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Collaborate to learn and learn to collaborate: a case of exploitative learning in the inter-organizational project

Collaborate to
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Yan Liu 

Delft University of Technology, Delft, The Netherlands

Arash Amini-Abyaneh

Vrije Universiteit Amsterdam, Amsterdam, The Netherlands, and

Marcel Hertogh, Erik-Jan Houwing and Hans Bakker

Delft University of Technology, Delft, The Netherlands

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Abstract

Purpose – Management of inter-organizational projects focuses on the collective benefits of a group of organizations on a shared activity for a limited period and the coordination among them. However, how learning is facilitated in the inter-organizational project remains under-developed in the literature.

Design/methodology/approach – This research analyses the exploitative learning process in the longest tunnel project on land in the Netherlands realized in a densely populated area. Data were collected through archived documents, in-depth interviews, site visits in the ethnographic research to analyze the actors, the daily practices and social situations in projects.

Findings – The empirical findings indicate that exploitative learning is promoted positively between the owner and the contractor and internally within the contractor. The most significant change that the exploitative learning process has led to is the change in mindset toward the collaboration. Project culture is considered to be shaped by exploitative learning in the inter-organizational project. However, there is a gap between the transfer of knowledge from the inter-organizational project to the parent organization.

Originality/value – The findings have implications for understanding learning in the inter-organizational project setting.

Keywords Knowledge management, Innovation, Construction

Paper type Research paper

1. Introduction

As more and more infrastructure development projects are being built and maintained, the need to manage projects effectively and efficiently requires to learn from its internal and external experiences, to draw on lessons learned to avoid making the same mistakes, and ultimately to achieve better delivery. To satisfy the requirement, project teams usually rely on previous knowledge and experience for creating solutions (Brady and Davies, 2004). The prospect of capturing the learning from project-based work and making it available within

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and across projects and to the broader organization as “best practice” is particularly attractive (Kerzner, 2018). There has been growing academic interest in exploratory and exploitative learning in the infrastructure project management practice (Liu and Leitner, 2012; Petro *et al.*, 2019; Worsnop *et al.*, 2016).

The infrastructure development industry is a project-based sector with a myriad of actors. It is known to be mainly locally organized and conservative (Kisi *et al.*, 2016). The nature of large projects separates people from different parties. They are eager to collaborate, but except the necessary handover required by the contract, they have trouble identifying extract value from those collaborations. Knowledge is often lost after the completion of a project because project team members move on to new projects or occasionally go back to their line functions (Schindler and Eppler, 2003). In practice, infrastructure development projects’ decentralized and discontinuous nature leads to broken learning and feedback loops (Gann and Salter, 2000). The construction industry is often criticized for slow learning or not learning at all (Flyvbjerg *et al.*, 2002; Hertogh *et al.*, 2008). Learning seems to take place often quite intensively at the project initiation (Fangel, 1991) and the end of the construction phase (Rezania and Lingham, 2009). Most learning experiences occur more or less accidentally on the job, and support for learning from these experiences is limited (Savelsbergh *et al.*, 2016). Project team members lose tacit knowledge about working together effectively, and organizations are unable to build upon ideas accumulated during the project (Dubois and Gadde, 2002). Therefore, it calls for more research on how learning can be better exploited in the collaborative environment of inter-organizational infrastructure development projects.

The research was performed on the design and construction of the Gaasperdammer Tunnel (GSP) project in Amsterdam, the Netherlands. There has been a learning trajectory program set up by Rijkswaterstaat (RWS), the executive body of the Dutch Ministry of Infrastructure and Water Management, in collaboration with IXAS, the winning consortium of contractors (mentioned as the contractor in this article), which was organized to have a constant reflection going on in the project rather than just learn from the project after it has finished.

The research will focus on viewing the relationship between the multiple organizations in a project from a learning perspective. The actors’ experiences from both owners and contractors will be investigated and analyzed in the inter-organizational project setting. We have the following research question: What are the effects of exploitative learning carried out by the inter-organizational project actors?

We will seek to understand the potential convergence between “collaborate to learn” and “learn to collaborate,” to establish a link between learning and collaboration. Since all parties have their own culture and ways of working, we have to invest the time to learn to collaborate with all the parties and when collaborating we continue to learn from each other.

The research is structured as follows. First, we start with a brief review of the literature on organizational learning and exploitative learning in the inter-organizational project, showing that exploitative learning in the inter-organizational project setting needs to be better explored. Second, a detailed case description of the exploitative learning process within the GSP project is presented. The research method of data collection and analysis are provided. Third, the empirical results are given, following the conceptualized findings and discussion. Finally, conclusions are drawn, and attention is given to theoretical contributions and managerial implications.

2. Literature review

2.1 Inter-organizational project

Often conceptualized as a temporary organization, large infrastructure projects are established within and between organizational functions and span organizational

boundaries, categorized regarding their intra-organizational and inter-organizational nature (Burke and Morley, 2016). In practice, these projects are set up so that multiple organizations work jointly to produce goods and services in a limited amount of time, and multiple knowledge flows coincide (Jones and Lichtenstein, 2008).

An inter-organizational project can be understood as an association of diversely skilled employees from several organizations who temporarily interact to coordinate their efforts to accomplish a complex task (Bakker, 2010; Levering *et al.*, 2013; Sydow and Staber, 2002). Lundin and Söderholm (1995) and Sydow and Braun (2018) summarized the inter-organizational project's characteristics.

- (1) The inter-organizational project can serve as a bridge between multiple levels (within and across projects). Relationships between organizations may be latent after the project ends until they are activated in future projects.
- (2) The inter-organizational project can influence the organization's bureaucracy through inter-organizational teams. Each organization has its hierarchy and routines. When organizational boundaries intersect, organizations need to define the roles of people in the inter-organizational project to work simultaneously on different levels.
- (3) The inter-organizational project can blur organizational boundaries. When members of different organizations are assigned to a project, they work together to complete a given task. It asks for a dynamic perspective to ensure the commitment of project team members from different organizations.
- (4) The inter-organizational project can re-construct the behavior of project team members. To accomplish the task, members of different organizations need to have inter-organizational governance, enabling the inter-organizational project members to behave consistently with their organizations and with the inter-organizational project.

Previous literature on inter-organizational relationships in the project explored several theoretical lenses such as strong owner (Winch and Leiringer, 2016), systems integration (Davies *et al.*, 2009), meta-organizations (Davies and Mackenzie, 2014), project-based networks (Manning, 2017; Pryke *et al.*, 2018) and project network organizations (Lundin *et al.*, 2015).

Construction projects are a typical inter-organizational example (Burke and Morley, 2016). The implementation of an infrastructure development project often involves multiple parties, such as owners, designers, contractors, subcontractors and suppliers, who establish or maintain partnerships through one or more discrete projects. Project team members are deployed from the participant organizations and cooperate in the construction process. At the same time, it is necessary to ensure that the project's results align with the development strategies of their respective organizations. The knowledge created within inter-organizational projects is likely to dissipate when the project comes to an end, and the participating organizations disband (Bakker *et al.*, 2011a).

2.2 Organizational learning in projects

Organizational learning has great potential for influencing organizational outcomes (Levinthal and March, 1993) and is the primary determinant of performance differences among firms (Crossan and Berdrow, 2003). Learning becomes crucial when the project is inter-organizational, having multiple organizational stakeholders. The emergence of inter-organizational structures would contribute to information sharing and collective meaning (DiMaggio and Powell, 1983).

Scarborough *et al.* (2004) defined project-based learning by conceptualizing both the creation and acquisition of knowledge within projects and the consequential transfer of this knowledge to the broader organization and other projects. Bartsch *et al.* (2013) defined learning in project-based organizations as the process of integrating project knowledge, recognizing many learning opportunities in the projects they conduct with other partners. Learning in the inter-organizational project represents a specific type of organizational learning. Because of multiple organizations' involvement, this type of learning can be characterized as being multiparty and inter-organizational (Holmqvist, 2003).

Project-based learning, which is mainly ad hoc, requires commitment and continuous investment of time and resources, yet it is often neglected (Davies and Brady, 2000; T. Williams, 2008). Inter-organizational project-based learning seldom occurs in a traditional short-term competitive relationship. The frameworks and models of learning developed for permanent organizations (Duffield and Whitty, 2014) may not apply to temporary construction organizations. Moreover, the learning mechanisms often are discussed in an intra-organizational instead of an inter-organizational context, thus focusing on how a single organization learns across projects (Prencipe and Tell, 2001). Learning in inter-organizational projects can be more difficult because of the involvement of multiple organizations with incongruent goals, overlapping areas of responsibility and unequal expertise levels (Jones and Lichtenstein, 2008). Cross-functional or cross-organizational resources make it challenging to execute projects within the traditional organizational boundaries, which complicate the transfer and reuse of useful lessons. Further research is needed to address this gap in extant literature.

2.3 Exploitative learning in projects

Learning in organizations is often categorized into two main learning modes: exploration and exploitation (March, 1991). Mahr *et al.* (2014) highlighted the importance of integrating different actors' knowledge sets and engaging in mutual explorative and exploitative learning. Exploitation involves activities characterized by refinement, efficiency and execution, whereas exploration involves activities characterized by search, discovery, experimentation and innovation (He and Wong, 2004). The tension between exploration and exploitation on the firm-level has been mostly studied in earlier research (O'Reilly and Tushman, 2011; Uotila *et al.*, 2009). It became necessary to figure out how exploration and exploitation can be facilitated in inter-organizational relationships in different organizational contexts (Im and Rai, 2008), for example, in project settings. More research is needed to study how exploration and exploitation are managed at the project level (Turner *et al.*, 2015).

Exploitation is associated with routinization, incremental development and short-term orientation (Andriopoulos and Lewis, 2010; Junni *et al.*, 2013). It has been studied at the firm level by prior research (Swift, 2016; Uotila *et al.*, 2009). In the project organizing context, exploitative learning focuses on controlling existing knowledge and addressing customers' needs to achieve high levels of consistency and efficiency (Zerjav *et al.*, 2018), which is much needed in traditional construction projects. Eriksson *et al.* (2017) further identified key exploitative learning themes as knowledge sharing and innovation diffusion.

The fragmented nature of the construction market makes incremental innovation more commonly adopted. Construction projects benefit from exploitative inter-project learning to achieve efficient use of limited project resources (Eriksson and Leiringer, 2015). However, construction projects often do not well record early recollections. They are less likely to spend time and effort articulating knowledge and capturing lessons learned (Perminova *et al.*, 2008) under the pressure of finishing projects before the *ex ante* defined deadline. The owner may use an external audit to evaluate the project delivery. However, often audits aim more to

judge than to learn, looking back what happened in the past instead of looking forward to approaching issues in the future. The evaluation is only a snapshot at the end of the project. Exploitative learning could help project teams avoid repeating the same mistakes (Brady and Davies, 2004) and refine existing ways of doing things while avoiding experimentation risks (Shaw, 2017). More attention should be paid to the exploitation during implementation rather than at the end of the project.

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3. Research methods

3.1 Ethnographic research

Answering the research question will be done through ethnographic research. Initially developed in social anthropology to observe radically varied cultures, ethnography is developed as a qualitative method for collecting rich and complex social data (Fine *et al.*, 2009). It allows various fieldwork methods to study organizations, cultures, daily practices and groups of actors (Schwandt, 1996). The combination of the fieldwork methods entails participant observation, interviews and the close reading of documents or other sources (Sierk *et al.*, 2009). The contribution of ethnographic studies is evidenced by the small but growing number of scholars using ethnography as a methodological approach in studying construction projects (Phelps and Horman, 2010; van Marrewijk *et al.*, 2016).

3.2 Case description

The Netherlands is an appropriate research setting for cultural reasons, for its ubiquitous consensus-seeking mentality. The Dutch polder model culture fosters close collaboration among social actors (Papadonikolaki *et al.*, 2019). In the Dutch construction industry, most projects are carried out by many different organizations, and the contractor, in most cases, is operating in the form of a consortium. That means that learning often takes place in an environment where more than one organization collaborates. It is an environment that is more likely to be more collaborative and could be better suited to study learning in inter-organizational projects (Bakker *et al.*, 2011b).

The case selected is the Gaasperdammer tunnel (GSP) project, a land tunnel between the Amsterdam–Utrecht railway line and the Gaasp River in the crowded area, part of the road extension between Holendrecht and Diemen, and belonging to the largest infrastructure program in the Netherlands, the SAA program (Schiphol–Amsterdam–Almere). The tunnel is a three-kilometer long tunnel, with a park on top that connects the neighborhoods in Amsterdam Southeast on both sides of the tunnel. The project was started in August 2015 and plans to be delivered in October 2020. Then it will be the longest tunnel on land in the Netherlands. The owner RWS has set up an integrated project management team to manage the GSP project. Three separate organizations, Fluor, Ballast Nedam, and Heijmans, joined together and formed IXAS, the contractor consortium, to complete the GSP project in a DBFM (Design, Build, Finance and Maintain) contract.

In 2015, the Sluiskiltunnel project, which has budget underrun and was completed in time, was evaluated in collaboration with COB (the Center for Building Underground, Centrum Ondergronds Bouwen in Dutch), a network organization that focusses on gathering, developing and unlocking the knowledge of underground construction. The results appeared in a book (Hertogh *et al.*, 2015) and were shared via a conference with the sector at the tunnel opening. This evaluation inspired the GSP project directors to consider their own projects critically. They went a step further than the Sluiskiltunnel: to start a knowledge project, together with the client RWS and contractor IXAS facilitated by COB, from the beginning so that fresh experiences are immediately collected and shared, which is later called the

“learning trajectory program.” The ambition was to add extra value by starting well before the contract closes. This process will promote knowledge usage efficiency and elicit improved learning and problem-solving skills in the project environment itself, which we defined as exploitative learning. There was already the provision for this in the contract: regular alignment sessions in which the client and contractor exchanged views on specific topics. There is also a clear incentive to improve knowledge sharing between the different parties. A plan of action was drawn up for the exploitative learning process in 2016 at the outset. RWS and IXAS have documented lessons and experiences gained in the GSP project in collaboration with COB. At this moment, it is the biggest learning trajectory program in the Dutch construction industry. The entire exploitative learning process and cooperation will continue up to the completion and delivery of the tunnel. The setup and experiences of the first phase (2014–2016) and the second phase (2016–2018) covered knowledge meetings, two books in print (Hertogh, 2017, 2019) and knowledge sharing on the website. One of the recommendations was to evaluate the learning: to learn from learning.

We selected the case based upon the criteria of the project’s size with inter-organizational relationships, the focus on the exploitative learning during the execution phase and the depth in the project we participated in. We carried out ethnographic research to analyze how the parties involved in the GSP project have learned from the ongoing process. The engaged scholarship facilitates in gaining an in-depth understanding of organizational complexity (van den Ende and van Marrewijk, 2019), i.e. exploitative learning in an inter-organizational setting in this case, which also aims at knowledge co-creation between academics and practitioners (Liu *et al.*, 2019; van Marrewijk and Dessing, 2019).

3.3 Data collection

The data were collected through document analysis by the first author, the ethnographic research from February to July 2018 by the first and second author, onsite participant observations by the third author since the start of the project (activities see Appendix 1), and interviews by all authors (protocol see Appendix 2). The second author acted as an intern for half a year to help the project parties to improve their exploitative learning. The third author combined the roles of ethnographer and consultant. The first, fourth and fifth authors went through all the reports, interview data and observational notes. Various methods, such as site observations and validation interviews, helped to triangulate the empirical findings to overcome the limitation of the sympathetic interpretation of research findings (Yanow and Schwartz-Shea, 2015). The triangulation of methods allowed a reliable and valid view on how the members of both IXAS and RWS experienced the learning trajectory program and whether they experienced changes due to the learning trajectory program.

The books mentioned above at the GSP project gave general insight into how the exploitative learning process has been intended and how it has been put into place in the project. The RWS and IXAS project team members interviewed were all involved in the making of the COB books. In total, 13 semi-structured face-to-face interviews were conducted, among whom 5 come from RWS, 6 from IXAS and 2 from COB; 5 have a technical background and 8 have a managerial background (see Table 1). The interviews varied in duration but ranged between 60 and 90 min. Additional data were sourced from attending weekly meetings held in the GSP project in Amsterdam, the construction site visit, and having multiple informal conversations with onsite project managers.

3.4 Data analysis

Semi-structured interviews were all recorded, with the permission of the interviewees. These recordings were transcribed and translated from Dutch to English and given codes by the first and second author. The transcript was thoroughly read and analyzed and classified into

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No	Role	Organization	Gender
1	Environmental Manager	RWS	Male
2	Former Environmental Manager	IXAS	Female
3	Maintenance Engineer	IXAS	Male
4	Head of Communications	IXAS	Female
5	Tunnel Technical Installation Manager	RWS	Male
6	Tunnel Technical Installation Manager	IXAS	Male
7	Contract Manager	RWS	Female
8	Director of IXAS	IXAS	Male
9	Project Manager	IXAS	Male
10	Project Manager	RWS	Male
11	Project Manager	RWS	Male
12	Consultant	COB	Female
13	Consultant	COB	Male

Table 1.
Interviewee profile

codes by all authors as insider and outsider researchers. Themes that came across in the transcripts, informal talks, participant observations and COB books were therefore interlinked. Inside and outside perspectives contribute to a more holistic and objective view of exploitative learning in the inter-organizational setting (Yanow and Schwartz-Shea, 2015).

Our unit of analysis is project actors' inter-organizational actions and interactions in the exploitative learning process. The attention might shift toward the way people make sense of what actually happened, and not so much to what happened. Only the wholly agreed practices were finally retained.

There was a significant overlap between data collection and data analysis, and they influenced each other. Critical practices and phenomena were identified, relying on labels representing similar descriptions across multiple data sources. We devoted subsequent literature readings to assembling these concepts into categories that defined similar ideas, issues or relationships relevant to the informants. We developed an analytical frame, focusing on two dimensions to refine the codes: the exploitative learning process and inter-organizational relationships. We moved back and forth between the case and the concepts, tentative assertions and raw data. In this way, we built the theory, which will be discussed below.

4. Results

4.1 Overview of the exploitative learning process

4.1.1 Learning as a management tool. A learning project organization does not arise automatically and requires attention and belief in the added value. Project managers from RWS hoped to experience the exploitative learning process as an extra management tool. They highlighted that by stating, "*without the prescriptions, my team members would have the excuse of doing nothing* (Interviewee 2)." They emphasized how the exploitative learning process has helped them to improve their daily work. The goal of generating and sharing knowledge did come back in other interviews as expected. Project managers from IXAS recalled this in many ways:

We did not have any contractual obligation to learn in the past, but now we have to learn together. (Interviewee 4)

The learning trajectory program allows for reflection and different ways of reflection. (Interviewee 9).

Yes. Firstly the book is out there. I can always look into it when necessary because it is all on paper. Secondly, unassumingly, I have been involved with this trajectory. I have been interviewed, and I have been to a COB session. (Interviewee, 2).

On the other hand, the exploitative learning process aims to generate knowledge that can benefit not only the GSP project but also the entire construction industry, as evident from the following statement:

This and this alone has been the goal of this trajectory, so that we may improve in the sector altogether. Because in the infrastructure industry, we are making mistakes, and we are still not making profits. (Interviewee, 2).

Yes, you are making your experiences communicable. It helps to explain to others what your experiences have been. (Interviewee 6)

In one project meeting, success stories were discussed. Subsequently, RWS's employees were asked to present their bad experiences because, within RWS, it is more the culture to discuss errors. Finally, an independent expert ensured that other organizations and project team members' negative experiences were brought forward, for example, by giving a positive twist to ignorance or by indicating the causes of the failure. This created an atmosphere in which negative sharing experiences were no longer scary and everyone knew that one's own learning experiences would make the project better.

4.1.2 Learning on the job. A traditional summative project evaluation is often done in hindsight when it is too late to improve project performance. It has been noticed that most project reflection and lessons learned collection happen when the project is finished, as one interviewee said:

We were way too often looking back at phases trying to learn rather than learning on the job. (Interviewee 10)

It was emphasized that there were no follow-ups in the past. This becomes clear from her following statement:

This means that I feel like I gave a lot, but I did not receive anything back. I did not learn on the job, so to say. There might have been nice lessons learned, but I did not feel this. (Interviewee 2)

In this case, the learning trajectory program was trying to learn and reflect in an immediate feedback way. This was explicitly mentioned in the following statement:

This means the learning trajectory program and the project were on a simultaneous line. I could be able to learn far more interactively. I could align the learning trajectory program with the phases in which the project took place so that I might learn while in the project and not after. (Interviewee, 2).

Project team members have not only their technical knowledge but also their past experience. Learning on the job gives access to a much wider breadth of knowledge than they would have from the post-project appraisal, after-action review, micro-articles, learning histories, recall and other solidification forms for other projects (Schindler and Eppler, 2003).

4.1.3 Mindset change. The head of communications from IXAS believes that the exploitative learning process has led to different working experience. She explained how the present mindset in the project could be conceptualized:

There is much openness and trust that the problems can be shared and that there is no penalty, but a common goal of solving the problem with RWS. (Interviewee 4).

The interviewees claimed that the exploitative learning process itself has led to a more open and adaptable project sphere. The fact that this topic is directly taken over from IXAS

showcases the close relationship these two organizations have. In reality, the exploitative learning process in their experience was put into place by placing everyone in contact. The project manager from RWS explained this in the following statement:

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What we did was put the key managers into contact with each other. We allowed them to talk with each other and talk about how everything is done, even though everyone is in a stressful period. (Interviewee 10).

When asking about one specific thing that he might have learned from the exploitative learning process, the environmental manager from RWS believed there is a more conscious mindset created. This becomes evident when he stated that:

The good thing about this is that acts are performed more explicitly because they realize that acts are noted or are passed onto other projects. Because this leads to unconsciously thinking about the fact of why and how you are doing things. The second important effect is that you create a mindset which you develop after sharing the knowledge. (Interviewee 1)

He explained that one of his takeaways to future projects is:

The insight perhaps, that there is no them and us between contractors and the owner, the motivation for people is often that we want to realize a good result and be proud of the result; this binds us. (Interviewee, 1).

This line of thinking is again stressed through the following statement the contract manager made:

The added value is not actual facets of the tunnel; the added value is understanding each other, of your role and the whole situation. That is the tricky part about taking a project and knowledge like this into the next project. (Interviewee, 7).

4.2 Learning in inter-organizational settings

4.2.1 *Owner and contractors.* The contract manager from RWS experienced the learning trajectory program as a renaissance of the collaborative way in which RWS is already working. She stated:

The openness and transparency were already present at RWS, but for IXAS, it probably took a bit more effort. It is very brave by IXAS. (Interviewee 7).

We always ask what we can do to help IXAS. If we help IXAS, that helps the project. (Interviewee 7).

RWS set up the learning trajectory program together with IXAS and was partly responsible for executing it. They reflect on their actions and try to alter their behavior concerning the steering of RWS in the project. The project manager from RWS emphasized that the learning trajectory program sets out to allow for a new and different communication method. This becomes evident in the way the project manager of RWS stated the following:

What I find interesting in this story is that by forming the learning trajectory program this way and have the conversations we had, you can talk with each other differently. If you say you are prepared to share knowledge and be transparent, you create curiosity. If you have a project like this, and within that, you create a learning trajectory program, you create almost a new steering mechanism. We had a couple of times that before we talked with the COB, we were already talking about what we were going to discuss. It makes you think. If you can talk about all the experiences you had, you create another management tool. (Interviewee 10)

Why a private organization like IXAS is willing to share its knowledge and is bound to the IXAS culture of knowledge sharing. An interviewee from IXAS answered:

Let me tell you something interesting. Construction organizations do not know the worth of knowledge, and they do not live on knowledge either. They can produce knowledge and produce goods. However, they do not know what knowledge they are producing. We are no knowledge organizations. We are prepared to share knowledge because I know that I am again working with the same people in the next project. (Interviewee, 6).

Within the RWS project organization, the importance of collaborations is exemplified because of a specific RWS culture, framed as the alliance culture. This culture is described as being an open culture in which there is an “us” and not a “us” versus “them.” The observation that the word RIXWAS was created showcased the closer relationship between RWS and IXAS. RIXWAS refers to an intertwining of IXAS and RWS (also referred to as “colleague model”). A clear commitment has been made to the project strategy.

IXAS sets out to be adaptive, resulting in the openness and willingness to share. Therefore, the project management proceeded with caution and ensured a familiar environment where people felt safe to tell about their negative experiences. A few meetings were arranged, such as project start-ups, project follow-ups and other alignment sessions in which both RWS and IXAS were deemed to be present. These meetings allowed the participants to view how the project had been going, which were aligned with the learning goal that the learning trajectory program set out to achieve.

4.2.2 Members within the contractor consortium. The project manager from IXAS exemplified how the learning trajectory program was a great team-building tool. The fact was highlighted that regarding the employees’ backgrounds coming from the three organizations that form IXAS, there was also no discussion of “us” and “them,” just like the relationship between RWS and IXAS. It was stated that:

There were no talks about them and us, Ballast Nedam, Fluor, or Heijmans (the three contractors of IXAS). I did not experience that at all. This also led to the learning trajectory program, as the need to share and learn coming out of this open culture. So there was also much courage needed from our perspective and from RWS to speak to our superiors and say that we are going to do it this way, and we stand apart from the “parent” organizations. (Interviewee, 2).

We let go existing company cultures (Interviewee 9).

The director of IXAS experienced the learning process as something which focusses on softer knowledge. He referred to this as:

But how you deal with the culture, people, and companies to create a huge project in a short time that is a competency that is interesting to understand. That is, also depending on the people and situations. (Interviewee, 8).

When asking the project manager from IXAS about this argument, he answered by stating:

Of course, it is. If there is no willingness from both sides, it is not possible. We hardly used the contract in our meetings. That is only used in disputes. We are open to sharing knowledge because of this mentality. (Interviewee 9)

4.2.3 External knowledge party. Three learning networks were formed: (1) the safety network, (2) industrial integration automation, civil engineering network and (3) environment management network with key figures at IXAS and RWS. The COB team held in-depth interviews per network and collected documents for the exploitative learning process. They analyzed what exactly the learning vision was, how that vision had been worked out in a plan of action, what the essential tools were and would become, what the experiences were in practice and what could be learned from them. The learning trajectory program results were written out and added to the various chapters of the COB books. The chapters were submitted to experts from five large inner-city infrastructure projects, including A2 Maastricht, Combiplan Nijverdal, Zuidasdok, A16 Rotterdam and

Blankenburgtunnel. Academics were also invited to review the material and enrich it from their own scientific perspective.

Project managers from both RWS and IXAS emphasized that they were inspired by members of the COB team to bring lessons learned to the light and share them. Some managers involved in the project might not be able to reflect on their actions and on the project itself because they are too close to the project and therefore find it challenging to keep an overview.

The tunnel technical manager from RWS believes that an external knowledge party like COB can look at the project with an outsider's view and explain to his manager that he could not visualize himself. He explained this in the following statement:

Many things I just do the way I do it. I have done it and will do it the same way. If you ask me what happened, I will just start talking about what I did. Moreover, an academic will then point to something and talk about something that would be reflected upon. I cannot do that myself. The professor gets something out of the ordinary that I cannot get out of it myself. (Interviewee, 5).

It was also mentioned how they were pushed by the COB team to generate and share knowledge during the project. Two books, written by COB, were handed to various projects to learn to switch from exploitative learning to inter-project learning, and this would allow for dialog sessions to happen. The books would then allow these different projects to contact people from the GSP project in case of questions.

4.3 Project-based organization and parent organization

It is essential that lessons from projects eventually are structurally found back in the organization (Sydow *et al.*, 2004; Terry Williams, 2008). The project managers from both the owner and contractors are in the position between the parent organizations and the project. This separation from the parent organization could also be felt at IXAS. The former environmental manager IXAS emphasized the separation between the RWS representatives in the project and the parent organization of RWS by stating the following:

I also believe that we were more innovative and brave than RWS initially. (Interviewee 2).

There is a difference in the level of learning from the perspective of the IXAS director:

Yes, but on different levels, some just take with them knowledge on more "smaller," more basic acts and working experiences at the tunnel. They might take some of these lessons very literally to the next project. What we are talking about is, this might sound a bit common, but we are at a different level. (Interviewee, 8).

The physical dissociation was quite literal as the project team started to work in another building. The dissociation from the relative political and permanent bureaucratic organizations appeared to lead to a confidential and safe environment that encourages learning within the project and results in successful projects. This is in line with the approach in the Sluiskiltunnel project. The different distance locations create, however, hinders learning between the project and permanent organization.

5. Discussion

5.1 Exploitative learning in the inter-organizational project

Data from RWS and IXAS both had a positive experience with the exploitative learning process. Many managers stated that learning in the inter-organizational setting has come as a result of alliance evolution, and partners that work together will eventually come to new knowledge and learn from each other, even in cases when alliances are not created with learning intentions (Grant and Baden-Fuller, 2004; Muthusamy and White, 2005).

Collaborate to
learn and learn
to collaborate

Our findings join the discussion on the project learning paradox (Bakker *et al.*, 2011a). The inter-organizational project shows that the form of tacit knowledge in projects cannot be easily copied and pasted to another project. In contrast to the hard procedural and technical side, there are lessons learned aimed at a professional collaboration. Learning can be a useful management tool for project management (Chow and Chan, 2008). People perform better and are more motivated when they feel that their opinion matters.

According to interviewees, many actors in this inter-organizational project will appear in other big projects as well. The experiences lie mostly in the people, which would mean that the lessons might not get lost at all. People themselves might be the most extensive knowledge asset that can be transferred to other projects. In that sense, the knowledge lies within practices and can be shared. The past influences the temporary effects of inter-organizational projects (Ligthart *et al.*, 2016). The project collaboration experience and the assessment of future opportunity costs are the driving factors for the establishment of repetitive partners by temporary organizations (Ebers and Maurer, 2016). The learning goals might have been reached in the bigger picture.

However, there is a difference in the way that lessons can be applied to other projects. This difference is partly influenced by the level in which one operates in the inter-organizational project. The infrastructure development project can be seen as a temporary organization that considers the parent organization as the most important stakeholder. Such a project is successful when the parent organization receives appreciation, measured by how well the project implements and supports the parent's business strategy (Artto *et al.*, 2008).

There are many contradictions between temporary organizations and permanent organizations. Learning boundaries are an essential constraint on exploiting project-based learning benefits for the broader organization (Scarborough *et al.*, 2004). Burke and Morley (2016) outlined four central contradictions, pointing out the problem of knowledge being transmitted in a broader permanent organization. The multi-level layer of the inter-organizational project affects learning as they tend to act as learning boundaries. We are sensitive to the practitioners' double obligation toward their parent organization and toward the inter-organizational project in which they are involved. Projects operate relatively autonomously from their parent organization. The parent organizations were almost entirely left out of the exploitative learning process in this case. Our research explained how the owner and contractors' members stood closer together than they did to their parent organizations.

5.2 Collaborative project culture shaped by learning

Often it is only after the occurrence of a significant adverse event that a change in mindset happens (Zimmermann and Renaud, 2019). The exploitative learning process, in this case, introduces a proactive attitude, conceptualized as a "mindset change," with which people have started to think and discuss more things. This mindset is also partially a requisite for the exploitative learning process to succeed in the first place.

Organizational culture plays an essential role in motivating and facilitating learning from projects (Prencipe and Tell, 2001). Our study demonstrates that there is a reciprocal relationship. Learning from scratch, rather than with lessons learned from other projects or at the end of the project, has given participants a vital sense of involvement needed to start things up. The owner is mainly responsible for establishing the culture, and all parties should maintain the culture. Culture creates norms regarding what is encouraged in the project and influences how people communicate and share knowledge. Edmondson (1999) observed that the better performing teams admit to errors and discuss their occurrence—a climate of openness.

This suggests that learning has socially constructed values or meanings. Most interviewees focused more on the possibility of creating the right project culture to allow

for the exploitative learning process to function. Organizational culture in the project can be referred to as existing out of practices, symbols, values and assumptions that members of an organization share regarding appropriate behavior (Willmott, 2011). The culture of RWS in the inter-organizational project has been conceptualized as an alliance culture. This culture refers to a cultural type in which working together is the norm. The project culture can also be shaped by the exploitative learning behaviors. In this sense, exploitative learning behaviors are embedded in the project culture present in both the owner and contractors. The culture shapes the members' learning behaviors and influences how they learn and adapt it (Lekkakos and Robertson, 2009).

We came up with the theoretical framework by bringing key exploitative learning actors in the inter-organizational project (see Figure 1). It is also a combination of three learning processes: experience accumulation, knowledge articulation and knowledge codification (Prencipe and Tell, 2001). First, by working on the project, project actors automatically accumulated experiences. The GSP learning trajectory program sought to develop ways to manage knowledge articulation from scratch. Tacit knowledge becomes verbally articulated through performance reflection as a management tool and learning on the job. Learning happens both between the owner and the contractor and within the internal contractor. The external knowledge party is needed to stimulate and facilitate the trajectory continually. They are necessary as an impartial body to establish the dialog. The owner and contractors tried to implement here a move away from this traditional way of thinking toward a more collaborative culture. Learning is observable through the impact on the culture of the project level. Some studies suggest that collaboration enhances exploitation (Scarborough *et al.*, 2004), while our research found that exploitation can, in turn, enhance collaboration. Exploitative learning in the inter-organizational project can enable the sharing knowledge and lead to a common understanding, which generates a higher order of collaboration (Otra-Aho *et al.*, 2018, 2019). The collaboration is a direct result of this shared project culture, as in practice,

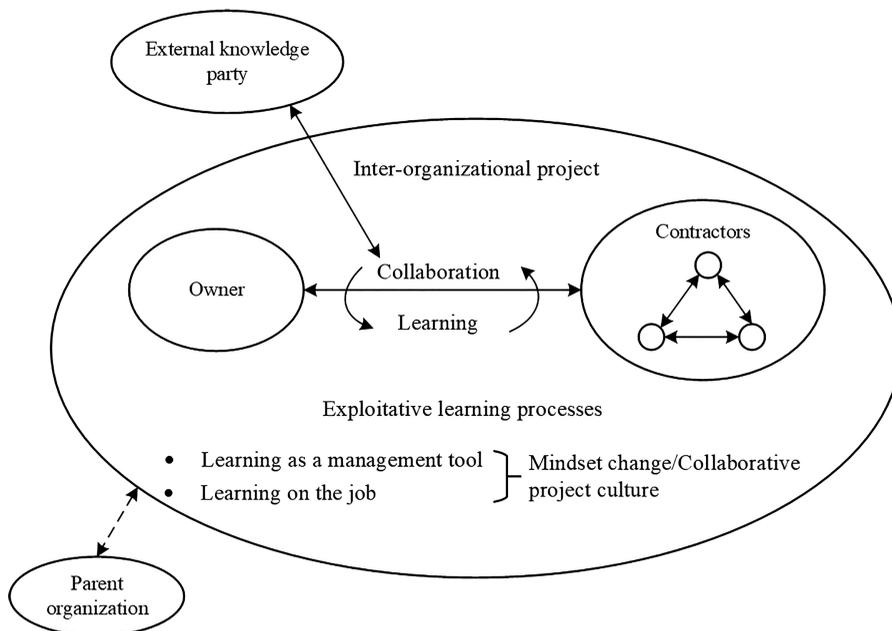


Figure 1. Exploitative learning in the inter-organizational project

this collaboration was experienced as very open and friendly. However, it is found that this project culture allows these members to stand apart from their parent organizations to a certain degree. [Wiewiora et al. \(2013\)](#) argued for the need to investigate the role of subculture in sharing knowledge between projects within project-based organizations. This also means that these different types of culture and ways of working do not always go hand in hand with each other ([Ajmal and Helo, 2010](#)). These cultural differences can be a source of difficulty and miscommunication.

5.3 Implication for the future

There is a strong sense of having a collaborative project culture that is shared by both organizations. Project culture will transcend the organizational culture. The inter-organizational project is centered on having an open and inclusive mindset, which is needed to experience the exploitative learning process. They need to be open to receiving feedback from an unexpected angle, and they need to have the courage to ask for opinions from different people. The motivation behind this is the philosophy that by working together this way, the result can be more than just the sum of its parts and lead to innovative knowledge co-creation ([Liu et al., 2019](#)). To bring this knowledge to another project, the right culture needs to be in place at that organization, for the exploitative learning process and the new mindset.

RWS and IXAS have indicated that they want to use their knowledge and experiences in their own projects and share it as a source of inspiration. In this case, the involvement of parent organizations was minimal. The organizations need to focus on people's learning initiatives, not on the collection of data because knowledge resides in the people ([Davison and Blackman, 2005](#); [Rubenstein-Montano et al., 2001](#)). The best way to share this knowledge is by putting a person with their experiences in another project in which the knowledge can be implemented. It can enable exploitative learning in the inter-organizational project, leading to the project's continuous improvement to meet business goals. Future research would be needed to find out more about possible added benefits of adding parent organizations' involvement in a similar exploitative learning process ([Riis et al., 2019](#)).

6. Conclusion

In this research, we investigated how exploitative learning was promoted in the inter-organizational project. The learning trajectory program (exploitative learning process) has been experienced generally positively as a continuous "learning-in-practice" phenomenon during the project. During this collaboration, there were lessons learned from each other as well, and this line of thought fits with the learning process. Learning helps to better understand dilemmas and their origins. Further, learning should occupy a more dominant role to create a collaborative culture in the specific challenging project environment during project development.

According to the empirical data, the most significant change that the exploitative learning process has led to is the change in mindset. One of the conclusions is that learning stimulates openness and this has a positive impact on more collaboration, which echoes the theory about collaboration from [Hertogh and Westerveld \(2010\)](#). A collaborative culture and understanding of each other's roles in the inter-organizational project will lead to a better project. The mindset of creating a stable and trusting relationship with the owner and contractors was the biggest effect the exploitative learning process had on them, beyond the technical expertise, thus the biggest piece of knowledge the project participants would take with them to future projects. The knowledge learned in this inter-organizational project is bound to the people that have experienced it. There is a reciprocal relationship between

learning and collaboration. Collaboration can enhance learning, while learning can facilitate collaboration. Our findings confirmed this theoretical relationship and suggested to cultivate a culture of promoting learning in future projects. In this sense, collaboration is the fifth discipline in project-based learning (Senge, 1990).

This research responds to the debate about project-based learning. The study fits in with various discussions on learning in and between projects (Bakker *et al.*, 2011a; Hartmann and Dorée, 2015). Within the construction sector, learning seems not to be widely achieved (Flyvbjerg *et al.*, 2002; Hertogh *et al.*, 2008; Lindner and Wald, 2011). Because of the focus on projects, there is an institutional distance between the project and its organizations, which hinders learning. The learning within the project team is not only to solve the problems encountered in the project. What was learned by the project participants was somewhat more bound to soft knowledge. The collaboration was experienced as predominantly positive and personal in the case. We view exploitative learning as a meaning-making endeavor. Learning gives meaning to what is happening in the project. In that sense, it is also the carrier of the collaborative culture in an organization. This exemplifies the project culture that was shared and the mindset which would be brought to future projects. The concluding remarks seek to establish a reciprocal relationship between a collaborative project culture and an exploitative learning environment to motivate employees to communicate and share knowledge and expertise with their colleagues and across the supply chain instead of working in silos. It can be exciting to follow-up with the increasing parent organizations' involvement of both the owner and contractors in a similar exploitative learning process in the future and test its effects.

The research was conducted in a Dutch context. Dutch participants perceive open discussion as a standard way of working. It is related to the Dutch roots, which result in a more free mentality with a focus on its employees' well-being. Besides, egalitarianism is emphasized in Dutch culture. It does not aim to select the best among potential solutions but instead devotes energies to consent on a recommended one. It is suggested to align the findings presented with the experiences of construction organizations in other parts of the world.

ORCID iDs

Yan Liu  <http://orcid.org/0000-0001-8706-6712>

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Appendix 1

Date	Meeting	Present	Topic	Number of participants
9-03-2015	Alignment session	IXAS and RWS	–	–
10-12-2015	COB congress, presentation	Sector	Results evaluation tender and dialog phase	100
20-04-2016	Group discussion	IXAS and RWS	Progress knowledge project with management	6
21-06-2016	Alignment session	IXAS and RWS	Challenges in the project	18
09-10-2016	Interviews knowledge session	IXAS and RWS	Environmental management, tunnel safety, relationship TTI civil	–
21-11-2016	Group discussion	IXAS and RWS	Sharing lessons with management knowledge project	8
08-12-2016	COB conference, various presentations	Sector	Learning trajectory program, environmental management, technical tunnel installations	100
07-03-2017	Alignment session	IXAS and RWS	Content sparring and preparing and knowledge day	35
27-03-2017	Knowledge Day	Sector	Share and discuss knowledge project	150
22-09-2017	COB café	Sector	Presenting COB books and plenary discussion	100

Table A1.
Activities for participant observation

Appendix 2. Interview protocol

Objectives

- (1) To explore the experiences of actors from RWS and IXAS in the learning trajectory program
 - (2) To determine whether the learning trajectory program has led to observable changes in practice
 - (3) To examine the role of organizational culture in the effectiveness of the learning trajectory program
- (1) Present function in the GSP project
 - Their expertise in their respective field
 - Their function within the project (development of the GSP project)

Theme 1. Experiencing the learning trajectory program

- (2) Expertise on the learning trajectory program.
 - Their description, in their own words, of the learning trajectory program
 - What are the goals of the learning trajectory program in their own opinion
 - Have they been informed about this learning trajectory program, and if so how

- (3) Personal partaking in the learning trajectory program
 - Their partaking in the learning trajectory program
 - The success of the learning trajectory program in their eyes
 - The satisfaction of their own partaking in the learning trajectory program
- (4) Experiencing the learning trajectory program
 - Anything that you would like to have seen differently in the learning trajectory program?
 - Their satisfaction with the learning trajectory program
 - One thing that has stuck with them the most from this learning trajectory program
 - Has their experience with the learning trajectory program been positive, negative or rather a mix of both

Theme 2. The changes in practice due to the learning trajectory program

- (5) Observable changes in practice
 - Previous experiences with the learning trajectory program
 - Their belief in the helpfulness of the learning trajectory program for themselves and/or for the project
 - Possible major differences in behavior from themselves or their colleagues due to the learning trajectory program
 - What have they learned during this learning trajectory program of learning
 - Name one valuable lesson if possible
 - Possible changes to the way of thinking about any aspect of the project due to the learning trajectory program
- (6) Applicability of the learning trajectory program for future projects
 - Their view on the usefulness of such a learning trajectory program for projects such as the GSP project
 - Possibility of lessons learned to be transferred to other projects
 - Personal lessons learned that they would take themselves, or are already taking, to other projects

Theme 3. Collaboration with the opposing party

- (7) Collaboration with IXAS/RWS
 - Their description of the collaboration with IXAS or RWS
 - The role of the learning trajectory program in this collaboration
 - Experiences with this collaboration until now
 - Would they have collaborated differently if they knew what they know now and would have experienced what they have experienced up until now
 - (For RWS stakeholders) The extent to which they have learned and applied any new methods such as the safety topic from IXAS
 - (For IXAS stakeholders) The extent to which they have learned and applied any new methods from RWS
 - Their view on whether this possible learning and applying is a result of the learning trajectory program or a result of their own organization

Theme 4. The role of culture in the project and the learning trajectory program

(8) The role of culture

- How they see or experience culture
- Their description of their own organizational culture, if they experience it
- Describe the opposing culture, if they experience it
- Their beliefs on the existence of a temporary project culture which both IXAS and RWS could experience and operate within
- If indeed experienced, their description of this culture
- (For RWS stakeholders) The possibility of a difference between this project culture and the (broader) RWS culture (meaning RWS outside of the GSP project)
- (For RWS stakeholders) The possibility of a difference between the project culture within the (broader) RWS culture
- Their views on the learning trajectory program being a result of their own culture or rather the learning trajectory program shaping their culture

Corresponding author

Yan Liu can be contacted at: y.liu-9@tudelft.nl