regular meetings and working closely together as a result of co-location has been found to support the development of mutual trust in inter-organisational projects (Bygballe and Swärd 2019). Scholars have also examined how the use of facilitators and the implementation of behavioural norms in collaborative spaces can facilitate the formation of a joint collaborative identity in construction projects (Hietajärvi and Aaltonen 2017) and support the institutionalisation of collaborative routines within inter-organisational arrangements (Bresnen 2007; Bygballe and Swärd 2019). Particularly, the use of informal events and meetings and development of joint values and norms for the behaviour in collaborative spaces during the early project stages has been found to promote socialisation and trust development in the project organisation (Aaltonen and Turkulainen 2018).

Recently, the impacts of co-locational work on behaviour have been problematised, and the role of managerial practices and facilitators as important mediators for the realisation of benefits of collaborative spaces has been acknowledged (Kokkonen and Vaagaasar 2018). Some studies have also focused on the role of the spatial design of the workspace layout and how it may prevent social interaction in multi-party projects (Bosch-Sijtsema and Tjell 2017; Karrbom Gustavsson 2015).

11.2.3.   Socialisation in Inter-Organisational Projects

Socialisation can be defined as 'the level of interaction between, and communication of, various actors within and between organizations, which leads to the building of personal familiarity, improved communication and problem solving' (Cousins and Menguc 2006, p. 607). It facilitates the building of inter-personal relationships, trust, interaction, and knowledge sharing, ultimately facilitating better performance (Cousins et al. 2008). Research on inter-organisational projects describes various collaborative practices for facilitating socialisation among the participating organisations, including workshops, relationship programmes, co-locational collaborative spaces, use of facilitators, and joint training (Bresnen 2007). However, the use of these practices has rarely been problematised.

The majority of the existing studies have focused on formal mechanisms for facilitating collaboration. However, there is growing interest in the social dimensions of collaboration and in understanding the role of informal socialisation practices in facilitating the emergence of trust and a collaborative mind set in projects 'naturally' (Bresnen 2007; Hietajärvi and Aaltonen 2017; Suprapto et al. 2015). Furthermore, we have limited understanding of how the spatial setting and the use of co-locational space shapes the socialisation process in inter-organisational projects.

11.3.   Methodology

Contrary to the majority of previous research that has primarily addressed the role of co-locational spaces in advancing collaboration and cooperation, the aim of the study is to extend the understanding of the socialisation tensions that collaborative spaces may produce in an

inter-organisational construction project. We adopt the theory elaboration research approach (Ketokivi and Choi 2014) and build on research on socialisation and existing understanding of co-location in the context of inter-organisational construction projects. We collected empirical data from four case projects and use the cases in an illustrative manner to sharpen and advance the understanding of socialisation tensions in the inter-organisational project context. We collected qualitative data with an in-depth multiple case study method (Yin 2009). A case study approach was considered appropriate because it is particularly suitable for theory elaboration purposes (Ketokivi and Choi 2014) and assists in producing a rich analysis and understanding of complex phenomena.

As we were interested in understanding the project practices and activities and the socialisation processes taking place in collaborative spaces, we sought contemporary case projects that use collaborative space as their integration strategy. To control the potential variation that the project delivery form may bring to socialisation processes, we decided to focus on construction project alliances (Walker and Lloyd-Walker 2015). A project alliance can be considered an extreme form of relational integration in projects, where relational and behavioural aspects and collaborative work are emphasised to optimise the value creation of the project system. The selected replicative four case projects (Case Railway, Case Tunnel, Case Tramway, and Case Hospital) were all complex construction projects from an organisational and technical perspective, requiring emphasis on socialisation and collaborative work. We decided to focus on the use of collaborative space and the development of socialisation during the development phase of the project alliance. In this phase, the project team is formed, and the project is developed jointly by the alliance participants such as the client, designers, and main contractors. The use of the collaborative space and the socialisation dynamics are typically most intensive during this phase of the project.

Case Railway is a rail renovation project that includes three alliance organisations (development phase in 2011), Case Tunnel is a complex tunnel construction project in a city centre that includes five alliance organisations (development phase in 2015), Case Tramway

is a light rail construction project that includes three alliance organisations (development phase in 2016), and Case Hospital (development phase in 2017) is a new and ambitious women's and children's hospital project that includes four alliance organisations, all executed in a Northern European country. The value of each project was around or more than 100 million euros.

Data collection regarding the use of collaborative space and socialisation processes focused on understanding how the project used Big Rooms in practice, what socialisation practices were in place, and how people experienced them. Understanding the potential tensions and conflicts that the alliance project participants had experienced in their projects in use of the Big Room and interaction within it was also important. The data collected (between 2014 and 2018) on all cases included 37 semi-structured interviews (7 at Case Railway, 11 at Case Tunnel, 15 at Case Tramway, and 4 at Case Hospital), non-participant observations in all Big Rooms, and research-related workshops. All interviews were recorded and transcribed as text. The data were complemented with project documentation, including organisational charts of the project, process descriptions, behavioural guidelines, and project reports. The number and format of the workshops varied between the cases; for example, in Case Tramway, extensive workshops were held, including one on the use of the Big Room.

The interviewees represented the key alliance organisations in all cases and were from different levels of the organisations, that is, from the leadership team, project management team, and project team. Individuals who worked full and part time in the Big Rooms were interviewed.

We began the data analysis by building a thorough understanding of the case projects, on the use of and behaviours and practices in the collaborative spaces, as well as on the tensions the project members experienced regarding use of the Big Room and socialisation in general. Then, we coded the interview transcripts, documentary data, observation memos, and workshop memos with Excel. During the data analysis, we observed that similar types of challenges and socialisation tensions were raised in all the cases. We realised that the use of the collaborative space was associated and posed challenges for the socialisation process in

the temporary inter-organisational setting and that the project organisations were struggling with socialisation tensions that did not follow, for example, the traditional inter-organisational boundaries. The data also indicated that the project organisations struggled with finding the most suitable ways to use the collaborative space to facilitate socialisation. We found many indicators and instances in all the cases where the use of the collaborative space was linked to the outcomes of socialisation. We categorised the indicators into four themes that we labelled socialisation tensions produced during the use of the collaborative space.

11.4. Findings

We identified four themes that were linked to tensions in the use of the collaborative space and thus, also contributed to the development of socialisation in the inter-organisational construction projects.

11.4.1. The Spatial Design of the Physical Collaborative Space

Planning and designing the actual physical space that would serve as a collaborative space was not experienced as a trivial task by the project representatives. It was evident that the role the actual physical layout would play in the team's socialisation process was acknowledged by the managers. However, at the same time, they experienced that they did not have the proper tools or unified ideas on how to plan the optimal layout and the physical space. It seemed that the managers longed for simple best practice guidelines related to spatial planning but faced uncertainty and differing and even controversial ideals about the optimal solution. This was illustrated by a Case Hospital representative:

We have still a lot to do with regard to the planning of the layout, and we need to modify it throughout the project and experiment and adjust. We are not completely sure what kind of layout works best in this project.

Consequently, the data indicated that although the interviewees could easily list the most important features of collaborative spaces, such as visual attractiveness, flexibility, and

somehow distinctive from what they were used to, they were unsure about the connections in the physical space that fostered informal and formal collaborative behaviours among the different disciplines. In some cases, the interviewees seemed to assume that collaboration would emerge in the co-locational space without any formal planning of the layout, which caused socialisation-related tensions in the project. This was described by a Case Tramway coordinator:

We have not paid enough attention to the planning of the spatial space in the beginning as it seemed that we just came here, eager to work with the project, and started sitting somewhere. The planning was not that systematic, and the assumption was that we just start collaborating.

In all case projects, the project managers and coordinators emphasised cross-disciplinary collaboration between designers and builders in the early development phase, but at the same time, they acknowledged the need to advance design processes efficiently among the designers. This led to dilemmas in space layout planning, as the projects struggled with whether to mix professionals from different disciplines or, for example, locate structural designers in one place and facilitate collaborative work through other means such as workshops. At the same time, the interviewees were afraid that cliques would form because of a non-optimal space layout where, for example, people from the same company or design discipline sat next to each other. These tensions introduced layout planning dynamics: 'We have experimented pair-working among the designers and builders and also made some adjustments to the space layout use in this open space to facilitate cross-disciplinary working' (Case Tunnel). The space layout and use, therefore, were dynamically adjusted throughout the development phase to deal with the tensions and emerging project needs.

The ideal of open-space layout was visible in all the cases. Each project had some kind of large open-space office with designated workstations. The meeting and workshop facilities were either in the middle of the open space or in separate rooms. Some project members strongly believed that information and knowledge would transfer fluently in the open space as people could easily hear, for example, what the managers were discussing in the meetings, and one could tap a colleague's shoulder and ask for more information for some emerging

problem. However, although it was evident in all the case projects that the open-space planning facilitated information sharing, the project members also struggled considerably with this configuration. Many interviewees expressed concerns and problems with 'being available all the time' and the noise levels. Interviewees also felt that it was not always motivating to listen to the conflicts and challenges discussed in the project team meetings. Some individuals even mentioned that if they wanted to really concentrate on their work, they did not necessarily come to the collaborative space, but went to their parent organisations' spaces to work. Therefore, the multi-tasking approach that the open-space layout produced was also a factor that decreased work efficiency. Furthermore, individuals questioned the assumptions that knowledge transfer could be facilitated simply through open-space layout design. Interviewees felt that in some cases the belief in 'knowledge transferring by itself' through co-location was so strong that not enough attention was paid to facilitating knowledge transfer through managerial activities or knowledge IT systems. This was illustrated by a Case Railway representative:

I need to have a reason for coming to the co-location space. Otherwise, it is not productive for me to spend time there, as work can be distracted. I see some value in socialisation, but at the end of the day, it is still about doing those things that advance the project, not socialising. Tensions and struggles due to the spatial design and the socialisation process were also experienced by individuals, particularly designers, who were working on multiple projects at the same time. Typically, agreements were made that individuals could work on other projects while co-located in one project's co-locational space. This was a managerial strategy to make sure that certain individuals were available face to face when needed. However, some of the design professionals felt that this meant they should be available all the time. They also mentioned that the spatial layout did not address working on multiple projects at the same time. It was not very easy to work on other projects, particularly in the open space, if there was information that should be kept secret, and if meeting rooms were unavailable. The data revealed that the project members experienced that there were not enough meeting rooms for individuals to work, and their use rate was high. To signal and symbolise transparency, in

many cases, the doors were always kept open, even when meetings were held. However, this led to closed doors raising suspicions.

Tensions also emerged regarding the use of walls and visualisation in the spaces. The emphasis on visualisation increased in all the case projects during the development phase, but its usefulness was valued differently by the interviewees. Some emphasised the importance of sharing information through visual elements such as innovation spreadsheets or valued visual organisational charts. However, in other projects, the wall space was dedicated to only the Last Planner system. Its physical versus virtual presence was also constantly debated by the project members. Some individuals felt that its use should only be physical, but some perceived that kind of use as very outdated and did not place much value on the social processes related to its use.

Finally, the planning process of the spatial design produced some tensions among the project members. Interviewees pointed out that a separate Big Room coordinator position should be established, but others favoured a continuously self-adapting planning process. The questions of who could be and should be in charge of planning the collaborative space in an inter-organisational project and how widely project members should be engaged in this process were indicators of power struggles related to the collaborative space.

11.4.2. Facilitation of Collaborative Working in the Collaborative Space

The actual collaborative working and collaborative practices within the collaborative space were constantly debated and entailed tensions that were not all resolved during the projects' development phases. The most significant differences in perceptions were related to the formalised versus informal approach to collaboration in the co-locational space. Some interviewees were very much in favour of 'engineering collaboration' within the space and favoured systematic planning and scheduling of the space use and workshops. Others felt that this approach would lead to too inflexible structures that would not produce value for the

collaborative work in the space. The need to balance these two is described by a Case Hospital representative:

We need to plan very systematically the weekly timetables and the activities what to do in the Big Room when different individuals come and go. Then, on the other hand, in order to allow ideation and encourage creativity, we should be able to offer more relaxed and informal moments. This is some kind of a challenging balancing process.

This debate was also intertwined with the use of dedicated and specialised collaboration facilitators: Some managers and project members called for a separate collaboration coordinator, who would be assigned tasks related to collaboration planning and execution. Others believed that relying too much on the formalised rules of collaboration and separate positions could destroy the project team's innovativeness and ideation capability. 'I do not know if you can really outsource the task of collaborating, it is not a task of someone. It is a joint process, and formalising it does not really pay off', stated a Case Tramway representative. In addition, the debate over whether internal facilitators would be better than external consultants was also highlighted, as well as the struggles regarding which project party would be in the right position to act as a facilitator.

The evidence also points to a constant struggle of inclusiveness versus exclusiveness in the use of the collaborative space that had implications for the socialisation process. Typically, at the start of the development phase, the managers highlighted an inclusive approach to engage the project personnel as widely as possible in the different project procedures and to facilitate commitment. This approach led to meetings and, for example, Last Planner sessions that were long and extensive and produced experiences in which individuals felt that their presence in the meetings in the collaborative space was unnecessary. The exclusiveness approach was described by a Case Tunnel representative:

At the start of the project, we were so eager to engage and start working broadly. Almost everybody was invited into the meetings in our co-locational space to ideate, which did of course result in inefficient meeting practices. Then we adjusted, for example, the number of

people participating in Last Planner sessions so that we would have only those people who would contribute.

We observed a pattern in the data that after a period of inclusiveness during the early development phase, adjustments were made in terms of collaborative practices, typically resulting in exclusiveness strategies for the use of the collaborative space. Then, the strategies produced experiences of isolation among individuals who felt that they could not participate fully in the activities within the collaborative space.

11.4.3. Emergent Boundaries Between Full- and Part-Time Members of the Collaborative Space

The data also revealed an interesting emerging pattern in the organisational boundaries and the use of the collaborative space. As cooperation among the members of the project alliances developed in the collaborative space, the boundaries between the organisations started blurring. This was facilitated by a socialisation process of individuals who worked full time in the Big Room. At the same time, a novel boundary emerged based on whether individuals were located full or part time in the collaborative space. In other words, we noted a gradually emerging strong boundary between the full- and part-time members of the collaborative space. A unique 'collaborative space community' among full-timers who worked at the distinctive home base space of the project formed, which also reinforced the feelings of isolation among those who visited or used the collaborative space only occasionally or part time. This was illustrated by a Case Tramway representative as follows:

I also feel that it is about the attitude. If I imply that this co-location space does not work people say that you should be here more. But not everybody can be here. They are hiding behind it that everybody should be here. It does not go like that. It is almost like, 'if you are not here three days a week, you are a bad person'.

This project core and periphery structure and us-versus-them mentality between those who were the true space users and those who were outsiders to a certain extent was an emerging and unintended consequence of the co-locational space strategy for the managers. The data

showed that it can to some extent be explained by the unique space set-ups, and that the individuals seemed to identify with and the project's existence very strongly with the existence of and time spent in the physical space. This was also reinforced by the strategies that highlighted the Big Room as a key strategy for transferring knowledge. In other words, if you were not constantly present in the collaborative space, you were not necessarily considered a committed and true team member.

The part-time members, particularly designers, also experienced a very clear division between the users of the space. Some felt guilty if they were not physically within the space and felt that they were somehow blamed if they did not come to work in the space but worked in other co-locational spaces or in their company's office. In practice, they also felt challenges in terms of knowledge sharing: As the idea of the collaborative space was related to the free flow of information across those who were in the space, many times, the full-timers did not make an extra effort to share information with non-space users. Instead, the full-timers stated that it was the part-timers' own fault if they did not come to the space. These feelings were described by Case Tramway and Case Tunnel representatives:

It is truly a problem that there are these kinds of unexpressed expectations that you should be so much physically co-located in Big Room to receive information and knowledge. Why do we not just admit that this is simply not possible for all of us and quit this game of playing that this would somehow be possible. If we do not admit it, development is not possible.

There are these expectations that you should be in the Big Room, and you feel guilty if you cannot be physically present there. It is the place where information is transferred, and you can ask for input from people. It almost makes you feel that communication through other channels such as e-mail or phone in this project would not somehow be right. This can cause problems in information exchange.

Thus, the data revealed insights into how co-locational spaces and presence within them can be used as means of control and power in inter-organisational projects. They seem to enable new kinds of power structures in projects that are not tied to inter-organisational designs. Some informants felt that they were in a way 'punished' and missed some critical knowledge

because they were not present in the co-locational space, as illustrated by a Case Railway representative:

I know that I must attend the weekly meetings as planned and be there physically; otherwise, I will miss some information related to the project and, for example, its schedule, which is there on the wall in the form of a Last Planner.

Interviewees also brought up that calling or sending an e-mail to people who are part-time workers becomes increasingly challenging in cases where you have the collaborative space in place because it seemed that it was easy to decide to postpone contacting to the moment when the person is in the place physically. This indicates that on some occasions, the very essence of collaborative space can also decrease information exchange and socialisation in an inter-organisational project.

11.4.4. Development of a Shared Identity in the Collaborative Space

The fourth theme of socialisation tensions was related to the development and dynamics of the shared collaborative space identity and the means to facilitate it. The collaborative space identity was related to discussions about what the project space represents, how it differentiates the project from other projects, and how people should collaborate and behave in this project's co-locational space when compared to other projects. Struggles were also related to the activities through which the Big Room's spirit could be transferred to the sub-Big Rooms on the construction sites. These tensions were also tied to the emergence of boundaries between full-timers and part-timers as well as to struggles in terms of the collaborative processes.

The data indicate that some of the interviewees felt strongly that the project organisation should try to establish a unified and permanent collaborative space identity, for example, through codified rules for collaborative space and cooperation within it. Within this approach, engaging individuals at the start of the project to develop collaborative rules were favoured, as illustrated by a Case Tramway representative:

It is important to build a joint culture and alliance spirit for the project and to try to establish the rules and values of this Big Room so that people know how they should behave and co-operate here. This also supports the socialisation of the newcomers to the Big Room.

On the other hand, some interviewees – a minority, however – considered this approach unrealistic and promoted a more fluid and polycentric approach to the culture and identification. They considered that the culture is always in constant flux, and that project members come and go. Therefore, attempts to invest too much in a shared culture do not pay off. Interviewees also experienced so many rules and demands for collaboration that are partly contradictory and produce complexity that knowing which to follow is often challenging. For example, in Case Tramway, there were rules and requirements for behaviour in Big Room, virtual etiquette, the client's requirements, and service promises that all entailed at least some kind of guidelines on how to collaborate in the co-locational space. Furthermore, socialisation tensions related to the collaborative unified identity were experienced most strongly by part-time workers, who often had other project commitments. As part-timers juggled multiple project-related identities, they found it challenging to attach themselves strongly to any project's identity. In addition, tensions increased regarding attempts to copy the central co-locational space's alliance spirit and identity in sub-Big Rooms on construction sites.

We also identified tensions related to project transformation phases. The strongest tensions were grievances related to the potentially changing 'team spirit' within the collaborative space. These instances were evident when the physical collaborative space was changed as the project progressed and changes in the team were made. Interestingly, the evidence indicates very strong mental attachments to the actual physical space and its community that symbolised and represented the project for many people, as illustrated in the following comments: 'The Big Room is more than a physical place. It is a mental state of our project' (Case Tunnel). 'It has been such a great journey that you are already a bit afraid that it will end' (Case Railway). When the projects entered the execution phase, the collaborative spaces were almost always dispersed to the construction sites, and the project team needed to recreate its identity. A lot of work to facilitate creating shared identity was related to this phase.

11.5.   Discussion and Conclusions

The results broaden and problematise the existing understanding of the role of co-location spaces in producing favourable outcomes in inter-organisational construction projects as well as provide ideas for managers on how to use collaborative spaces in their projects to facilitate socialisation.

11.5.1.   Theoretical Contribution and Implications

The key contribution of the study is the identification of four novel tensions that the use of collaborative space may produce in the socialisation process of inter-organisational construction projects. The identified tensions shed light on the potential 'dark sides' and struggles that inter-organisational projects may face through the use of collaborative spaces. Overall, the results portray a more fine-grained picture of socialisation processes in inter-organisational projects that extends beyond the core team (Aaltonen and Turkulainen 2018) and provide evidence of the potential complexities associated with the use of collaborative space and realisation of their benefits (Bosch-Sijtsema and Tjell 2017; Kokkonen and Vaagaasar 2018). Consequently, the findings of the study suggest that the path towards favourable collaboration may advance through tensions and struggles that managers must resolve to realise the value of collaborative spaces.

The findings related to the design of spatial space reveal challenges in planning the layout (Bosch-Sijtsema and Tjell 2017). Similarly, the results related to the facilitation of teamwork lend support to previous findings of a need for facilitation and coordinators in collaborative spaces (Karrbom Gustavsson 2015). To some extent, the results also question the appropriateness of formalised engineering of collaboration in all phases of the project, resonating with the findings for collaboration paradoxes (Bresnen 2007). The present empirical evidence revealed how organising collaboration in a collaborative space may require time from the project team and that controversies exist regarding finding the right balance between formalisation and informal collaboration across the whole project team, and how this may foster socialisation. Socialisation, therefore, has a temporality to it.

The findings related to the emerging boundaries between the full-time inhabitants of the collaborative space and others on the periphery provide a novel perspective that incorporates the role of the physical space when analysing organisational boundaries in inter-organisational projects. To date, much research has focused on inter-organisational boundaries and how they affect cooperation and coordination in projects (Oliveira and Lumineau 2017). The present results suggest that this might not always be the case, particularly in project alliance contexts, where the physical space seems to play a significant role in the formation of boundaries and in project identification processes. The evidence also suggests that the physical space can be utilised as a powerful means of exercising power, which is a relatively novel perspective on inter-organisational behaviours. Paradoxically, the best intentions to facilitate integration and knowledge transfer through the use of the collaborative space may result in frustrations in some parts of the project; at worst, the notion of openness may then produce isolation.

Finally, the findings for identity tensions and struggles advance the notion and understanding of the role of collaborative space in promoting the formation of inter-organisational project identity (Hietajärvi and Aaltonen 2017) by showing how the use of collaborative space may pose identity struggles and affect socialisation processes. The notion of space as a producer of identity-related tensions sheds light on the potential dark side of collaboration, as researchers have focused primarily on the positive mechanisms through which a co-locational space can advance a joint alliance spirit (Walker and Lloyd-Walker 2015).

The findings on the countervailing requirements of the members and socialisation tensions also reveal important features of project organising and organisational design in general. First of all, organising in a collaborative space is an ongoing and non-linear process where balancing and mastering of contradictory or even paradoxical organising requirements. This view challenges and is in sharp contrast with the more static and linear approaches concerning the organisational design of projects as suggested by Schreyögg and Sydow (2010). Socialisation processes and organising in general are also unfolding throughout the project lifecycle: the degree of socialisation is constantly developing in the project organisation and

the organising solutions need to adapt to this change. Balancing between self-organising processes allowing flexibility and more formal team management processes including, for example, planned collaboration facilitation is, therefore, essential. For example, self-organising processes were favoured by some of the team members during the early stages of the projects to promote flexibility, spontaneous interaction and improvised processes, while formal team management approaches and the development of norms and values and routines through planned and facilitated collaborative workshops were required by other members to systematise collaborative work later on. The co-location of the project team also makes dysfunctional organising processes and challenges more visible to the inter-organisational project team members and may enable rapid adjustments of organising solutions, which do not seem to work as well as more flexible division of responsibilities among the project team members. Different types of integrative cross-disciplinary working groups were, for example, added in one of the projects, when the collaborative working between the disciplines did not work. As the findings demonstrate, the use of collaborative spaces also blurs organisational boundaries and requires a shift from the firm centred project management approaches to the management of project teams with representatives from different organisations (Hietajärvi and Aaltonen 2017). Consequently, instead of strengthening and developing the collaborative identity of each organisation participating in the project, focus in organising is shifting to the development of a joint and common, but temporary, collaborative identity within the single project.

11.5.2.   Further Research

This elaborative study used four alliance cases as a means of illustrating socialisation tensions produced by the use of collaborative spaces. The study focused on cases that used collaborative spaces for integrating project personnel during the development phase of project alliances. Studies on the use of part-time co-locational spaces and on different project life-cycle phases might produce different outcomes. Further research should also pay attention to the managerial strategies, responses, and balancing acts through which the illustrated

socialisation tensions are resolved in different inter-organisational projects. This would increase the understanding of how the responses are contingent on the emerging socialisation tensions and, thus, facilitate the development of contingency-based understanding of inter-organisational construction projects and their management. Research could also focus on developing models for the assessment of positive and negative outcomes (net benefits) of co-location in different kinds of projects. Understanding better how organisational behaviour and relationship management in particular is implemented in co-locational spaces would provide a valuable knowledge of collaborative dynamics in inter-organisational projects. Finally, the study opens up new avenues for further research related to the links between co-locational space and identity formation in construction projects, as well as to the emerging boundaries between the core and periphery determined by the user status of the co-locational space.

11.5.3.   Managerial Implications

The findings for the use of collaborative space and their links to the socialisation processes in inter-organisational construction projects offer managers various key lessons. First, managers should be aware of the potential tensions that the use of co-locational space may produce in project teams, be able to reflect upon the tensions, and formulate strategies for managing such conflicts in their projects. The path to realisation of the benefits of co-locational space is complicated and requires extra investment in managing collaborative behaviours. Managers should plan the layout of collaborative spaces carefully by addressing the challenges experienced by part-time workers and be able to adjust the layouts when needed. Transition phases from one project stage to another are particularly important for the redesigning of the layout and collaborative practices. Layout planning should consider the need for designer–contractor interaction as well as ensure that members from different organisations are mixed. Managers should also be tuned to observing signals about the potential formation of cliques of full- and part-time workers in co-locational spaces. Regular workshops that encourage project members to discuss and reflect upon the co-locational space working-related challenges and come up with improvement solutions are needed. Efforts should be directed

to more carefully integrate the periphery employees into the project, and collaborative space should not be used as the only means of knowledge transfer. To manage this challenge, virtual solutions to integrate part-time members and ensure their presentism are recommended. Facilitating collaboration and collaborative practices should also be addressed with care, and in some projects, a specific role of collaboration facilitator can be useful. Enough time should also be reserved for developing collaborative practices in the co-locational space together, which facilitates the development of joint norms, values, and identity. Furthermore, identity struggles among part-timers should be considered in the strategies for project identity formation.

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