



Norwegian University of
Science and Technology

Innovation with Creative Collaborative Practices

A case study of Team Bispevika

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Abstract:
Today, construction projects are increasing in complexity as a result of higher demands for quality in production and material choice, tougher competition in the market and increased use of digital tools. These factors are increasing the need for higher quality and competence in achieving project success. Changing the approach towards development of new and innovative solutions should play a key role to achieve competitive advantage in future projects.

The team of the construction project Bispevika in Oslo, Norway is working on how creative collaborative practices can be performed in problem-solving processes, in order to develop improved, innovative solutions. This study considers following research questions through a case study of Team Bispevika: Which creative collaborative practices are implemented in Bispevika? What are the experiences of these practices? How to improve these practices in future projects? In addition to observations on site within design and procurement, interviews of project managers as well as a document study based on received project material is carried out to answer the research questions. A literature study on interaction, trust in collaboration, creativity, creative processes and creativity and innovation in lean is also presented.

The engagement of an innovation manager as a facilitator combined with his own research on creative practices contributes to the overall vision of being an innovative project. The executed method is based on a three-phased process leading to the choice of best solution to a given issue. By using a strategy of creating winning teams and focusing on trust in these collaborations, the project is aiming at innovating the way projects are managed in the future.

Identified creative collaborative practices with experiences and possible improvements are presented. Among successful practices are co-location of stakeholders, use of digital aids, ICE-meetings, discipline strategies and constraint-shattering practices, in addition to the development of Key Performance Indicators.

Keywords:

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| 1. Innovation |
| 2. Creative processes |
| 3. Creativity |
| 4. Collaboration |

Ingrid L. Berg

Preface

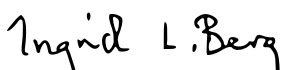
This master thesis is written as a finalisation of the five-year master program in Civil Engineering at the Norwegian University of Technology and Science (NTNU), and counts for 30 Credits. The thesis is part of the subject *TBA4190 Project Management, Master's Thesis* and is written during the spring semester of 2018 at the Department of Civil and Environmental Engineering (IBM) under the Faculty of Engineering.

The study examines how practices related to creativity and collaboration are used in development of innovative solutions in a construction project. The work has provided a greater insight to how complex and demanding the implement of change in an multidisciplinary engineering prosjekt is, and how important creative collaborative practices are for improved performance in future projects.

The structure of the master thesis differs from a traditional thesis, as it contains of three parts: (1) A report of the master thesis, (2) a conference article and (3) appendix. The conference article has been written and submitted to the 26th annual conference of the International Group of Lean Construction - IGLC 2018 - which is to be held in Chennai, India in July.

I would like to thank my main supervisor at NTNU, Ola Lædre, for guidance, feedback and support with the master thesis as well as the conference article. Sebastiano Lombardo as my co-supervisor has taught me a lot about creative processes and made my case study possible, thank you for sharing of your knowledge. Thanks to Team Bispevika with its members for being generous, welcoming and inviting me to take part in their daily work as an observant, providing me with information and nice talks. And finally, a big thank you to my family for their unwavering support, love and belief in me; Mamma, Anne and Kristin.

Oslo, June 2018


Ingrid Løvendahl Berg

Abstract

Today, construction projects are increasing in complexity as a result of higher demands for quality in production and material choice, tougher competition in the market and increased use of digital tools. These factors are increasing the need for higher quality and competence in achieving project success. Changing the approach towards development of new and innovative solutions should play a key role to achieve competitive advantage in future projects.

The team of the construction project Bispevika in Oslo, Norway is working on how creative collaborative practices can be performed in problem-solving processes, in order to develop improved, innovative solutions. This study considers following research questions through a case study of Team Bispevika: Which creative collaborative practices are implemented in Bispevika? What are the experiences of these practices? How to improve these practices in future projects? In addition to observations on site within design and procurement, interviews of project managers as well as a document study based on received project material is carried out to answer the research questions. A literature study on interaction, trust in collaboration, creativity, creative processes and creativity and innovation in lean is also presented.

The engagement of an innovation manager as a facilitator combined with his own research on creative practices contributes to the overall vision of being an innovative project. The executed method is based on a three-phased process leading to the choice of best solution to a given issue. By using a strategy of creating winning teams and focusing on trust in these collaborations, the project is aiming at innovating the way projects are managed in the future.

Identified creative collaborative practices with experiences and possible improvements are presented. Among successful practices are co-location of stakeholders, use of digital aids, ICE-meetings, discipline strategies and constraint-shattering practices, in addition to the development of Key Performance Indicators.

Sammendrag

Kompleksiteten i dagens byggeprosjekter øker stadig som et resultat av høyere krav til kvalitet i produksjon og materialvalg, tøffere konkurranse i markedet samt en økende bruk av digitale verktøy. Behovet for økt kvalitet og kompetanse innenfor måloppnåelse i prosjekter gjør seg derfor gjeldende i større grad. Større fokus på utviklingen av nye og innovative løsninger bør være en avgjørende faktor for å skape varig konkurransekraft i fremtidige prosjekter.

Prosjektledelsen av byggeprosjektet Bispevika i Oslo, Norge jobber med å finne ut hvordan kreative og samhandlende praksiser kan gjennomføres i problemløsningsprosesser, med mål om å utvikle forbedrede, innovative løsninger. Denne studien tar for seg følgende forskningsspørsmål gjennom et casestudie av Team Bispevika: Hvilke kreative og samhandlende praksiser kan identifiseres i Team Bispevika? Hva er erfaringene av disse praksisene? Hvordan kan praksisene forbedres i fremtidige prosjekt? I tillegg til observasjoner av prosjektet innen innkjøp og prosjektering, er det gjennomført intervjuer av prosjektledere og et dokumentstudie basert på prosjektmateriale. Til sammen har disse metodene som mål å besvare forskningsspørsmålene. Et litteraturstudie er gjennomført på temaene samhandling, tillit i samarbeid, kreativitet, kreative prosesser, samt kreativitet og innovasjon i lean.

Bruken av en innovasjonsleder som fasilitator, kombinert med hans egen forskning på kreative praksiser, bidrar til en helhetlig visjon som et innovativt prosjekt. Den benyttede metoden baserer seg på en prosess i tre faser som skal føre til valg av den beste løsningen i en gitt problemstilling. Ved å bruke en strategi som baserer seg på å utvikle winning teams og fokusere på tillit i samarbeid, vil prosjektet innovere måten fremtidige prosjekter ledes på.

Studien presenterer identifiserte praksiser med tilhørende erfaringer og mulige forbedringer. Blant vellykkede praksiser finnes samlokalisering av interessenter, bruk av digitale hjelpemidler, ICE-møter, fagstrategier og begrensings-knusende praksiser, i tillegg til utvikling av faktorer for ytelsesmålinger.

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Part 1: Report of master thesis

1. Introduction

This chapter presents a background for the research topic, problem statement with related research questions, the study's limitations and the thesis' structure through four subchapters.

1.1 Background

The development of problem-solving processes is underestimated in the construction industry today, but is on the rise of a new horizon regarding future project management and execution (Lombardo, 2014). As projects increase in complexity due to higher demands for quality in production and material choice, tougher competition in the market and increased use of digital tools, the need for higher quality and competence in achieving project success is prominent (Klakegg and Krane, 2015). Project success needs to meet three criteria in order to be fulfilled: time, budget and performance (Pinto, 2013). As information and knowledge is more accessible than ever in a digital society, changing how we approach new solutions and technology should play a key role in achieving competitive advantage for project success in the industry.

This approach can be addressed in various ways, but looking towards concepts as optimizing resources and reducing waste is one of them. The goal of planning and executing projects while minimizing waste and maximising value comes from the mindset of lean construction (Ballard and Howell, 2003), and is increasingly implemented in a conservative and traditionally bounded industry, as construction is perceived today. In Norway, the interest for continuous improvement and Lean Construction is relatively high (Engebø et al., 2017).

Simultaneously as the market changes, a complex project design demands uniqueness and higher level of specialization (Lombardo, 2014), yielding a need for interaction and involvement of multidisciplinary stakeholders on another level than before (Bygballe and Swärd, 2014). Stakeholders can briefly be defined as “all individuals or groups who have an

an active stake in the project and can potentially impact, either positively or negatively, its development” (Pinto, 2013, p.58).

How the industry adjusts to changes like these on a project level by establishing problem-solving practices is interesting to study, as the need for optimization increases with the development of new technology (Winch, 2010). Problem-solving processes are often carried out as mapping of previous solutions and experiences, moving along patterns of existing knowledge (de Bono, 2009), thus limiting the number of possibilities for innovative, new-minded solutions.

By using a structured and conscious approach towards creative processes leading to innovative and improved solutions (Amabile et al., 2002), future projects achieves to combine the mindset of lean with the demand for complexity and uniqueness. Implementing problem-solving practices of this kind requires close facilitation (Lombardo and Kvålshaugen, 2014; Amabile and Khaire, 2008) with internal as well as external, multidisciplinary stakeholders, and should aim at crossing these established patterns in problem-solving processes. Thus, creative practices demands and yields collaboration, as a partnering relationship requires interaction to reach its full potential (Bygballe et al., 2010). A new approach to problem-solving practices should involve the two elements creativity and collaboration, while emphasizing the development of innovative solutions.

Studying how creative collaborative practices are enacted in a real-life project can inspire future projects to use identified work-processes, methods and experiences when managing complex solutions and challenging collaborations.

1.2 Purpose

The overall goal of the work is to produce a traditional master thesis and to submit a scientific article to a conference, hereby referred to as *Part 1 Report of master thesis* and *Part 2 Conference Paper*. The choice of writing a scientific article as a part of the master thesis was made in consultation with main supervisor. The opportunity to contribute and participate in an

annual, international conference has been used as a motivational challenge in the work process. The scientific article has the form of a conference paper, and is submitted as a part of the 26th annual conference of the International Group of Lean Construction (IGLC), planned in Chennai, India, July 2018. The camera-ready version of the paper was submitted to IGLC on May 23rd, 2018. Due to the demanding page limitation given by the conference, the scope of findings and discussion is larger in *Part 1 Report of master thesis* compared to *Part 2 Conference Paper*. Still, the content of the two parts is more or less equal and coinciding.

The master thesis contributes to a Norwegian research project called KSS - *Contract strategies and Specialist-based Interaction*. This is a research project between several institutes at the Norwegian University of Science and Technology and several actors in the construction industry, AF Gruppen Norge among others.

The purpose of this thesis is to discover how creative cooperative practices mediate the production of innovative solutions in a multidisciplinary engineering project. A case study of an innovative construction project is used as unit of analysis in order to identify creative collaborative practices, which experiences the project has with these practices and how they can be improved in future projects. In the light of this, three research questions have been developed and are presented in figure 1.1. Mentioned limitations related to each research question are elaborated in section *1.3 Limitations*.

The scope of each research question makes it reasonable to connect the findings to a theoretical framework or method. The research of the project's own innovation manager - through his doctoral thesis - is used as a basis for observations and structure of findings, in order to discover how his theory is practiced and implemented in the case study and further to answer the presented research questions.

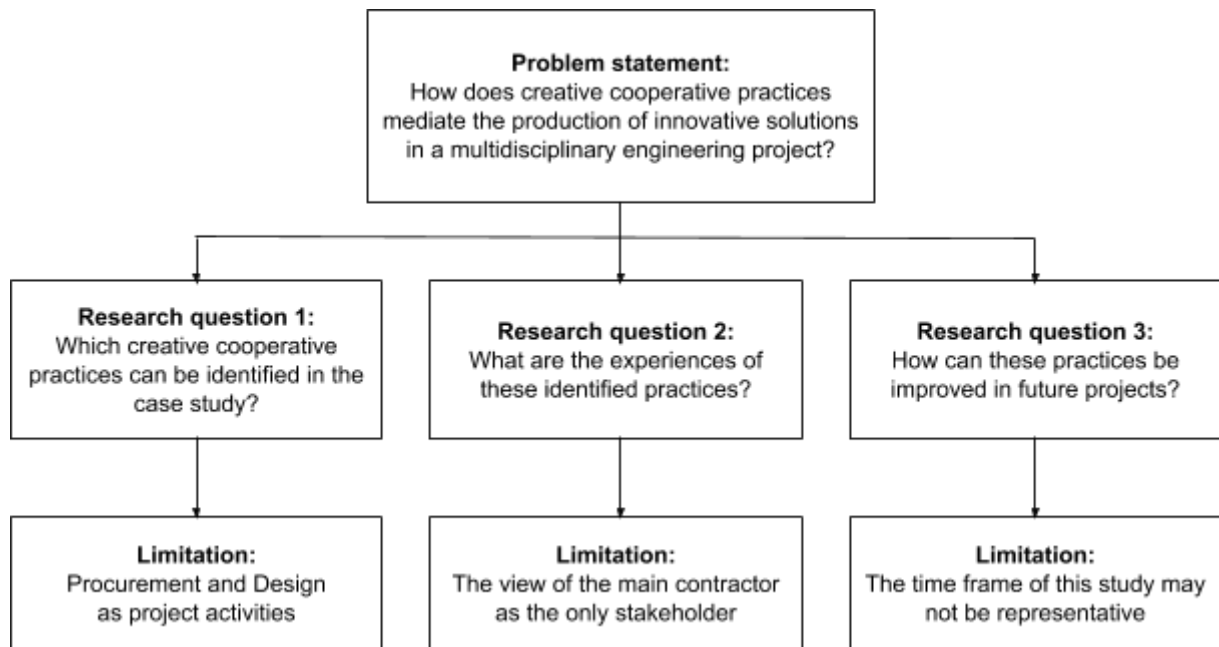


Figure 1.1: Problem statement and research questions with limitations

1.3 Limitations

As mentioned previously, *Part 2 Conference Paper* is limited in size and thus constrained in topics and discussion. The potential information loss from this limitation is evened out in *Part 1 Report of master thesis*, which is longer and more detailed in all stages. The master thesis is aiming at answering the research questions addressed in figure 1.1, primarily using a literature study and a case study to identify and improve creative collaborative practices. In the following sections, four central limitations to the study is presented and elaborated.

1.3.1 Single-case study

As opposed to research based on empirical evidence from a large data set, this master thesis is based on a qualitative single-case study. More information on qualitative method under chapter 3. Methodology. A single-case study can limit the validity of findings, but also allow a richer and more detailed insight to a certain case. As the chosen methods follow the executed practices of this case closely and detailed, it might uncover a nuanced and more complete image of the studied practices. Taking this into consideration, the choice of case for the study

needs to be well-founded in a clear strategy or plan for these practices. As theory and practice is intertwined and founded in a key role of the innovation manager, the chosen case enables the possibility of being a single-case study and still be of great interest as research topic. In addition, the project is in a special position regarding resource use, client drive and the construction area, as elaborated in subchapter 3.4 *Practice as unit of analysis: A case study of Team Bispevika*.

1.3.2 Procurement and design

After executing interviews of key roles in the project management covering approximately all project activities, narrowing down the number of activities seemed reasonable taking the scope into consideration. Through the interviews, representants from property development and sales, procurement, design, production and project management were studied. Procurement and design creates the fundament for further production and the project's completion, and was chosen as most interesting activities to proceed with in the thesis. Another argument is the mutual dependency that they pose through their importance on a daily basis. The chosen case project is spending substantial resources on creating innovation within procurement and design, and expecting to develop a new way of working on current challenges and finding new practices.

1.3.3 View of the main contractor

When studying how practices are executed in a project, several angles appear as interesting regarding how different stakeholders experience and view these practices. In this study, the main contractor - AF Gruppen Norge - is used as only angle of view. In order to only choose one stakeholder, several arguments have been used. The main contractor holds a core role in every construction project, and regarding the clear innovation profile of the chosen case project, the main contractor stands out as the best suited stakeholder. The choice is also based on the use of resources on the practices, where AF Gruppen contributes largely with time, workers and competence to move practices forward. When choosing interviewees, key roles of the project management have been prioritised, and most of these are found in the organisation of the main contractor. The interviewees have been chosen for their knowledge

on the project's vision and involvement in the management of developing a new, innovative method in execution of projects.

1.3.4 Time frame

As a result of the nature of a master thesis lasting one semester, the time frame of the study is a limitation to be considered when valuing the validity of findings. The current time frame is spanning approximately six months, and could be misleading the findings of this study in a long-term perspective. It is reasonable to assume that a longer time frame would lead to a more representative and valid result, unveiling a larger and more varied image of creative collaborative practices. The limited time frame has made it demanding to follow a given case or topic throughout every phase of a creative process. A representative selection of every phase has thus been chosen in the study, leaving out continuity as a criteria.

1.4 Structure

This master thesis counts three parts, consisting of a report of the thesis as first part, a scientific article as a second part and the appendix as a third part. The scientific article counts as a valid part of the thesis, thus the size of *Part I Report* differs slightly from a traditional master thesis. Still, the structure of this part follows a traditional layout, presented in figure 1.2.

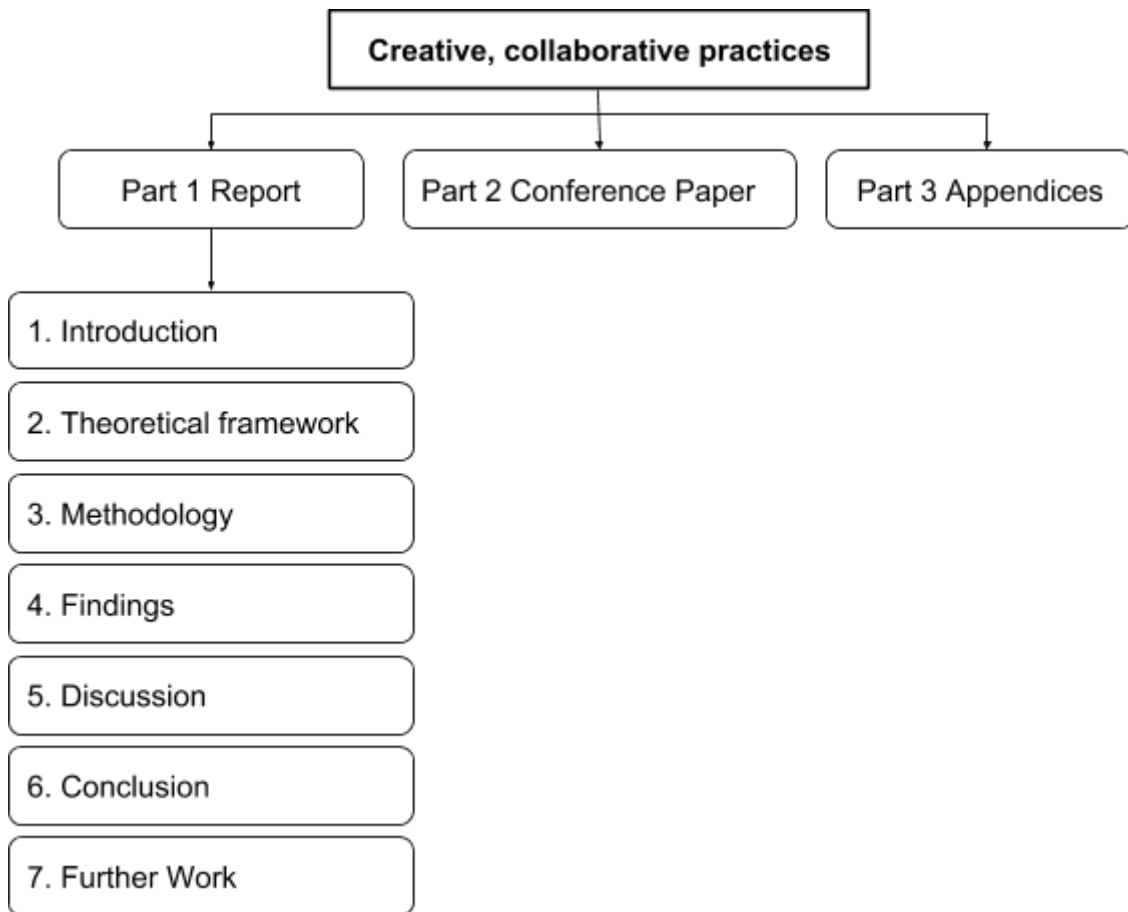


Figure 1.2: Structure of the master thesis

The scientific article in the form of a conference paper is compiled as a contribution to the International Group of Lean Construction Conference 2018 - IGLC18, presenting the last edited version of May 23rd, 2018 in *Part 2 Conference Paper*.

The chapters of *Part 1 Report of master thesis* are level-based, e.g. chapter 3., 3.3 and 3.3.3, in order to structure the presentation of topics in a clear way. Further, findings are structured by the different phases of the methodology of Lombardo (2014) presented in the theoretical framework, and subdivided by the research questions. The research questions are used to structure the discussion chapter and the conclusion chapter, aiming to answer the main problem statement in a clear matter. The scientific article follows guidelines given by the conference of IGLC18, thus a page limitation of ten (10) pages. The interview guide as an appendix is presented in *Part 3 Appendix*.

2. Theoretical framework

Based on the topics presented in the introduction, it is interesting to take a closer look at research treating topics related to the creation of trust in collaboration, as it is considered a critical element in obtaining a creative collaboration (Swärd, 2016). Definitions of interaction, innovation and creativity as well as how creativity and innovation are mediated with the concept of a lean mindset are topics to be treated further on in this chapter. Finally, research related to creative processes in problem solving tasks is elaborated on.

The theory framework is based on a study of existing literature, presented as a method under section 3.3 *Literature Study*. The aim of this chapter is primarily to map how these topics have been treated and explored in existing research and secondly to identify lack of knowledge about how mentioned topics interact with and are dependent of each other (Blumberg et al., 2005).

2.1 Interaction

2.1.1 Definition of interaction

Interaction is defined as the share of thoughts, ideas and resources increasing the performance of an individual when being in a group as opposed to being alone (Sjøvold, 2014). The extreme effects of interaction are defined through the terms *social facilitation* and *social loafing*. *Social facilitation* occurs when the performance is better in collaboration with others, while *social loafing* refers to a lower performance with others than what would be the case when working alone. Most groups or collaborations will find it demanding to exploit the total amount of resources of each member, as parts of the potential always will be lost in the interaction process. Thus, total observed productivity is defined as the difference between the productivity potential and the process loss.

Often, interaction is strived as a step towards creating a team (Edmondson, 2012; Pinto, 2013). The establishment of teams can be seen as a continuous learning process, as there

never are two sequence of events which will be similar when people interact and communicate (Edmondson, 2012). The level of interaction also affects the *group dynamics*, defined as “an ever-changing polarization among the group’s members” (Sjøvold, 2014, p. 154). Successful collaboration and interaction are time-dependent under development, so time should be considered a governing element when establishing norms and values in a group. The development of interaction in a group should be measured with regard to how the skill of task-solving increases. With regard to this, a group will go through different stages affecting their ability to solve tasks, dependent on time.

2.1.2 Challenges when interacting

The issue of *moral hazard* has been preventing project in the construction industry from interacting and collaborating through all times (Winch, 2010). This phenomenon concerns the motivation of suppliers and other stakeholders to fully mobilise capabilities in order to achieve a mutual goal. In the case of a collaboration where interaction demands more than it pays off, bad handling of project resources is most likely the main reason for failure (Lombardo and Cabiddu, 2017). Network, reputation and economy, in addition to knowledge about the subject and problem statement are project resources worth mentioning in this context. A sincere wish to create mutual values, creating awareness towards potential pitfalls, having stamina when changing destructive practices and a putting energy into developing well-working corporations are success-criteria for processes related to interaction. Destructive behavioral patterns preventing interaction are presented in table 2.1. As information is exchanged under high uncertainties during a project, potential misunderstandings can prevent interacting in a collaboration (Winch, 2010). A classification of known and unknown information in order to plan feedback and optimising of information flow is presented in *Johari’s window* in figure 2.1.

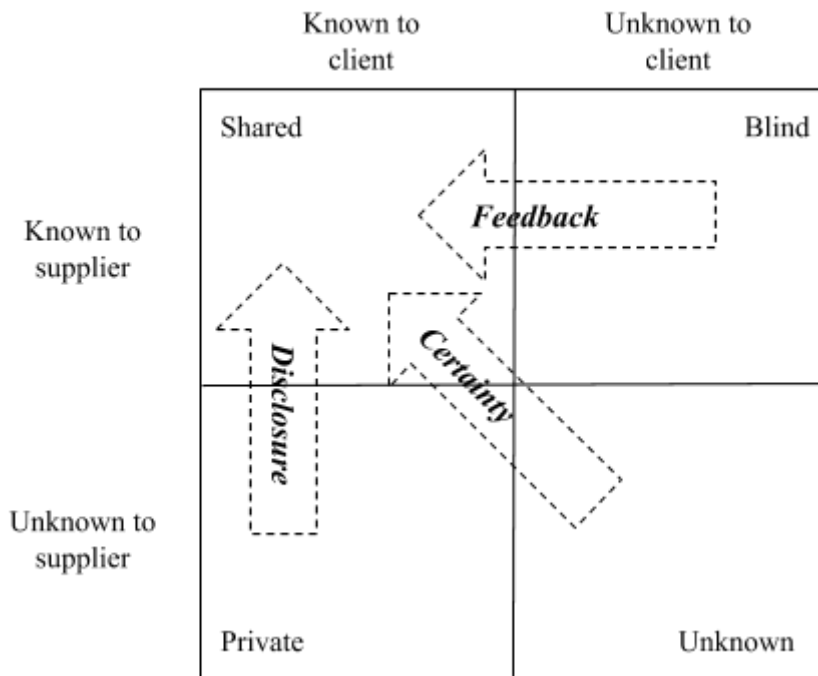


figure 2.1: Johari's window, from Winch (2010).

table 2.1: Elements preventing interaction in a project

| | |
|-------------------------------------|--|
| <i>Denial of access to resource</i> | Lack of an “open-book”-policy in cases concerning budget, risk and costs creates mistrust among other stakeholders. |
| <i>Abuse of resources</i> | Ineffective meetings, excessive use of competence, abusing trust and financial resources and use of information with an aim of delaying decision making. |
| <i>Lack of resource integration</i> | Poor planning of resources, lack of involvement of resource-personnel when developing new solutions. |
| <i>Wrong use of resources</i> | Plan for wrong amounts, hiring “wrong” employees, involvement at the wrong time. |

2.1.3 Incentives

Whenever a change of existing practice is planned within project implementation, all parties need to have a sense of benefiting from it. One solution is to use incentives connected to budget, project progress, safety management, operational costs, client satisfaction or collaboration (Lædre, 2009). Incentives can be defined as “a reward or punishment due to an action related to cost, use of time, quality or scope within the project” (Lædre, 2009, p.89). Further, it is through stakeholders’ possibility to influence the end result through their actions that incentives reaches its potential. Incentives can affect the distribution of risk and responsibility between project stakeholders, and different use of incentives varies with the project phases. Incentives can also be used to facilitate trust in a collaboration, drawing attention to cultural aspects and behaviour in terms of incentives as a formal tool (Bygballe et al., 2010).

2.2 Trust in collaboration

2.2.1 Trust and reciprocity

Several researchers within creativity and innovation are pointing towards the need of trust, affect and reciprocity as a prerequisite when developing a problem-solving and creative environment (Bygballe et al., 2010; Swärd, 2016; Sjøvold, 2014). Affect and creativity are linked by positive affect facilitating cognitive variations (Amabile et al., 2005). These variations yield new associations which finally leads to creativity. Reciprocity is defined as a social norm in the shape of an expected repayment for an action between two parties, a behaviour which may lead to increased trust (Swärd, 2016). The response time of a reciprocity increases with the significance or investment of the reciprocity, and will also contribute to a larger sense of trust in a long-term relation. Trustworthiness can in other words be gained when showing vulnerability by taking large, long-term risks, as opposed to seem insulting by only taking small, short-term risks (Swärd, 2016). The construction industry should rely on trust extended beyond personal matters, namely *system-based trust*, based on a formalised system in the collaboration (Bygballe et al, 2010). In addition to formalised tools, informal

aspects such as interplay, culture structure and social dynamics should be taken into account when building trust. Lack of project team motivation, poor communication and leadership in addition to dysfunctional behaviour are among the reasons why teams fail (Pinto, 2013).

2.2.2 Psychological safety

In order to optimize the use of reciprocity towards development of trust, the necessity of psychological safety in the collaboration between multidisciplinary actors in a project needs to be announced and established (Edmondson, 2012). Psychological safety is critical when establishing working teams beyond a pure business relation, and lack of this safety prevents innovation, change and development within an organisation. A working environment characterized by openness, trust and accept for flaws will increase creativity and the degree of innovation: “With psychological safety, (...) individuals are free to focus on collective goals and problem prevention rather than on self-protection” (Edmonson, 2012, p. 113). This must imply that when conditions for trust, e.g. psychological safety, are present, the project is more likely to succeed in implementing change.

The opposite of psychological safety is related to fear of speaking out, abuse of power and mistrust (Edmondson, 2012). Power in this context can be defined as “the ability to take advantage of others despite their resistance” (Sjøvold, 2014, p. 67). Dysfunctional group dynamics is a potential result of power abuse, preventing problem-solving processes (Rasmussen, 2011). Members staying quiet and being discouraged from speaking out on controversial topics and seeing opposing viewpoints as a threat to the group’s identity are typical signs of dysfunctional group behaviour. Pinto (2013) points towards organizational culture when describing how stakeholders are “expected to interact and support each other in pursuit of project goals” (Pinto, 2013, p. 79).

2.2.3 Trust in inter-organizational collaborations

Dysfunctional group dynamics can lead to a basic need to label each other in order to stay in control of a given situation (Sjøvold, 2014). It is challenging to restructure a control-based practice towards a collaboration based on trust, as interaction demands openness and

engagement (Swärd, 2016). Trust plays a bigger part in situations where use of new knowledge and a high degree of coordination and communication is needed. Introducing new practices in procurement will necessarily require trust among stakeholders, as an agreement involves mutual commitments between the parties (Lædre, 2009; Winch, 2010). One way of accommodating this need for trust is through physical proximity of certain stakeholders, making it easier to interact with each other (Pinto, 2013). If necessary trust among stakeholders is absent, issues occurring in unprepared situations will need a high level of interaction. Use of control as an instrument, on the other hand, is preferred when common knowledge is used and tasks are independent of each other. The benefits of trust are many, and especially connected to a reduced level of conflict, increased exchange of information, engagement and commitment, in addition to a higher degree of learning, cooperation and performance. Finally, trust spurs an positive attitude towards acting voluntary and towards processes through empowered relations, leading to project success.

2.3 Innovation

2.3.1 Definition of innovation

The term innovation originates from an opportunity or a need for change (Haarstad and Baumann, 2012). There are various sources to innovation, where users as innovators is considered as most important (Tidd and Bessant, 2009). This is especially applicable for companies aiming for customer satisfaction. Products and processes can be improved and adjusted by listening to the users' need during a development process. A distinction is made between two terms for activities in innovation; *exploitation* og *exploration*. Where exploitation is about using already existing knowledge and competence, exploration is about acquiring new knowledge within the given field of study. Innovation through strategic change is proven to happen in the interplay between exploitation at the organisational level and exploration at the project level (Bygballe and Swärd, 2014). Within the various development paths of innovation, the most suitable innovation strategy in this case is related to *scale-intensive companies*, focusing on optimizing production processes in order to create competitive advantage through incremental innovation and continuous improvement (Tidd

and Bessant, 2009). Still, it should always be in mind that humans in general have a resistance towards change, especially when the change is made by another stakeholder on behalf of their own business (Edmonson, 2012). This is particularly visible in innovational changes related to contract strategies, leading to stakeholders feeling unsafe (Lædre, 2009).

2.3.2 Value creation

The creation of value in a project happens both through the process and the product (Eikeland et al., 2014; Winch, 2010). The estimated profit or value creation from a given project is normally related to a view of perspective; If the overall-perspective of value creation is missing at the management level, it is impossible to require commitment on a lower level of a project organisation (Samset, 2014). To a given stakeholder, value creation can be defined as the difference between received values and total costs related to the stakeholder's commitment in the project (Eikeland et al., 2014). This definition involves several elements in addition to the economical aspect, as the construction process creates values like image, identity and learning while demanding resource use and a price to pay from the client. In order to monitor a project's progress related to value creation and innovation, evaluation at the right time is necessary (Samset, 2014; Pinto, 2013).

2.4 Creativity

2.4.1 Definition of creativity

Creativity has been looked upon as an individual and abstract skill, with low ability of measuring effect or size (Klausen, 2010; Kaufmann, 2003). Among other misconceptions are the idea of creativity only being performed as an activity of brainstorming (de Bono, 1995) and that the best creative solutions are achieved under time pressure (Amabile et al., 2002). There are several challenges related to the definition of creativity, and Klausen(2010) reminds us to never confuse novelty alone for being creative. In addition to being something new, "creativity must make sense and must work" (de Bono, 1995, p. 12) and needs to be considered as appropriate (Klausen, 2010). Kaufmann (2003) points to different scenarios within creativity, depending of the task and the solution. The degree of novelty within these

two parameters is crucial when managing problem-solving processes (Kaufmann, 2004). As problem-solving processes traditionally consists of moving along patterns elaborated from previous experiences and existing knowledge, crossing across these patterns can enable serious creativity in the form of *lateral thinking* (de Bono, 1995). In the establishment of new problem-solving practices, diversity needs to be enhanced in order for creativity to reach its potential as a collaborative practice (Amabile and Khaire, 2008). By enabling collaboration through combatting the lone inventor myth and encouraging individuals to gain diverse, creative experience, creative practices can get people with different background and expertise to work together.

2.4.2 Facilitating creativity

The term *facilitating leadership* is used when describing management during strategic change (Rasmussen, 2011), aiming for potential solutions and experiences to reach decision-makers and management in an organisation. Leaders using this approach should be able to unite stakeholders across organisational boundaries and point of interest to trust each other and develop healthy relations. Managing stakeholders in different situations requires *situation-based management*, demanding a leader to change style of management based on the stakeholders willingness to take responsibility and approach a problem (Sjøvold, 2014). Being able to identify potential conflicts and friction, as well as listen to people express their opinions and thoughts are important skills of facilitating leaders (Rasmussen, 2011). Their main task is to facilitate processes and dialogues concerning increased interaction and innovation, among them creative processes. Recognising different kinds of failure is determinant to a leader, in order to increase innovation and accept the utility of failure as a step towards the best solution (Amabile and Khaire, 2008). Three crucial conditions for success when facilitating creative cooperation are the composition of participants, skill of the facilitator and the facilitators professional knowledge of methods available (Rasmussen, 2011).

2.5 Creativity and innovation in lean

As implementing change in the construction sector is dependent on mediation of new knowledge into existing routines (Bygballe and Swärd, 2014), there is reason to believe that relation and interaction with external stakeholders pose as critical elements towards success in performance of concepts like lean construction. The motivation for change needs to come from a belief of increased competitiveness in the market (Bygballe and Swärd, 2014). In other words believing that change could make the organisation more profitable and attractive to other stakeholders. By bringing creativity and innovation into the concept of lean, an organisation's confidence, attitude towards problems, motivation and engagement are among the requirements for optimal execution (Johnstone et al., 2011). The concept of lean construction emphasizes resource-use and process-flow in optimisation, while creativity is proven to reach its potential when time is an adequate resource (Amabile et al., 2002). Thus, there is a controversial balance to be upheld in uniting creative practices with a lean mindset. One concern is related to workers developing an excellent planning skill while reducing their creative skill, towards neglecting or strangling innovative, creative work (Bygballe and Swärd, 2014). Organisational practices mediate the link between innovation and knowledge-sharing by collaboration and interaction (Foss et al., 2011), and interaction should thus be taken into account when managing creativity and innovation in a lean-environment. One solution must be to facilitate consciousness towards the definition of creativity, and what creative practices are intended to achieve.

2.6 Creative processes

As a possible solution to the challenges regarding problem solving processes in optimization of innovative solutions, lateral thinking, as defined earlier, should be enabled into practices suited for a given project. A possible practice for creative processes, adjusted to the complexity of multi-disciplinary project teams, is presented as *we-engineering* in the thesis of Lombardo (2014). The practice consists of four phases; focus, idea generation, assessment and evaluation, and finally choice of solution. The phases are illustrated in figure 2.2, and each one is further explained in table 2.2. It is particularly the idea generation-phase which

demands creativity, as the creative interaction between the stakeholders is put at the core of the problem-solving process. The practice aims at leveraging the creative resources by stimulating interaction.



figure 2.2: Phases of the creative process, freely adapted from Lombardo (2014).

Within each phase, a number of actions are performed in order to provoke creativity, requiring participants to know the usual approach to a problem in order for the exercise to be appropriate. Not knowing a common approach to a given issue can easier spur creativity (de Bono, 1995), making the mentioned practice unnecessary to proceed. Practices being open and direct to shattering established truths are more likely to obtain a large number of creative contributions (Lombardo and Kvålshaugen, 2014). This type of generation or exploration of creativity implicates having an adequate time frame while avoiding an excessive number of participants in the collaboration (Amabile et al., 2002).

Rasmussen (2011) presents several elements to be paid attention when carrying out creative sessions, such as doing a round of introductions and presenting basic rules initially in the session, include many, short breaks to “restart” the creative mind-process during the session, and always do a closure of the session by asking participants for reactions and comments. The rounds of introduction and closure are important for the group dynamics and development of the group as a team. The concept of *we-engineering* is a more including way of performing creative processes within a project, focusing on creating collaborations working towards a mutual goal (Lombardo, 2014). These processes needs to be facilitated in specific sessions through the four mentioned phases.

table 2.2: Phases of the creative process, Lombardo (2014)

| Phase | Description | Do's and don'ts |
|---------------------------------------|---|--|
| <i>Focus</i> | The parties should define the purpose of the collaboration. The result of this phase should be a defined, relevant area of work, as well as a mutual goal. | The focus should be on defining rather than problem-solving. |
| <i>Idea Generation</i> | Working together on producing as many ideas as possible, keeping the goal from the focus phase in mind. The facilitator should design and plan this phase early considering possible content, techniques and participants. | The aim should be to get as many ideas to the table as possible without evaluating them. |
| <i>Idea assessment and evaluation</i> | When assessing and evaluating ideas, the purpose is to support the final decision-makers and prevent hasty conclusions in the last step of choosing a solution. Justification of why ideas are chosen or not is also needed. The result is an overview of the potential value creation in the ideas, in addition to uncovering the need for a new round of idea generation. | The selection criteria needs to be clear and unambiguous, as the best solutions should be easily identified. |
| <i>Choice of solution</i> | Chosen solutions from the evaluation should represent the best alternatives, given the total picture of ideas mapped in the previous phase. Deciding which idea to choose - in other words which solution to implement - should be done by the responsible decision-makers, and be well-founded before a final decision is made. | The final choice needs to be made with the focus from the first phase clear in mind. |

3. Methodology

The chosen research methods are based on practice as unit of analysis, consisting of data collaboration and data analysis. Initially, a literature study has been performed in order to map the current research state on the topic. The findings of the literature study is presented in chapter 2. *Theoretical Framework*. Data collaboration in the case study is carried out through initial, qualitative interviews in addition to document studies and observations within a limited time frame. Findings from the case study is presented in chapter 4. *Findings*.

3.1 Qualitative method

The chosen method in this thesis is qualitative; emphasizing subjective, individual understanding and experience of practices (Creswell, 2014). A quantitative method - on the other hand - would rather be based on data from numbers and research performed in a controlled environment. The most visible qualitative element in this thesis is the single-case study. As qualitative methods are based on analysis and interpretation of written and oral sources, the verifiability of data is demanding (Samset, 2014). Being critical to received data by evaluating both the validity and reliability of the different sources is necessary in order to maintain credibility to the study.

When use of qualitative method, the aim is a holistic understanding from few units of analysis (Creswell, 2014). It is thus necessary to describe the context of the case closely, and further perceive and discuss data in a structured matter. More on the context in subchapter 3.4 *Practice as unit of analysis: A case study of Team Bispevika*.

The validity is an indication of how well the data align with theory, in other words how representative the data are (Samset, 2014). Reliability is linked to the consistency of the data; how well different findings confirm each other. It is reasonable to assume that a well performed qualitative study needs a blend of both validity and reliability to draw a conclusion

with sufficient quality. While an overweight of validity could be in need of a larger dataset, too high reliability can be caused by insufficiency in theory or a source with low credibility.

3.2 Research design

Serving as a strategy for how the problem statement will be answered, the research design is also the body structure of the research studies (Yin, 2014). The purpose of this thesis is to discover how creative cooperative practices mediate the production of innovative solutions in a multidisciplinary engineering project. In order to achieve this, several methods need to be taken into account.

Throughout the case study, three methods are used: Observational studies, qualitative interviews and document studies. The qualitative interviews have been used as an introduction to the case study, in order to get into the mindset of the project and to get the interviewee's thoughts on how practices are intended to be enacted. Further, the observational studies are used to confirm these thoughts, and discover how practices actually are performed in everyday meetings. Whenever data from interviews or observations are conflicting or inconclusive, document studies are performed as a contribution to the complete image on the practices and to clarify misunderstandings or misconceptions.

When discussing the study, findings should be supported by a theoretical framework based on existing research within the topic. This framework is presented and elaborated through a literature study, with an aim of understanding core issues and finding guidelines for how the case study should be carried out with regard to these issues.

Aiming to get sufficient and relevant information about the chosen problem statement, triangulation is used as a technique of approaching the sources in varied ways (Yin, 2014). Triangulation empowers the reliability of the study by confirming and structuring data through the chosen methods, and will create a clearer image of the real situation of creative collaborative practices. Viewing the case study from different angles should enable to answer

the research questions in an exact matter. The chosen methods will be presented and further elaborated in the following chapters.

3.3 Literature study

A literature study is the preferred method to map existing knowledge on a given domain or topic (Creswell, 2014). The method gives an overview of the current state of research, and brings us closer to identifying deficiencies in the research. These gaps and lack of knowledge are used when identifying and designing the research questions (Blumberg et al., 2005). Findings from the literature study are presented in chapter 2. *Theoretical Framework*, and later analysed and discussed together with the other findings from the study. Literature on creativity and innovation in general represents a various number of industries, and a literature study is a good way to get an overview of the topics and gain new knowledge on the research field. When searching and evaluating literature, it is important to keep a critical sense in mind, as most research is hard to verify. Thus, to carefully choose literature by taking the research method into account is important. The methods used to search and evaluate literature are presented in the following chapter.

3.3.1 Literature searching

When searching for literature, two methods are mainly used: Search engines and recommendations. Used searches engines are Google Scholar and NTNU's University Library, Oria. These engines are considered serious as they provide peer reviewed articles and books, as well as information on number of citations and other published material from the same authors. Recommendations from supervisors are the main source to findings related to the study, covering everything from specific articles to name of authors of relevance. This literature has been recommended through discussions and supervision, and has also established a "starting point" for finding literature in the mentioned search engines. Recommendations from supervisors have resulted in searches based on name of authors, finding literature with published titles related to the topic of the study.

In addition, searching by words have been a way of discovering other authors in the research field. When searching for words related to the topic on creativity and innovation, finding literature from other disciplines and industries have been considered a possible outcome. Thus, reading article abstracts and use of combined search words has been important. More on this under the next section on literature 3.3.2 *Literature evaluation*. Search words resulting in relevant and accurate literature are presented in table 3.1.

table 3.1: Search words with associated literature

| Search word | Literature results | Type of literature |
|-------------------------------|---------------------------|---------------------------|
| <i>Creativity</i> | de Bono, 1995 | Journal Article |
| <i>Creative Processes</i> | Lombardo, 2014 | Doctoral Thesis |
| <i>Creativity+lean</i> | Johnstone et al., 2011 | Journal Article |
| <i>Innovation</i> | Tidd and Bessant, 2009 | Book |
| <i>Interaction</i> | Edmondson, 2012 | Book |
| <i>Interaction+innovation</i> | Foss et al., 2011 | Journal Article |
| <i>Interaction+lean</i> | Ballard and Howell, 2003 | Journal Article |
| <i>Innovation+lean</i> | Bygballe and Swärd, 2014 | Conference Article |

3.3.2 Literature evaluation

The evaluation and choice of literature is based on a four criteria-method from the University Library at NTNU (VIKO, n.d.), presented in table 3.2. The method is used with an aim of structuring the selection process and assuring quality in literature evaluation. The criteria have aided the process of finding relevant literature with sufficient quality level, which is important for the quality of the thesis in total.

table 3.2: Evaluation criteria for literature

| | |
|---------------------|--|
| <i>Credibility:</i> | Where is the literature published? Is the document published in a peer reviewed journal or in an other scientific source? |
| <i>Objectivity</i> | Who are the authors and what is their background? Is the bibliography thorough and varied? |
| <i>Accuracy</i> | When is the document dated? Are used research methods well described? If the document is an article, does it follow the IMRAD-structure of Introduction, Method, Results And Discussion? |
| <i>Suitability</i> | Which topics are treated in the literature? Does the document fit to my purpose and study? Is the title suited to my problem statement? |

In addition to the criteria, following elements have been considered as required when choosing literature:

- Should be valued to a Level 1 or Level 2 publication according to The Norwegian Scientific Index (NSD, 2018).
- Scientific articles should be peer-reviewed.
- Preferred literature types are conference articles, doctoral theses, journal articles or books.

If documents have gone through presented criteria and requirements and still appear relevant and within the study's limitations, they have been collected and gathered in a literature list for closer examination and reading.

3.4 Practice as unit of analysis: A case study of Team Bispevika

To analyse creative collaborative practices in the light of a specific framework, practices through data collection and data analysis of a case study is chosen as unit of analysis. The data collection consists of three different methods, used to triangulate the information from the case study. The context for the case study is the construction project of Team Bispevika in

Oslo, Norway. To limit the scope of practices within this project, problem solving incidents within design and procurement is chosen to be studied. As the data collection is from a single-case study, the story and context of Team Bispevika needs to be presented as a narrative in order for the analysis and findings to be credible as a qualitative study (Eisenhardt and Graebner, 2007). The information and citations presented in the following sections originates from the website of the main contractor, as well as interviewees from the project management.

The two most obvious challenges related to a method such as the single-case study is the possibility of a low transferability of results to other cases and the possible impact and effect of other variables than the ones included in the study (Sjøvold, 2014). A common misunderstanding about qualitative single-case studies is that the results cannot be generalized, are less valid and reliable than quantitative multiple-case studies, making the single-case study less suitable for scientific development (Flyvbjerg, 2006; Yang et al., 2006).

Team Bispevika holds an official statement to be an “interaction project” between the client and the main contractor (AF Gruppen, 2017), focusing on innovation in the stages of design, procurement, production and sales. The client, Oslo S Utvikling - OSU, has been involved in the development of the *Barcode* in Bjørvika, located by the old harbour of Oslo, throughout the last decade, and are heavily engaged in the development of Bispevika as a new area in Bjørvika. Thus, OSU is familiar with the context, challenges and specifications given by the development of this area.

The vision of OSU is to develop Bjørvika to become Norway's most attractive commercial and residential area. Our hope is that a collaboration with AF will contribute largely to this vision and we are willing to work new-minded and untraditional to make it happen.

Rolf Thorsen, CEO OSU (AF Gruppen, 2017)

The current project consists of two contracts for Team Bispevika: B2 *Dronninglunden*, consisting of 140 apartments, and B6a *Vannkunsten*, consisting of 240 apartments. In total 9

buildings on 48.000 m², where 8000 m² are commercial areas. An illustration of the location and appearance of the two contracts B2 and B6a are presented in figure 3.1 and 3.2.

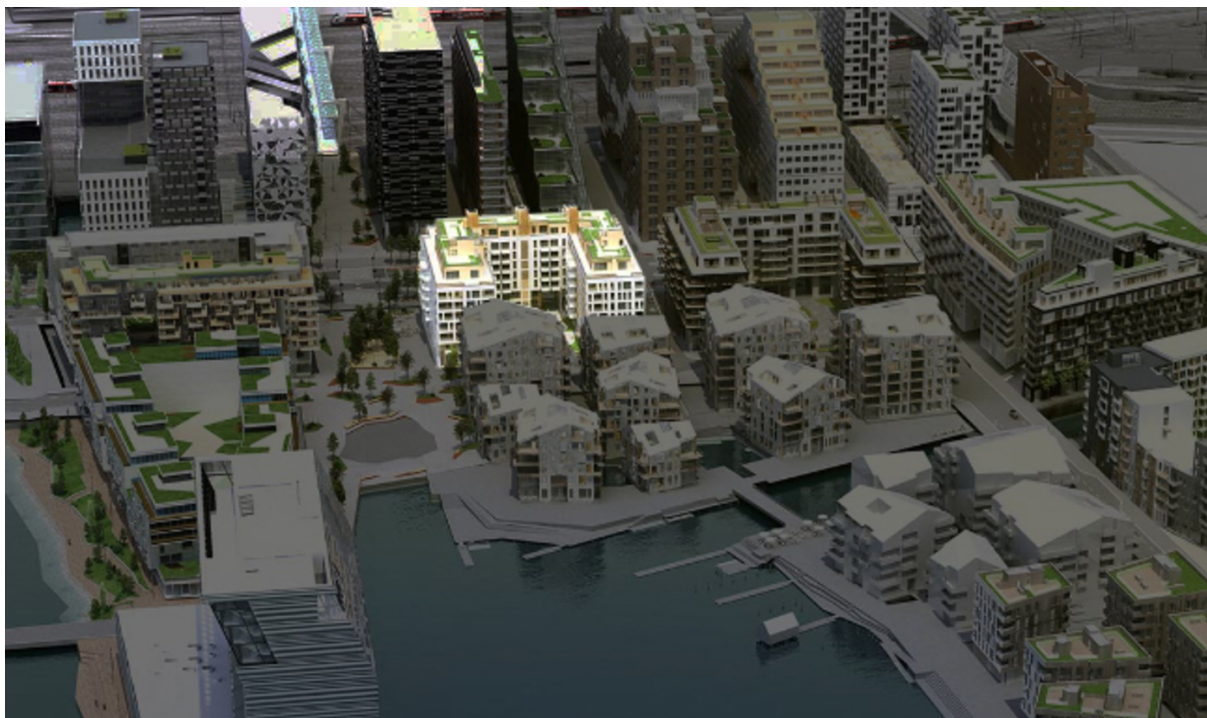


figure 3.1: Project B2 Dronninglunden (AF Gruppen, 2017).



figure 3.2: Project B6a Vannkunsten (AF Gruppen, 2017).

The main contractor of the two projects of Team Bispevika - AF Gruppen - landed the contracts through two-stage tendering. OSU invited the largest and most recognized contractors in the industry to the table, encouraging them to come up with ideas on how to develop this new area with regard to improved solutions and cost reductions. The intention was to focus on industrialisation, digitalisation, interaction, planning process and contract structures in order to achieve this. OSU promoted the project as an opportunity for contractors to take part in a collaboration focusing on changing the industry towards a closer collaboration between client and contractor.

AF Gruppen was chosen for their presentation of what has been called the *Bispevika model*: A tender document of 600 pages presenting a vision of the project as something innovative, different, game-changing and ambitious for a traditional and conservative industry. Later, this document has been referred to as *The Bible* internally in Team Bispevika, and is in use on a weekly basis. The main goals with regard to innovation on the project from this document is presented in table 3.3. The strategies towards these goals spans from a new method of partnering with contractors to contract strategies and a new approachment to the structure of the project management. The initial team working on the tender consisted of four key roles which are in the core of Team Bispevika: The project director, the head of the design and engineering team, head of purchase and procurement and head of innovation. In addition, the project had resources from the group management when compiling the tender document.

table 3.3: Main goals for innovation in Team Bispevika

Reduction of project costs

Risk reduction for client and contractor

Development of smart and optimal technical solutions

Securing a predictable and rational production

Motivation to be new-minded through high involvement of all project stakeholders

The presented innovation goals are steps towards a strategic, more economic-oriented and long-term goal of an added value of 20-40% in projects in a ten-year perspective. This is the quantified goal from AF Gruppen, where Team Bispevika is the first project in a chain of several projects to be taken on by the collaboration of AF Gruppen and OSU in the future. The vision behind the collaboration between AF Gruppen and OSU is a result of the mutual goal of creating competitive advantage in order to change the industry. The final change is based on cost reduction and increased value for the end-customer in terms of higher quality and an elevated sale price. The main economic goal is a total reduction in resources of 20-40% through several projects, and the path towards this goal is visualised in figure 3.3, in norwegian.

Utvikling i bygge-kostnad og salgsverdi

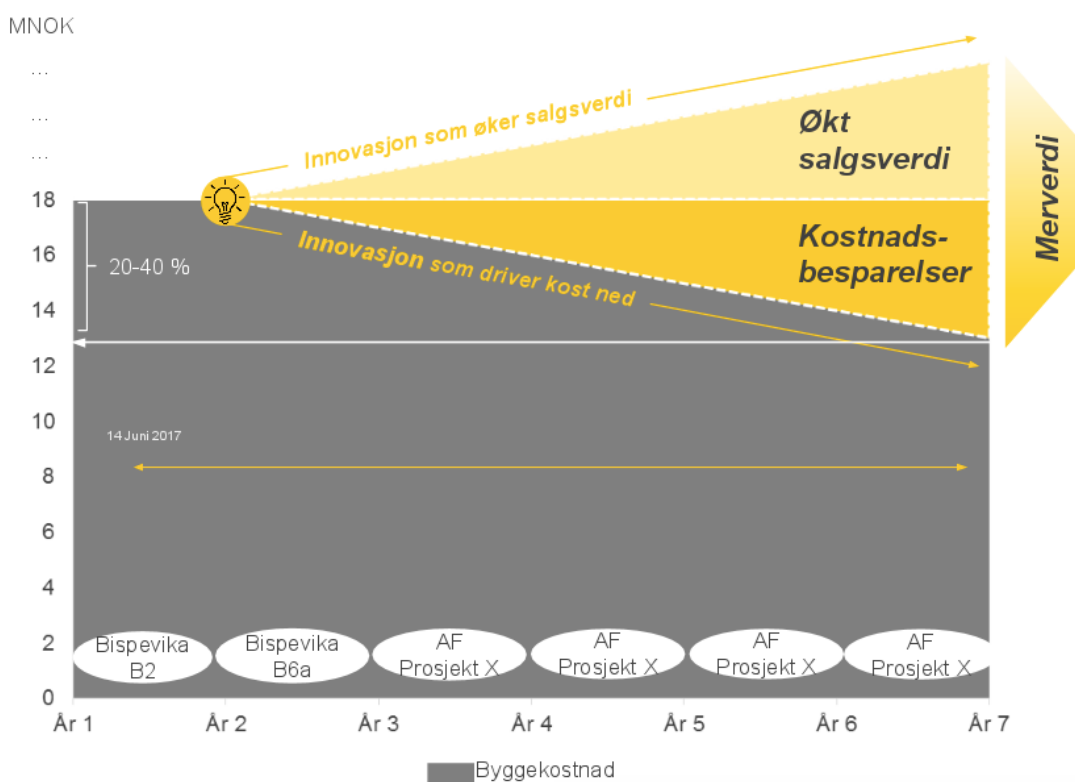


figure 3.3: The main economic goal in Team Bispevika

Our team in Bjørvika are continuously developing a new model for project management which we believe will create a basis for lasting competition for AF Gruppen, our clients and our sub-contractors.

Lars Petter Fritzsønn, project director Team Bispevika (AF Gruppen, 2017).

As an instrument towards innovation, the project uses creative processes in problem solving incidents. This practice is prominent in the project execution within procurement and design, but also in production and end sale. In this study, procurement and design are chosen as activities to be studied with regard to creative, collaborative practices.

There are two main differences to be paid attention regarding the contracts of B2 *Dronninglunden* and B6a *Vannkunsten*. B2 *Dronninglunden* is developed and drawn by the norwegian architect *LOF Arkitekter* with an intention of blending in to the existing architecture in the area without too many restrictions regarding design. This building consists of both apartments and commercial area on the ground floor. B6a *Vannkunsten* is developed and drawn by the danish architect *Vandkunsten Tegnesteue*, aiming to create exclusive and unique apartments on the seaside with a highly specific preferences on design (Vandkunsten, 2017). The involvement of the two architects on different levels affects the problem solving incidents with regard to the level of innovation, and will be further elaborated in findings and discussion of this study.

3.4.1 Observational studies

With the goal of obtaining a deeper understanding of how the creative processes are executed in the project, observational studies were chosen as a preferred method in the case study (Yin, 2014). The observations consisted of participation in sessions related to the creative process in procurement and in design, both meetings defined as creative sessions and meetings related to planning for development of new solutions. Agreements were made consecutively with the innovation manager, normally operating as one of the session's facilitators. One of the most prominent challenges of observational studies in a single-case study is related to the reliability

of observation data, e.g. how well two observations correspond (Sjøvold, 2014). Consciously choosing a method for observations can prevent potential biases when observing.

When planning the observations, the method of Creswell(2012) was used as a base. The intention was to follow meetings in procurement and design as a direct link to discover how practice is performed in everyday project life. The role as a peripheral member was chosen, which is based on no participation in the meeting and to strictly be an observer (Knotten et al. 2017). Access to meetings was taken care of through appointments with the innovation manager or other project managers. The published material from the project's innovation manager was used to conduct each meeting, relating the sessions agenda to the framework presented in the theory framework of Lombardo (2014). Every observation was made in a focused matter, with certain criterias to be followed.

Recording of the observations were made through taking minutes, consisting of what actually happened in the meeting as well as my impression of the group dynamic and the role of the facilitators. As an observer, I was always introduced at the beginning of each meeting, and occasionally asked to give my objective opinion on the meeting when wrapping up. In addition, an informal, brief evaluation of each observation was made in collaboration with the facilitators of the session or meeting.

Every observation is related to a planned and prepared meeting, corresponding to a specific phase in the creative process; focus, idea generation or evaluation and assessment. The phase concerning choice of final solution has been left out in the observational studies, as it is considered to be of less interest regarding the practices of creative processes. A matrix of the observations made within each topic, activity and process phase is presented in table 3.4. Throughout the observation time there are completed ten observations within different topics and collaborations of the project, evenly distributed among the phases. The limited time frame made it demanding to follow each case through each process phase, thus a representative number from each phase is chosen.

Table 3.4: Observations of the case study

| Topic for innovation - Activity | Focus | Idea generation | Evaluation & assessment |
|---|--------------|------------------------|------------------------------------|
| <i>Waste recycling - Procurement</i> | X | X | |
| <i>Roof construction - Design</i> | | X | X |
| <i>Concrete: Con Form - Procurement</i> | X | X | |
| <i>Discipline Strategies - Procurement & Design</i> | X | | |
| <i>Sunblind - Design</i> | | | X |
| <i>Timber - Procurement</i> | X | | |
| <i>Logistics - Procurement</i> | | | X |

3.4.2 Qualitative interviews

All interviews are executed as a part of a final report in the subject *TBA4531 Project Management, specialisation project* at NTNU, fall 2017. The interview guide is based on research questions formed in this report, closely related to the subject of the master thesis. The interview guide is presented in appendix 1, and is presented in norwegian.

The interviews are carried out as semi-structured with a prepared interview guide. Semi-structured interviews allow the interviewer to angle the questions and topics toward the relevance based on the consecutively answers given by the interviewee (Yin, 2014; Dalland, 2000). It also gives the interviewer access to pose follow-up questions, which makes the interview more of a conversation than an interrogation. The interview guide served primarily as a checklist to assure that the most precarious elements were covered and discussed, and the guide was used throughout all interviews. The guide was sent to the interviewees prior to the appointment, allowing them to prepare as they wished.

All interviews are sound-recorded after approval from the interviewees to use when transcribing interviews and writing minutes. The interview guide as a starting point for a dialogue has affected the writing of minutes, resulting in a varied level of structure. The duration of each interview has been approximately one hour, focusing on the interviewee's perspective on the novelty and characteristics of the project. This does not include preparations or transcribing.

Interviews have been appointed individually and were all completed within a three-day period. The short timeframe made it challenging to change angle from one interview to another, missing out on the possibility of making the answers correspond in a more conscious matter. An evaluation has been made on whether the interviews should be done by skype or through meetings at the project site. Taking quality of the interviews into account, meetings at the office in Bispevika were chosen as a favorable method. Interviewing face to face is preferred as it gives an increased level of communication. Yin (2014) points out the importance of analysing the interviewees' reaction in order to balance the moderation of questions while challenging them. This is done best when being physically present in the same room as the interviewee.

Choosing interviewees to the case study was done in collaboration with the external supervisor from AF Gruppen, in order to connect the research questions to relevant key roles in Bispevika. It was considered appropriate to study different project activities in order to get an overview of the project in total. This has been done through interviewees from the following project activities:

- Purchase and procurement
- Property development and sales
- Design
- Project management

The chosen representatives from these activities are presented in table 3.5, all being managers within different areas of the project. In addition, the manager of strategy and interaction has been interviewed as he holds an untraditional role in the project. Other noteworthy, possible interviewees which have been discussed, are the head of finance and the project manager within structural work. They have been left out as interviewees when taking the scope and limited time frame into account.

Table 3.5: Interviewees of the case study

| Name | Head of | Project activity |
|------------------------------|---------------------------------------|-------------------------|
| <i>Lars Kristian Hunn</i> | <i>Strategy and interaction</i> | Management |
| <i>Lars Petter Fritzsønn</i> | <i>Project director</i> | Management |
| <i>Marius Winger</i> | <i>Purchase and procurement</i> | Procurement |
| <i>Per Olav Bernhardsen</i> | <i>Sales and property development</i> | Sales |
| <i>Tobias Saltveit</i> | <i>Design and engineering</i> | Design |

The intention of the interviews has been to unveil the mindset of the project, and to discover how Team Bispevika are working differently than traditional construction projects. There have been challenges concerning the coordination of information given in the interviews, as the interviewees have chosen different aspects of the project as important. On the other hand, this has given more varied data on the project in total.

Obtaining updated, first-hand information on the project's daily operations and having the possibility to pose elaborating questions are some of the benefits by using interviews as research method (Sjøvold, 2014). Subjectivity and personal opinions or biased answers are the obvious challenges when interviewing, but there are also challenges related to how easy the interviewee can trace off-topic or misuse the given timeframe.

3.4.3 Document studies

As an extension of the interviews, a document study concerning project material is carried through in the case study (Yin, 2014). All documents are received from the interviewees, and serve as support to the information which has been revealed through interviews. The purpose of studying project documents is to identify intentions and characteristics of the interviewees beyond the data collected through the interview and also unveil cultural patterns of the chosen project case team (Weber, 1990). The studied documents are presented in table 3.6. The documents are considered as official within the project organization, relating to the tendering process, strategies concerning collaborations with suppliers and subcontractors, and guidelines for creative processes in design. Most documents have been mentioned during interviews or been related to a session or meeting connected to an observation.

Table 3.6: Documents of the case study

| Received from | Document title |
|---|---|
| <i>Head of purchase and procurement</i> | Tender document Nov. 2016: Bispevikamodellen |
| <i>Head of purchase and procurement</i> | Procurement presentation design: Norconsult |
| <i>Head of purchase and procurement</i> | Standard procurement tender for suppliers |
| <i>Head of purchase and procurement</i> | Process description for supplier collaboration: HTH |
| <i>Head of purchase and procurement</i> | Strategy development of construction disciplines |
| <i>Head of property development and sales</i> | Description of customer satisfaction program |
| <i>Project Director</i> | Project management model in Bispevika |
| <i>Head of purchase and procurement</i> | Procurement presentation, timber |
| <i>Design manager</i> | Assessment and evaluation of ideas |
| <i>Supplier, waste recycling management</i> | Action plan: Team Bispevika |
| <i>Head of innovation</i> | The optimization process within design |

When studying a well-documented project, a document study can be useful as it facilitates to review findings several times and get a detailed description of a given situation in a long-term

perspective. Selective or unilateral reporting leading to poor objectivity is a challenge related to document studies (Yin, 2014), and subjective opinions in documents should thus be uncovered by comparing information from interviews.

Data presented in these documents are specific for the project and structured in an understandable manner, making the document study useful and contributing to answer research questions of this thesis. With an aim of being applicable to the whole project organisation, the document data is considered to be more reliable and objective than data given in an interview. In addition, the visual impression given by pictures, figures and graphs makes relevant information easily accessible and contributes to an overall good impression of the project documents.

During the document study, three documents have stood out as more important with regard to contributing and supporting collected data from interviews and observations. The document related to the tender stage is considered a guideline for every aspect of the project, and there is thus only the chapter concerning innovation which is taken in closer consideration. The document related to creative processes in design is a guideline on how sessions in the optimization process should be carried out. Representing procurement, the chosen document presents an example of how strategies for each business area in the project are developed and documented for further collaboration.

3.5 Working method

The process leading to a master thesis has consisted of several elements. Initially, a conversation with professors at NTNU established a contact towards the research project KSS, *Contract strategies and Specialist-based Interaction*. An appointment with Pål Egil Rønn, the board leader of AF Gruppen, lead to an interesting starting point for the topic of the study, and Bispevika was mentioned as a possible case study.

During the fall of 2017, a project report was completed on Team Bispevika as a preparation for the thesis. Interviews from the report has been used to design research questions for the thesis, and have been crucial elements when getting acquainted with the project.

Establishing contact with co-supervisor Sebastiano Lombardo, head of innovation at AF Gruppen, has also formed the working method and colored the process when carrying out the case study.

On request from main supervisor Ola Lædre at NTNU, a conference paper to IGLC18 has been compiled and submitted. Writing the conference paper and the thesis has been a parallel process, but for reasons as deadlines and limited time, completion of the paper has been prioritized ahead of finalizing the master thesis. The months prior to easter holidays were used to collect data and write the paper, the months after has consisted of reviewing the paper and completing the thesis. Working on the paper has eased the workload on the remaining master thesis as the topic, problem statement, research questions, findings and results are similar.

Throughout the process of writing the paper, main supervisor has given feedback and reviews. In addition, feedback has been given through two meetings with Glenn Ballard from Berkeley University. Knowing the industrial group of AF Gruppen through a summer internship and future employment has given motivation and eased the process of getting to know the project in order to increase the quality of the case study.

4. Findings

The main purpose of the chapter is to present findings from the described methods in the case study as they appear under each research question. In total, it should be a description of how creative collaborative practices are enacted in the case study; Identified practices, experiences from these practices, and possible improvements in future projects. To structure the findings, the chapter is divided into the first three phases from Lombardo's (2014) framework, elaborated in section 2.6 *Creative Processes* and presented in figure 2.2. Under each phase, subchapters are divided into the three research questions. The guide used for observational studies is also based on the presented framework. All citations and quotes are made anonymous, but occasionally referred to by a role or position if relevant to the context. Names and positions of interviewees and studied documents are listed in section 3.4 *Practice as Unit of Analysis: A case study of Team Bispevika*.

Before presenting the findings within each phase, one of the main actions taken in Team Bispevika towards the goal of increased interaction and innovation will be presented, as it doesn't fit directly under the phases. A visible action in the daily work as well as in the organisational structure, is related to the engagement of two untraditional resource positions: The improvement manager and the innovation manager. Their area of expertise is used to organise, follow up and monitor the work on interaction and innovation. There are significant differences between the positions, but they both contribute and assist in almost all project activities and phases. The term "improvement manager" can be misleading, but is chosen in lack of a better term in this untraditional role. The improvement manager works on optimising the interaction between project team members by exploring the potential of every employee and targeting personal contributions. The innovation manager works more on a group level, organising and facilitating different collaborations through creative sessions and meetings with an aim of creating innovation and better solutions. The goal for Team Bispevika is that these two resource positions are defining and crucial in achieving the overall project vision of interaction and innovation. Taking the topic of this study - being creative collaborative processes - in consideration, the innovation manager is more prominent in terms of

observation and answering the presented research questions. Still, the work of the improvement manager being focused towards interaction is important to consider and keep in mind, as his work creates the basis for collaboration. Findings show that these two roles are considered special for this project as they are building a new way of working with innovation, and thus not considered as fixed roles in future projects. These two roles are presented in this section as they are related to all creative collaborative processes in Team Bispevika.

4.1 Focus

Which creative and collaborative practices are identified in the focus phase?

Discipline Strategies: Finding the potential of development

To map the potential of each discipline within the project, the procurement team spends time and resources on development meetings together with potential suppliers and the client, in addition to internal meetings in the project organisation. The goal of this meeting practice is to reduce friction and misunderstandings, clarify expectations, discover potential costs related to change and emphasize the main goal. This is done by mapping existing knowledge, possibilities for change and desired outcomes. After contributions based on experience and competence from all stakeholders, a strategy for the given discipline is determined through a mutual goal towards improved solutions. The physical result is made through documents called *Discipline strategies*, consisting of intentions and goals of each collaboration.

Procurement process: From subcontractor to partner

When focusing on problem-solving processes, Team Bispevika have decided to be careful when initiating potential collaborations in order to secure the best suited and most motivated business partners. This implies a radical change to how subcontractors and suppliers are contracted in the project, traditionally driven by competitive prices and the ability to deliver on time, despite a wish to focus on other criterias. As the procurement manager points out;

A contract which only addresses a transaction from AF Gruppen to our customer or client is a one-sidedness that doesn't reflect how skilled this team is. If you manage to gather the most companies willing to lose the most money, you get the job. This is the reality of big contractors today, which we are trying to change in Team Bispevika.

As a tool towards a procurement process dominated by a higher level of collaboration, Team Bispevika wishes to change focus from the terms *subcontractor* and *supplier* to *partner*. By using more including terminology as a conscious approach to collaboration and mutual goals, they believe in engaging the right stakeholders for long term collaborations. The main goal for AF Gruppen as main contractor is to find and establish partners in various disciplines of the project who wishes to join the journey and are willing to take the risk that comes with change. The presented practice related to procurement of partners is limited to project disciplines or areas with potential of developing, so traditional tendering will still occur in certain areas of the project, e.g. smaller contracts or standardised services. Through the tendering document for Team Bispevika, a three-phased plan for the procurement process is compiled. This plan has been confirmed to be alive and dynamic through several observations of focus meetings. When presenting the process of partnership, Team Bispevika uses

Procurement matrix: Developing exclusivity

When presenting the procurement process of partnership, Team Bispevika uses a matrix to illustrate how suppliers and subcontractors can benefit from the collaboration and create competitive advantage in their industry by innovating their services or products. The thought is to change the supply chain in a traditional construction project by working on supplier development. The matrix has two dimensions as shown in figure 4.1: the number of relevant suppliers within a discipline, and the purchase cost of a given supplier. Team Bispevika wants to show suppliers that through a collaboration with them, the parties shall develop the supplier's business together, with the goal of becoming the only preferred alternative of their services or products in future projects. AF Gruppen on their side wants reliable suppliers with high quality, and to show their clients that they value close relations with their suppliers and subcontractors.

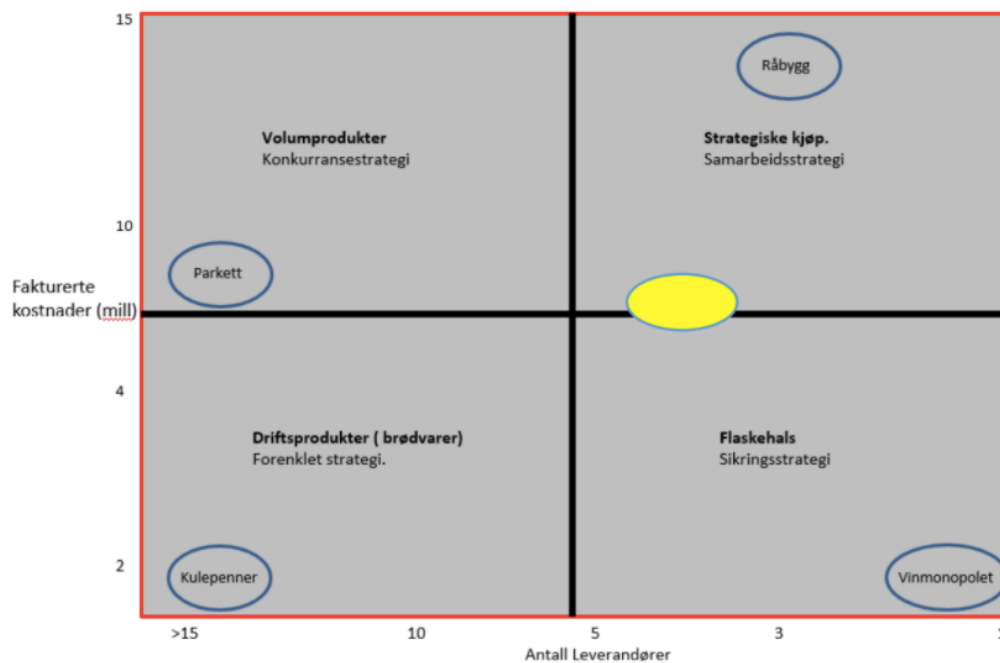


figure 4.1: Procurement matrix of Team Bispevika, from document studies

ICE-meetings and Last Planner System

One of the approaches to the problem-solving process within the design team, is the use of Integrated Concurrent Engineering (ICE) as a meeting structure and a platform for addressing potential issues in design. Whenever larger issues are identified, the design team breaks the issue down to be solved in smaller and separate creative sessions. The purpose of using ICE-meetings is to coordinate and work targeted towards a milestone in the design process, leading to fewer misunderstandings and increased interaction of consultants. Every meeting has a specific topic given by the design team's needs to reach the current milestone in the overall plan. The overall plan is given by the Last Planner System (LPS), used as a tool to monitor the progress and timeframe of the design process. The LPS is physically available through a post-it-system on the walls, and digitally through documents on the intranet. The meeting structure of ICE forces the consultants to put potential issues on the agenda weekly, creating progress and interaction in the design team in their daily work. A finding which won't be covered by the limitations of this study (procurement and design) is the implementation of LPS in the production team, where they're using a five-metres long digital smartboard to monitor the planning and coordination of actions.

Creative processes: Implementing the method with a facilitator

Throughout the focus sessions, the innovation manager works as a facilitator, reminding the participants of the session's intention and desired outcome. This strategy of facilitation is confirmed through the tendering document, aiming to contribute in implementation of the creative process in daily problem-solving work:

The Innovation Manager(IM) is responsible for execution and facilitation of the project's innovation processes. IM will also plan and execute collaborative processes.

What are the experiences of these practices?

The process of changing the mindset of traditional contractors in a conservative industry takes patience and guts, but occasionally Team Bispevika meets potential partners who already have the mindset of change and innovation in their daily business. One of these partners are the waste recycling company, Norsk Gjenvinning. A collaboration like this spurs many positive loaded sessions, confirmed through observation of a focus meeting in addition to be used as an example of a successful collaboration through interviews. During their focus-session, both parties showed a large interest towards gaining benefits from the business relation while being willing to risk certain assets in order to achieve their goal.

The interviews and observations unveils variation from procurement to design regarding the time frame of the focus phase, due to the current project phase and nature of the activity. Findings show that the procurement team spends more time on establishing trust and knowledge towards the mindset of Team Bispevika, while the pressured time-limitation in the design team rather makes the collaboration about "getting the job done". The use of tools as ICE and LPS in design naturally creates a work progress in a structured matter, and is helping to speed up the process of problem-solving processes. The observations of design are done on a more detailed level than procurement, which could also explain the difference. The challenge occurs when design and procurement needs to merge and coordinate their plans.

When observing the internal meeting of elaborating discipline strategies in Team Bispevika, managers from both design and procurement were present. During the meeting, several issues on the prepared agenda needed to be postponed, as a result of process delays and lack of coordination between the project activities. In the other hand, some strategies were desirable to keep open and unsolved in the absence of a suitable supplier at the current time.

As a part of the process towards change of problem-solving practices, creating competitiveness in the market through exclusivity is used as motivation for development of these practices. The project team uses a visual presentation of their long-term goal of cost reduction and quality increase throughout the focus sessions, in addition to the mentioned procurement matrix. During the observation of the tendering meeting with potential timber suppliers, questions around the motivation for the main contractor to help developing a supplier was raised. The procurement manager explained thoroughly how Team Bispevika believes that helping their partners will directly benefit the main contractor in terms of new, innovative solutions as well as a higher quality of their projects. The explanation and answer was met with confirming head nods in the audience as he used illustrations, numbers and graphs to present the vision. He also asked a manager from one of Team Bispevika's suppliers of construction machines and equipment - present at the meeting - to present his experiences from their collaboration. He confirmed that the company are developing new, beneficial solutions for their business with help from Team Bispevika.

The main outcome of the phase is a list of criterias corresponding to the problem-solving issue, mentioned and confirmed orally in sessions as well as written in project documents. By focusing on the outcome of each session, new participants can relate to the process and get ownership to something that makes sense to them, as opposed to risking the creative process to remain at an idea-stage. This was made clear through the observation of the meeting with Con Form, where the facilitator stressed the group on producing criteria to get the creative process started, rather than discussing potential pitfalls and issues in the future collaboration.

How can these practices be improved in future projects?

In order to replicate the practices of focus sessions, the involved stakeholders need knowledge of and experience with the process and work on the mindset of collaboration and interaction. Through session facilitation from an innovation manager and development of facilitation skills of several project managers, the attitude towards change and acquaintance of the working method be improved among all project members of Team Bispevika. The interviewees points out the fact that this form of facilitating management demands that the facilitator has a ownership towards the used method, being able to monitor the process without getting involved in the operational issues.

A change of attitude and perception takes time, and members of Team Bispevika work every day to change the stakeholders' conception of creativity, collaboration and innovation through their vision. As one of the interviewees emphasized:

None of the elements we use here in Team Bispevika are totally new and never tried out before, but the framework around how we do business gives a new perspective on how projects can be managed and executed in the future.

Preparation of the focus phase should consist of creating knowledge and awareness towards the method itself, as it takes time and effort to realize that creativity not necessarily equals novelty, but also needs to be realistic and fitted to the context. Interviewees also request a tool to determine deadlines and timeframes related to the creative collaborative practices, and propose a flowchart or timeline as a possible future solution. The tool should cover all project activities, as they are closely intertwined when planning each part and process. The project team are working with this issue in the development of a framework called *The Bispevika model*, working as a guiding mindset of how creative collaborative practices should be performed.

4.2 Idea generation

Which creative and collaborative practices are identified in the idea generation phase?

Several minds to increase creativity: Choosing and inviting participants

The project team invites a varied and representative selection of stakeholders to join and collaborate in idea generation sessions, as they believe that different minds leads to better ideas. Selection of participants is also done in a conscious way, avoiding people spending time in meetings where they are unnecessarily attending. This applies to procurement as well as design, where the finding in this case addresses the increased number of participants contributing in sessions, compared to a more traditional project with fewer contributors.

Constraint-shattering practices

Highly skilled and experienced consultants in design emphasizes the need of using constraint-shattering practices, aiming to find new angles to old challenges. Likewise, experienced managers of various suppliers are more likely to find solutions they are familiar with from previous work, and need to be guided in creative sessions order to avoid this situation. This practice consists of breaking up usual thinking patterns or approaches to a problem or issue, and using e.g. knowledge about the project's supply chain to spur new associations and potential ideas or solutions.

Digital aid: Smartboards

Aiming to illustrate and registrate new ideas and possible solutions in a more accessible way, the design team uses smartboards when documenting new ideas. Team Bispevika have spent resources on purchasing and developing the usage of these touch screens and other digital technology, all contributing to visualisation and an improved impression of the project's vision to be innovative. When someone has a new idea, it is numbered and explained by the idea's owner. It needs to be drawn and registered properly in order to be understood and remembered, something which needs reminding from the facilitator. The digital aid which are in use needs to be user-friendly and lead to a sufficient effect of an improved process to all participants of the session.

Co-location: Presence leading to increased interaction

At the construction site office of Team Bispevika, there is made room for sufficient space for external consultants and suppliers to perform their daily business and work side by side with the main contractor. The goal of this practice is to ease communication and interaction in the project and improve collaborations. Due to the project's size, there are several consultants working full time on Team Bispevika, enabling a continuity when co-locating. If the resources of this practice is exploited fully in the generation of improved ideas, an assumed decrease in cost and time spent will be significant. Using co-location will also make the vision of Team Bispevika more visible to external project members. The practice has a symbolic as well as a physical value, as it emphasizes the wish and willingness to share resources and work together towards a mutual goal while creating a sense of ownership to the project for all members.

What are the experiences of these practices?

Regarding idea generation in procurement, all contributions are visibly anchored in the business model of each sub-contractor or collaborative partner, making it challenging to change mindset towards a mutual goal in some of the collaborations. The project team have taken several actions to create a collaborative and sharing culture where all stakeholders are meant and expected to contribute in creative problem-solving processes. Among the most visible actions are co-location of external design consultants and sub-contractors on site and feedback-surveys to measure the subjective effects and experiences of a session or meeting. Project managers believe the practice of co-location reflects a main value in the business of the main contractor: "It is through presence and leadership values are created". Furthermore, the procurement team looks toward the project's supply chain when using constraint-shattering practices, in order to angle known problems in a new way. Throughout the session with the waste recycling partner, the participants went through many suggestions and possible solutions to reach the goal of 99% recycled material, always returning to the supply chain when uncovering new angles.

The outcome of the idea generation phase is a list of registered ideas, ready to be further treated and evaluated. Within design, there exists an issue related to gathering the best ideas within a reasonable number to be brought into the next session. The practice used in idea generation appears a bit chaotic and random through observation of the roof design, making it hard to get an overall view of which ideas that are on the table at all times. The design manager facilitating the session worked hard to keep the process structured and clean without killing the creative environment, but was affected by the lack of experience towards the used practice. Observations, document studies and interviews amplify the impression of a struggle to register and document each idea as they progress throughout the session, and further to emphasize the importance of a proper registration of every idea as a foundation for further work. When participants are new to the practice, it seems easy to lose focus and start an immediate evaluation of a presented idea, as opposed to keep focus on preserving the creative aspect of each idea through documentation.

Example of a creative-collaborative solution in design: Bonus-oriented consultant contracts

In a traditional design process of a project, the work of external consultants is paid by the number of hours spent. This system provides few or none incentives for consultants to drive design and engineering solutions to help the contractor and client in reaching a goal of cost reduction. This often results in low productivity, poor progress and friction between consultant and contractor. The issue is addressed by Team Bispevika as they are working on a contract where consultants are stimulated to higher efficiency through gaining bonuses. The contract has a fixed maximum price to lock the time usage, in addition to a bonus which is released at a given sum of saved costs in the project. The bonuses are favorable as they make up between 50 and 100% of the contract sum. The risk of unpredicted costs is reduced through subsequent contract meetings and close dialogue on what the consultants perceive as the most prominent uncertainties in design, giving the contractor better control of deliveries, time use and quality in the design phase. Interviewees believe this practice to be a step towards an improved execution model in the consult industry, but points out that Team Bispevika have been struggling with objections towards this change among consultants. Another interviewee emphasizes the importance of building trust when establishing new

contract structures in a collaboration. People feel safe to use their talent, engagement, experience and competence when trust is present, leading to Team Bispevika being able to exploit a larger potential of each co-worker.

Example of a creative-collaborative solution in procurement: Renting equipment from Cramo

The rental industry have traditionally been benefiting from contractors lack of ability to take full advantage of the rental time, creating what they call *dead equipment* when the rented equipment is not in use at site. Dead equipment is not being worn out, but the contractor is still being charged for the rent. Occasionally, the project loses control of rented equipment, resulting in charges for the loss. Team Bispevika have in collaboration with Cramo, their partner on rental services, been developing solutions to this issue which still are attractive to Cramo. The contractor, AF Gruppen, offers Cramo space for their equipment in close proximity to the construction site, giving them the ability to plan their use of equipment closely on a daily basis. Cramo benefits from saving costs on external space rental and increases equipment control by having daily delivery of rented equipment. The contractor saves transportation costs related to rental services and buying lost equipment and reduces the amount of dead equipment. In addition, Team Bispevika creates a higher involvement for Cramo in the project by providing offices on site. Cramo contributed in several meetings in the observation period with the role of helping Team Bispevika to confirm that their collaborative strategy is working from a third-party perspective.

How can these practices be improved in future projects?

Observations and interviews show challenges related to problem-solving processes and working on development of new and innovative solutions in the design team, as the work is under a significant time-pressure as it is. If a natural development of innovative design solutions is going to be a reality in the future, there needs to be spent more resources on the development process. Design managers also request a clear timeline or equivalent tool to determine at which point it is necessary and useful to initiate creative collaborative practices in order to merge them with finalising of engineering and design for the production phase.

Managers within design confirms that it has been demanding and consuming to get consultants to agree to a new type of contract, presented under the research question above.

High speed and time pressure related to the design process makes it demanding to spend resources on developing creative collaborative practices, and the implementation of the current innovation practice needs adjustments in order to fit the daily workload within design. These adjustments should be able to bring out the potential of invested resources in the project. Through focusing on expected preparation from participants ahead of each session, the total creative collaborative contribution can increase, and quality of the ideas could elevate. In addition, challenging participants in expanding their creative space by using techniques for association and value chains should be included in sessions. This is achievable through proper training and knowledge of the method used to facilitate creative sessions, as presented in project documents on process optimization.

4.3 Idea assessment and evaluation

Which creative and collaborative practices are identified in the idea assessment and evaluation phase?

The development of winning teams

The project team have - through stating the practice in tendering documents - chose to focus on creating *winning teams*, aiming to increase the collaborative environment by using an open-minded strategy:

We will work together on a long-term perspective, and time spent on building trust is time well spent. (...) Respect for the skill of one another is another central premise, and not to mention getting acquainted as personal individuals, regardless of position

This is an important mindset to be maintained during the idea assessment and evaluation, as it forms the basis for trust when ideas are being compared to each other. Trust in the meaning of trusting that evaluation criteria will pay justice for your interests as a stakeholder, and that decision-makers will choose the final solution as fairly as possible based on the evaluation

criteria. Creating winning teams is particularly visible through the procurement strategy, confirmed by the interviewees.

Evaluation matrix

In design, using a matrix to evaluate and map ideas corresponding to chosen evaluation criterias creates a basis for the assessment and evaluation phase. A matrix is illustrative, easy to understand for all participants and makes it easy to get an overview of which ideas are favorable and preferred. The facilitator uses a prepared document for the matrix, and fills in evaluation criteria, how they are weighted and their score in collaboration with the group. The matrix is visible for all participants on the smartboard, and is one of the tools when comparing and valuing each idea.

Developing Key Performance Indicators

When deciding which criteria to use and where the focus of evaluation should be, Team Bispevika uses a project management tool called Key Performance Indicators (KPI's) to match possible solutions with the project's overall goal of performance. KPI's are used to measure performance and quality on different levels and areas of the project, in addition to guiding the focus of where and how to distribute future resources in the project. If KPI's are considered when evaluating ideas, it should be easier to value if the idea is working on a long term basis. The indicators are made within all project phases and guided by the improvement manager. Many of them are developed by the contractor in collaboration with the client and suppliers, and work thus as a practice for creative collaboration, as all parties need to share of their knowledge, experience and competence.

Back to the first phase: Using focus criteria

Throughout the sessions, the facilitator reminds the participants of the focus from the first phase, in order to keep track on what they're actually trying to solve or improve. The elements from the first phase are used to guide the development of evaluation criteria, while keeping in mind who the decision-makers are of a given issue or case. Knowing who makes the decision on the choice of final solution is important, as it affects how ideas are being evaluated.

Feedback surveys: monitoring performance

In addition to mentioned practices, the design team are using surveys after each ICE-meeting as performance measurement of how well the implemented practice is functioning in daily work. The feedback consists of giving scores and comments on elements in the session, and aims at giving the project management the possibility to adjust and change practices during the design process, and not only after the process is finalized.

What are the experiences of these practices?

The observation made from the meeting on logistics emphasized the attitude of winning teams, as all participants were aiming to help each other to solve the issues related to logistics by offering their expertise and sharing experience around the table rather than focusing on their limitations. It became clear that the mindset and vision of Team Bispevika was prominent throughout the meeting, and that the project team actively are using the opportunity to be a different project when pitching their vision to potential partners. The goal of this session seemed to be clarifying roles, responsibility and interfaces for logistics. One of the suppliers of digital tracking services talked of mindset, commitment and further development of innovative solutions as if he is a part of the project management of Team Bispevika. This attitude benefits both the creative collaboration and empowers the vision of Team Bispevika among external stakeholders in an effective matter. When discussing and evaluating possible solutions during these sessions in procurement, the facilitator encourages an open dialogue between stakeholders to unveil biases and avoid any part to feel bypassed. This *open book*-mindset is clearly appreciated by external stakeholders, as feedback is given during sessions and through positive reciprocity in a long term perspective.

During the observation of the roof construction-issue in design, the assessment and evaluation-session suffered from a significant change and low continuity in participants from the last session, leading to much time spent on explaining the generated ideas to the new participants and letting them get an overview of the proposed ideas. It also seemed as if some of the participants had poor knowledge of the drawings and design of the roof construction,

considering that they work as a fundament for evaluating potential solutions. Some ideas requires the owner of the idea to be present, as a consequence of poor registration in the last session. If this person is absent, the idea is put on hold and loses attention despite having a potential to be very clever, useful and creative to solving the issue.

This observation, supported by information from interviews, shows how close and careful guidance from the facilitator is necessary when sorting and categorizing generated ideas, as the practice is new to most stakeholders. When the goal - as stated in project documents - is to leverage the creative resources, the innovation manager creates strength and credibility towards the chosen practice by using methodology recovered from his own research. Making it easier to correct unwanted execution of the practices as well as increasing chances for replication in future projects are only two of the desired outcomes of using the framework of Lombardo (2014) in combination with engaging him as head of innovation and facilitator in many of the creative collaborative practices.

The outcome of these assessment and evaluation-sessions is a complete list of possible and realistic solutions ready to be implemented to the daily work of design or procurement. As described in the project documents on creative process optimization:

The list of ideas presents winning solution proposals from the evaluation and argue why they are chosen to be the best.

How can these practices be improved in future projects?

By creating an adequate time frame for sessions and limiting the number of participants, the idea assessment and evaluation phase can be improved in terms of quality and resource use. In addition, observations show that biased and manipulated idea evaluation in design can be avoided by creating and preparing neutral evaluation criterias ahead of evaluation. As of now, the criteria are given different weighting based on their importance and impact. Suggestions of using other lean-inspired evaluation methods such as *Choosing by advantage* and *A3 reports* have been mentioned through informal conversations with the project managers as improved practices for idea assessment and evaluation.

Interviewees point out that the effect of *winning teams* should at a given point in the project be measured as a guide of expected success by completion, requesting a measurement practice limited to the most interesting parameters for success.

Regarding the discontinuity of participants from session to session, the method for registration of ideas during the idea generation-phase should be improved by proper review of the method by the facilitator and emphasized focus on the importance of proper registration of ideas in addition to require proper preparation concerning knowledge of drawings and plans. Whether to encourage continuity of participants from one session to the other, the innovation manager believes that the relevance of involved personnel in each phase is different, that they play different roles, and should thus be different in each phase.

5. Discussion

In this chapter, presented findings from the literature study on existing research is seen in light of presented findings from the case study of Team Bispevika, with an aim of finding corresponding contexts, moments and elements of interest to the study's problem statement. In addition, the discussion is added personal opinions and views of the author. The chapter is structured opposite of the previous chapter, as it is divided by the research questions followed by the three phases in subsections.

The study being qualitative and not empirical could turn out to be a weakness if the vision of Team Bispevika ends up being a disaster or a "one hit wonder" in the end. As the approach to development and implementation of creative collaborative practices seems to be more practical than academic in Team Bispevika, isolation of parameters for performance measurement seems demanding without affection of other project elements. The advantage of studying a project like Team Bispevika is that the size, use of resources and involvement of the largest players in the industry gives the project an increased possibility to succeed and create a significant change than in a different, smaller project.

Given the definition of interaction from Sjøvold (2014), the term covers both specific actions to increase creativity and conceptual tools which demands a higher degree of collaboration, but also the ability to create a feeling of being a part of a team, a bigger unity. This corresponds well with findings of the case study, where both physical and symbolic instruments are used towards increased interaction in creative problem-solving processes. These instruments and practices are presented and discussed in the following subchapters through the research questions.

5.1 Which creative and collaborative practices are identified in the case study?

5.1.1 Focus

By involving external stakeholder as the client, suppliers and subcontractors when developing discipline strategies in procurement and design, Team Bispevika are creating innovation aimed towards customer satisfaction. When their business partners are innovating their daily work, just as the theory suggests, the ownership and commitment to the final solutions are increased. This also applies for the use of the Last Planner System and ICE-meetings in focus sessions of design, aiming to create a stronger sense of participation and belonging among external actors in the project. The concern when involving well-established lean tools such as LPS and ICE, is that the skill of planning eventually will exceed and kill the creative environment, as pointed out by several researchers in the theory section.

The approach of using an untraditional procurement process in the focus phase is so far leading to Team Bispevika getting the desired attention of interested and motivated suppliers and potential partners, while reducing the offers from unwanted and disreputable suppliers. Together with their partners, Team Bispevika are aiming at optimizing their processes to create competitive advantage in the industry, and require their partners to involve the highest level of management in the organisation to commit to the collaboration. As presented in the theory section, the goal of these actions is to secure success in incremental innovation and continuous improvement.

By using the procurement matrix as a illustration of a suppliers opportunity for improvement or need of change in the industry, Team Bispevika sells their vision of innovation as something attractive and desirable to the suppliers, and relates to the presented definition of innovation. Establishing this type of relation and interaction with external stakeholders - by increasing their wish to collaborate in the focus phase - facilitates the mediation of new

knowledge in existing routines at later, more demanding stages of the project. This corresponds well with presented research on trust in collaboration.

The role of the facilitator is crucial in the focus phase, as the collaboration is at its initiation, and there are many unsolved issues regarding group dynamics and roles between the actors. There is also a natural human resistance and scepticism involved towards change at the beginning of collaborations, entering something new and unknown. Presented theory on team-building confirms this trend. As Team Bispevika are spending significant time and energy on building trust and acknowledge, the external resistance appears real. Through the use of a facilitator and the method of We-engineering and creative processes as presented in theory, the project team is succeeding in creating a less hostile and more including environment for interaction.

5.1.2 Idea Generation

By focusing on bringing several minds to the table in idea generation sessions, the variations in background, culture and view of the project increases the level of creativity and diversity in solutions. This resonates well with presented research on creativity, and it gives the session credibility and depth as a new practice. When gathering stakeholders who traditionally never take part in this process and are unfamiliar with the usual approach to an issue, new angles to the issue are able to be presented and discussed when generating ideas, just as claimed in presented theory.

When using constraint-shattering practices in idea generation, the resemblance to the concept of *lateral thinking* as presented in the theory section is inevitable. Breaking up existing thinking patterns and approaches are useful when finding improved solutions, and have proven to be of use in the case study. Still, restructuring of an incorporated and well known mindset does not happen at once, and the project team are still facing challenges and inertia when implementing this method in their collaborations. Using specific methods to find new approaches corresponds well to the framework of creative processes presented in the theory.

The main critics directed towards creative sessions, interaction and the innovation strategy in Team Bispevika concerns the scenario of the vision to remain talk and ideas, and never actually have a significant impact on project management in the future. Two of the most visible creative collaborative practices that are brought to life in Team Bispevika are the use of Smartboards as a digital aid for interaction when working on creating teams, and the use of co-location. Smartboards makes visualisation of information easier, and contributes to increased trust between stakeholders by clearing potential misunderstandings. Co-location has a visible impact on the interaction, and serves both as a symbolic and physical practice. These two actions are important in the trust-building process when new knowledge is involved, as it normally is during idea generation sessions. Trust and presence are needed when coordination and communication is essential, confirmed by theory and by the two presented practices.

5.1.3 Idea Assessment and Evaluation

The core of creative collaborative practices in Team Bispevika surrounds the strategy of creating winning teams. The project team believes this practice to play a key role in developing improved solutions and managing creative problem-solving processes. As presented through research, there is a clear link between interaction and managing creativity in innovation. This is best done by knowledge sharing and openness, as Team Bispevika emphasizes through their practices in assessment and evaluation of ideas and in their vision in total. The concept of winning teams is prominent as a fundament or basis in nearby every practice mentioned in this thesis, and will thus be mentioned later in this chapter.

When finding specific, physical practices related to evaluation of ideas, the evaluation matrix poses as the most visible tool in Team Bispevika, especially when the ideas are numerous. The matrix is understandable, intuitive and relatable, and user friendly for a varied collaboration of session participants. The idea of adding numbers and summing up a score makes it easy to justify and agree on a final idea, and seems like an appealing evaluation practice to the many engineers in the collaboration.

One of the guiding practices for assessment and evaluation of ideas, is the development of Key Performance Indicators. The KPI's serve as a backbone for many decision-making situations, and makes it easier for stakeholders across disciplines to interact. The development of indicators can affect the organisational culture, which again will shape how we interact in the project as presented in the theory chapter. In addition, they serve as reminders of how to develop solutions which will increase the probability of project success. Another guide towards improved evaluation of ideas is found in the use of focus criteria from the initial phase, linked directly to presented research on creative processes.

5.2 What are the experiences of these practices?

5.2.1 Focus

The untraditional procurement process has provided Team Bispevika with productive and rewarding business relations, where the most prominent examples of success in this study are with Norsk Gjenvinning (waste recycling) and Cramo (rental services). When the project team interacts in these collaborations, the level of knowledge sharing and willingness to make it work towards improved solutions is highly present. The mindset of these companies - being similar to Team Bispevika - makes the creative collaborative practices frictionless and efficient. Along with a similar mindset comes the agreement of a mutual trust between partners, corresponding well with the presented theory on trust in collaborations. The results and benefits of this trust is presented through research as performing voluntary actions and increasing empowered relations. Still, it should be pointed out that Team Bispevika spends a significant amount of time on improving other relations, involving a greater deal of issues despite using the procurement process.

During a focus phase, a difference in the time frame of procurement and design is presented through findings. As presented in the theory, creativity under time pressure is no guarantee for success, and might even strangle the creative collaborative environment during a process. Thus, Team Bispevika is spending an appropriate amount of time on the focus phase in each project activity and getting their collaboration partners into the project's vision and mindset.

Practices like using digital tools and co-location to achieve this contributes well to the continuous learning process of creating teams, as pointed out in existing research.

When using structured and established practices like ICE-meetings and LPS for problem-solving processes in design, it seems demanding to change the culture and mindset from being based on control to rely on trust. In this process, theory points out the importance of openness and engagement from all parts, but especially from the main contractor and client as concept “owners”. If practices from procurement and design are compared, it seems as if the design team are using creative collaborative practices in a more structured and defined context with clearer frameworks and expectations. This could turn out to be more efficient in focus sessions, but develop on behalf of the creativity level. The total observed productivity of these sessions are conditioned by participants’ ability to interact, as presented in existing research on interaction.

The facilitator of focus session, whether it’s in design or procurement, is always stressing the participants of the session’s outcome or delivery, in order to move forward in the creative process. The delivery from the focus phase is presented in findings and corresponding well to the presented theory on creative processes: A list of focus criteria. This shows how focus practices are closely related to the theoretical framework of the innovation manager.

5.2.2 Idea Generation

Implementing new and unknown practices in idea generation is demanding, as it requires participants to let go of their usual control and expectations and take some risk. The experience from practices like constraint-shattering shows that some suppliers and subcontractors don’t feel safe enough to take these risks, which could be related to new methods and ways of collaborating or their position in the industry. This is rooted in existing research, where the definition of value creation is described as the difference between received values and costs. One could ask if the creative collaborative practices only are available to the “big guys” who have the possibility of spending resources on innovation development in order to join the journey of Team Bispevika.

The commitment of becoming a partner in Team Bispevika needs to exceed the potential moral hazard of the construction industry as presented in the theory chapter, and be founded in mutual reciprocity in order to work in a long term. The ability of identifying conflicts and potential friction in a collaboration are crucial elements when inviting participants of different backgrounds to idea generation sessions, confirmed by existing research on facilitation of creativity.

By evaluating the project's supply chains in the search for new angles and approaches to known issues, the creative process in idea generation is structured and with a clear goal, as compared to a traditional brainstorming. This method is used to a certain degree in Team Bispevika, but could be explored in a much more detailed matter in future projects. Presented theory claims that shattering truths like existing practices will spur more creativity, as a first step towards improved solutions.

In findings, registration and documentation of ideas in sessions is presented as demanding for participants who are unfamiliar with the method of creative processes. Presented theory claims that this potentially could lead to misunderstandings and friction during interaction, and later to bad handling of project resources.

Through the presented design innovation of bonus-oriented contracts for consultants, issues related to trust are prominent. Theory states that stakeholders often feel unsafe when changes are contractual, relating well to the resistance presented in findings. The new contract structure is first and foremost used as a reward when consultants are contributing to the end result of the project, similar to the definition of incentives in the presented research. Another innovation in procurement presented in findings, is the rental logistics with Cramo. The solution will, in theory, benefit both parts, and be a *process innovation* when using distinctions from the presented theory, directly linked to the supply chain of Team Bispevika. Research presents this level of interaction as *social facilitation*. This innovation, as opposed to the one presented from design, seems to meet at more positive attitude among all

stakeholders. The two innovations are presented as they represent two different outcomes of the creative collaborative practices, and are welcomed differently in the project.

The outcome of the idea generation session in findings corresponds well with the presented outcome or delivery in the theoretical framework: A list of generated ideas.

5.2.3 Idea Assessment and Evaluation

Taking in consideration that the vision of Team Bispevika is to execute future projects in the most optimal way, the mindset of lean construction is assumed to be present in some way through the innovation practices. Presented research claims that an organisation's confidence, attitude towards challenges, motivation and engagement are key factors when optimizing processes in lean. These factors are proven to be at the core of Team Bispevika, visible in different practices. Concerning the development of winning teams, the mentioned factors are prominent in idea assessment and evaluation sessions. As polarization of the participants are continuously changing, the level of interaction is affected and challenged. The theory defines this as group dynamics.

As presented in findings, the lack of continuity of participants between sessions is causing friction in the collaboration. One of the results are that new and bold ideas can give certain stakeholders a feeling of losing control when evaluating ideas, and thus feel a need to label and blame other stakeholders. Labelling each other will, as stated in the presented theory, prevent interaction in problem-solving processes and contribute to dysfunctional group dynamics.

Presented research emphasizes the importance of facilitating leadership in change management, pointing out the facilitator's ability to unite stakeholders across organisations and point of interest. This element plays an important role in assessment and evaluation sessions, as participants are likely to be biased of their preferred solution. The facilitator needs to be skilled and experienced with the method used, and keep track of the session's involvement regarding group dynamics and biased arguments. Together with the composition

of participants - as discussed under section 5.1.2 *Idea Generation* - the conditions for success when facilitating as presented in the theory section are highly applicable in Team Bispevika. The logical and reasonable outcome or delivery from the assessment and evaluation sessions, is a list of realistic and complete solutions, ready to be presented to the decision-makers. In this study, this corresponds well with the presented theoretical framework on creative processes.

5.3 How can these practices be improved in future projects?

5.3.1 Focus

All identified practices related to collaboration are aiming at building trust beyond personal relations. Existing research presents this as *system-based trust*, developed through a formalised system. This system can be seen as the set of practices identified in this study. In focus sessions, this applies to the facilitator when creating initial trust and credibility towards the creative processes and the future collaboration. This requires the facilitator to know the methodology and process well. In addition, future projects should emphasize the teaching and guidance of the creative process to all participants, in order to secure an optimal execution of practices in the focus phase.

As presented in findings and the case study in methodology, it is not necessarily novelty in the individual solutions which forms the development of Team Bispevika as a unique project, but all practices in total making the difference. In order for the practices to be successful, all stakeholders need to feel able to speak up when something is wrong or dangerous. Innovative solutions can never be implemented at the expense of safety or lack of trust among participants. This element should be addressed in a clearer way by Team Bispevika in the focus session, as the tendency of self-protection is still visible among some stakeholders. This element is referred to in the presented theory as *psychological safety*.

Presented theory on interaction addresses the need of classifying information in order to optimize information flow, as shown in figure 2.1. This relates closely to the feedback from

design managers on the need of a tool or timeline to determine when to initiate the creative process and development of solutions. The design team needs to know what they don't know, and when to start working on potential issues, and a specific design or layout for this kind of tool needs to be elaborated in collaboration with the innovation manager.

5.3.2 Idea Generation

As mentioned in findings, the design team is rather pressured on time limitations in their daily work of producing technical solutions. Theory on creativity emphasizes the fact that creativity can decrease under time pressure, and it is thus not favorable for the design team to go into a creative process if it is done on behalf of the quality and time limitations of their daily work. The creative solutions need to be both novel and appropriate, as defined in the presented theory. This should imply that creative processes shouldn't be carried out if not necessary, it depends on the context and given issue. One suggested improvement must be to assign more resources into the design team if creative processes should reach its potential in design.

It appears to be some friction and difficulties when implementing a new structure to consultant-contracts. Team Bispevika has to look for further incentives and use them to build further trust towards their new proposal in order to make this contract preferable, as presented in theory. One suggestion is to involve the client more when developing incentives and contract details.

The facilitation of idea generation sessions needs to be structured more, especially in procurement. At times, the current practice reminds too much of a traditional brainstorming, all though presented theory encourages facilitators to use other techniques to spur creativity. The facilitator needs to change style of the facilitation and adapt to variations in a creative session posed by varied participants, context and project phase. This is named *situation-based management* in the presented theory. In addition, association techniques and other aspiring methods can open the mind and increase creativity.

Through the presentation of findings in idea generation sessions, a lack of preparation among participants is discovered. By requiring preparation of meetings in order to make sessions more productive, interactive and efficient, the collaboration in idea generation will be improved. Existing research presents other solutions to increase creativity in idea generation sessions, such as taking short breaks and asking participants for their reactions and comments.

5.3.3 Idea Assessment and Evaluation

During evaluation of ideas, manipulation of scores in the evaluation matrix in order to make them fit certain stakeholders' interests or preferences is a weakness in the used method. One solution could be to present neutral evaluation criteria, use a standard set of criteria or emphasize the importance of evaluation neutrality to participants of the session. This issue has been discussed with several members of the project management, but a mutual opinion on best solution is not yet agreed upon. Another solution could be to use other methods from the lean universe, such as A3-report or Choosing by Advantage.

Evaluation is essential when monitoring innovative processes, as presented in theory. To measure the effect of implemented practices, Team Bispevika already uses surveys for ICE-meetings, presented in findings. To expand the number of measurement practices through several KPI's will give the project management a larger basis and fundament for replicating successful practices in the future. As most of the presented practices are based on human factors as interaction, collaboration and trust, well documented measurements are essential for the practice credibility in future implementation. Monitoring the process by performance measurement is also important when uncovering reasons why team fail, corresponding well to the presented theory on trust in collaboration.

The presented issue on lack of participant continuity between sessions needs to be addressed, either through demanding increased meeting-preparation or through improved registration and documentation of ideas from previous sessions by introducing new techniques. A third solution could be to extend the current timeframe of sessions. Theory on creativity states that optimal sessions require an adequate time frame and an appropriate number of participants.

6. Conclusion

To sum up the discussion of this study, the conclusion is divided into the three research questions in subchapters. Finally, a subchapter on recommendations and possible further research is presented. In order to create an organized overview of the results of this thesis, the process illustration based on figure 2.2: *Phases of the creative process* is further developed and presented in figure 6.1 as an illustration of key takeaways from the three phases.

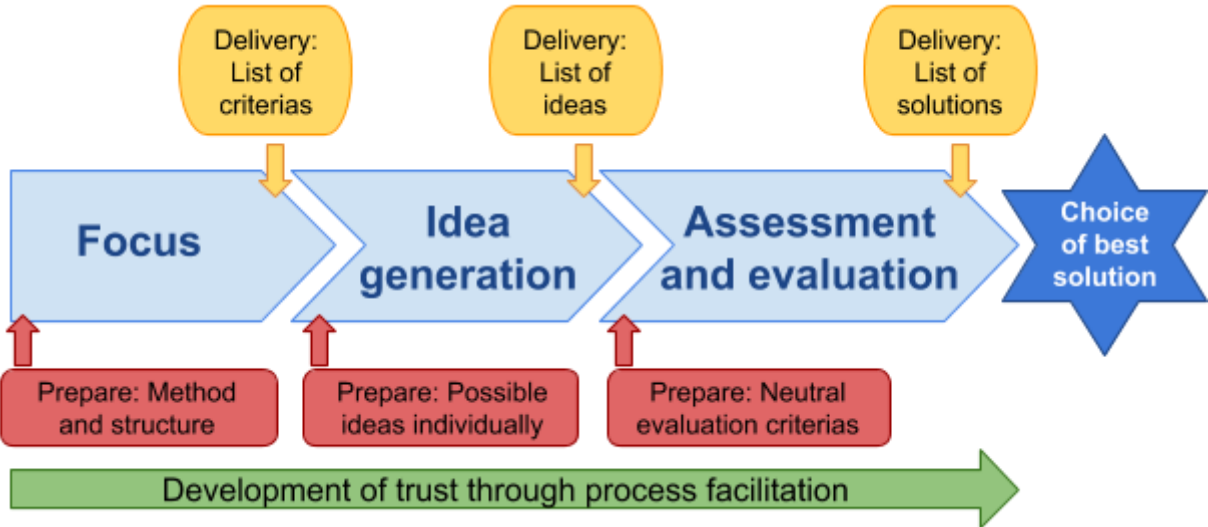


Figure 6.1: Creative collaborative practices in Team Bispevika, freely adapted from Lombardo(2014).

It should be noticed that figure 6.1 is a preliminary description on how creative collaborative practices are executed in the case study at a given point of the project, and is made by an external observateur. As shown in the figure, identified practices align well with the proposed structure of Lombardo (2014), but are added adjustments regarding preparations and outcomes from each phase in order to assure continuous development of trust and correct use of resources throughout the process. Another essential element to be paid attention is the importance of continuous process facilitation, as it is critical to the establishment of trust among internal and external stakeholders throughout all phases. As the facilitator focuses on creating awareness towards preparation and delivery of each session, the practice gains

ownership and trust from its users. The vision of Team Bispevika is not about creating innovations within a certain area or discipline, but rather about the total management system of implemented, improved solutions in all project phases, contributing to an innovative execution of future projects. This study is a documentation of what this kind of management system could consist of.

6.1 Which creative and collaborative practices are identified in the case study?

Through findings and discussion, the following creative collaborative practices are identified:

Focus phase

- Discipline Strategies: Finding the potential of development
- Procurement process: From subcontractor to partner
- Procurement matrix: Developing exclusivity
- ICE-meetings and Last Planner System
- Creative processes: Implementing the method with a facilitator

Idea Generation phase

- Several minds to increase creativity: Choosing and inviting participants
- Constraint-shattering practices
- Digital aid: Smartboards
- Co-location: Presence leading to increased interaction

Idea assessment and evaluation phase

- The development of winning teams
- Evaluation matrix
- Developing Key Performance Indicators
- Back to the first phase: Using focus criteria
- Feedback surveys: monitoring performance

6.2 What are the experiences of these practices?

Focus phase

Team Bispevika spends a significant amount of resources on building trust towards their mindset and vision among their potential business partners, but there are examples of certain partners where the collaboration is a success from the initial sessions. These collaborations contain a high degree of interaction and less friction between the parties. There is discovered a difference in the time use of different collaborations, and the project team is focused on adjusting their practices to a proper time frame depending on the issue to be solved and the context. They are using digital aids and co-location of their stakeholders to create efficient and productive collaborations. The level of structure in the sessions varies in Team Bispevika, whereas ICE-meetings and use of Last Planner in design are considered among the most structured sessions. With help and guidance from the facilitator, the focus session's purpose is always to create a list of focus criteria for further development of solutions.

Idea Generation phase

Building and developing system-based trust among stakeholders who are afraid of taking risks in new practices is an important focus in Team Bispevika, and the use of constraint-shattering practices is used tool to obtain trust. When inviting participants, Team Bispevika aims to gather stakeholders with varied backgrounds and views in order to increase creativity. When doing so, the importance of identifying conflicts and interaction is prominent. In order to structure the idea generation, the project team uses supply chains to find new angles to old issues. Idea registration and documentation has proven to be demanding for new participants, but is of high importance for phases that follow idea generation. Regarding solutions linked to contractual changes, findings shows how creation of trust is highly demanding. The outcome from this phase is naturally a list of ideas needing to be further treated.

Idea assessment and evaluation phase

When evaluating proposed and assessed solutions, the strategy of winning teams in Team Bispevika aids the process by focusing on key factors such as confidence, attitude, motivation

and engagement. A lack of continuity combined with poor registration of ideas from the previous phase causes friction in collaborations, leading to bad interaction and dysfunctional group dynamics. Managing these sessions through an evaluation matrix and other practices demands a skilled facilitator with high experience. The outcome of the evaluation session is a list of complete solutions ready to be chosen and implemented.

6.3 How can these practices be improved in future projects?

Focus phase

Emphasizing the importance of introducing new participants to the method used for creative processes by teaching and guidance is found crucial in order to secure an optimal process execution of focus sessions. In addition, the benefits of psychological safety in terms of creating an open and safe environment for collaboration should be further addressed by Team Bispevika. Findings present the need of developing a tool or a timeline for design managers in order to find out when creative processes should be initiated in the project.

Idea Generation phase

As the design team is highly time pressured in their daily work, this study suggests an increase of resources spent on creative processes in design if the concept of problem-solving processes should reach its potential. The discovered friction in contractual changes can be reduced by adding further incentives and increasing involvement of the client. In order to spur creativity in the idea generation phase, the use of situation-based management and structured creative methods needs to be increased. By requiring participants to prepare for sessions, the number of ideas and their quality can be increased.

Idea assessment and evaluation phase

The current practice of the evaluation matrix makes it easy to manipulate scores in order to arrive at a certain solution, thus the practice needs to be added methods for finding less biased and more neutral evaluation of ideas. If practices like development of winning teams are brought forward to future projects, they need a performance measurement tool to confirm validity as a successful practice. The addressed issue on lack of continuity between sessions

has several possible solutions, where the most prominent are focusing on creating an adequate time frame and find an appropriate number of participants for assessment and evaluation sessions.

6.4 Recommendations and further work

Identified practices - presented in subchapter *6.1 Which creative and collaborative practices are identified in the case study?* - are just steps towards trying to optimize the management and execution of future projects. Team Bispevika are working on a new project management model which is based on several creative collaborative practices. The big question will be how this new model is made alive in future projects with less room for maneuver and experimental use of practices. It may be a more appropriate approach to imagine the project management model as a toolbox rather than a recipe of project execution. The mindset of adapting to change is considered to be of importance in the future of construction projects. As presented in the theory section, strategic change in the form of innovation happens through interplay between exploration at the project level and using existing knowledge at the organisational level. This transition between levels decreases in size as new technology is implemented in the future.

As the study is narrowed down to present the view of the main contractor, it would be interesting to take a closer look at how practices evolving creative processes are perceived by different sub-contractors and suppliers as well as the external design consultants to get a larger perspective. To expand the number of project activities from procurement and design to also concern property development, production and sales could result in a broader understanding on the execution of creative practices, as several project activities are intertwined in daily work. By following the project through several phases over time, more precise observations on creative practices could be obtained, as opposed to the current timeframe. Finally, it would be interesting to take a comparative look at existing decision-making practices in the light of a lean-influenced method like choosing by advantages.

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Part 2: Conference Paper

INNOVATION WITH CREATIVE COLLABORATIVE PRACTICES

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ABSTRACT

Lean is about solving problems related to reducing waste while maximizing value. The project team of the construction project Bispevika in Norway is working on how creative collaborative practices can be performed in problem-solving processes. This paper considers following research questions: Which creative collaborative practices are implemented in Bispevika? What are the experiences of these practices? How to improve these practices in future projects? In addition to observations on site within design and procurement, interviews of the project managers as well as a document study based on received project material is carried out to identify creative collaborative practices. A literature study on trust in collaboration, creative processes and creativity and innovation in lean is also presented. The engagement of an innovation manager as a facilitator combined with his own research on creative practices contributes to the overall vision of being an innovative project. The executed method is based on a four-phased process leading to the choice of best solution to a case. By using a strategy of creating winning teams and focusing on trust in these collaborations, the project is aiming at innovating the way projects are managed in the future. Identified creative collaborative practices with proposed adjustments are presented.

KEYWORDS

Creativity, collaboration, innovation, trust, problem-solving processes

INTRODUCTION

The goal of planning and executing projects while minimizing waste and maximising value comes from the mindset of lean construction (Ballard and Howell, 2003), and is increasingly implemented in a conservative and traditionally bounded industry, as construction is perceived today. Simultaneously, a complex project design demands uniqueness and higher level of specialization (Lombardo, 2014), yielding a need for interaction and involvement of multidisciplinary stakeholders on another level than before (Bygballe and Swärd, 2014). Problem-solving processes are often carried out as mapping of previous solutions and experiences, moving along patterns of existing knowledge (de Bono, 2009), thus limiting the number of possibilities. By using a structured and conscious approach towards creative processes leading to innovative and improved solutions (Amabile et al., 2002), future projects are able to combine the mindset of lean with the demand for complexity and uniqueness. Implementing problem-solving practices of this kind requires close facilitation (Lombardo, 2014; Amabile and Khaire, 2008) with internal as well as external, multidisciplinary

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stakeholders, and should aim at crossing these established patterns in problem-solving processes. Thus, creative practices demands and yields collaboration, as a partnering relationship requires interaction to reach its full potential (Bygballe et al., 2010). In total, a new approach to problem-solving practices should involve the two elements creativity and collaboration, while emphasizing the development of innovative solutions.

This study aims to discover how creative cooperative practices are used in production of innovative solutions in a multidisciplinary engineering project. More specifically, to identify:

1. Creative collaborative practices concerning procurement and design in a case study,
2. The experiences of these practices from the main contractor's point of view, and
3. The potential for improvement of these practices for future projects.

Regarding limitations, the first step has been to narrow the scope to concern mainly two project activities, whereas procurement and design has been chosen as the most relevant activities. Further, the study is restricted to the view of the main contractor. The research period is limited to a timeframe of six months, which could have an impact on the results regarding the current project phase. The time limitation also makes the follow-up of a specific case through its respective phases of the creative process constraining. The solution has thus been to collect a representative number of observations from each phase, not taking the continuity of each case into consideration.

THEORETICAL FRAMEWORK

Based on the topics presented in the introduction, it appears interesting to take a closer look at research treating topics related to the creation of trust in collaboration, as it is considered a critical element in obtaining a creative collaboration (Swärd, 2016). How creativity and innovation are mediated with the concept of a lean mindset raises some controversies to be treated further on in this chapter. Other topics needing to be explored are creativity by its definition and creative processes in problem solving tasks. The aim of this chapter is primarily to map how these topics have been treated and explored in existing research and secondly to identify lack of knowledge about how mentioned topics interact with and are dependent of each other (Blumberg et al., 2005).

TRUST IN COLLABORATION

Several researchers within creativity and innovation are pointing towards the need for trust, affect and reciprocity as a prerequisite when developing a problem-solving and creative environment (Bygballe et al., 2010; Swärd, 2016). Affect and creativity are linked by positive affect facilitating cognitive variations (Amabile et al., 2005). These variations yield new associations which finally leads to creativity. Reciprocity is defined as a social norm in the shape of an expected repayment for an action between two parties, a behaviour which may lead to increased trust (Swärd, 2016). The response time of a reciprocity increases with the significance or investment of the reciprocity, and will also contribute to a larger sense of trust in a long-term relation. In order to optimize the use of reciprocity and then the development of trust, the necessity of psychological safety in the collaboration between multidisciplinary actors at a workplace or a project needs to be announced and established (Edmondson, 2012). Psychological safety is critical when establishing working teams beyond a business relation. This must imply that when conditions for trust are present, the project is more likely to succeed in implementing change.

CREATIVITY AND INNOVATION IN LEAN

Creativity has been looked upon as an individual and abstract skill, with low ability of measuring effect or size (Klausen, 2010; Kaufmann, 2003). Among other misconceptions are the idea of creativity only being performed as an activity of brainstorming (de Bono, 1995) and that the best creative solutions are achieved under time pressure (Amabile et al., 2002). There are several challenges related to the definition of creativity, and Klausen (2010) reminds us to never confuse novelty alone for being creative. As problem-solving processes traditionally consist of moving along patterns elaborated from previous experiences and existing knowledge, crossing across these patterns can enable serious creativity in the form of *lateral thinking* (de Bono, 1995).

As implementing change in the construction sector is dependent on incorporating new knowledge into existing routines (Bygballe and Swärd, 2014), there is reason to believe that relation and interaction with external stakeholders are critical elements for success in concepts like lean construction. The motivation for change needs to come from a belief of increased competitiveness in the market (Bygballe and Swärd, 2014). In other words believing that change could make the organisation more profitable and attractive to other stakeholders. By bringing creativity and innovation into the concept of lean, an organisation's confidence, attitude towards problems, motivation and engagement are among the requirements for optimal execution (Johnstone et al., 2011). The concept of lean construction emphasizes resource-use and process-flow in optimisation, while creativity is proven to reach its potential when time is an adequate resource (Amabile et al., 2002). Thus, there is a controversial balance to be upheld in uniting creative practices with a lean mindset. One concern is related to workers developing an excellent planning skill while reducing their creative skill, towards neglecting or strangling innovative, creative work (Bygballe and Swärd, 2014). Organisational practices mediate the link between innovation and knowledge-sharing by collaboration and interaction (Foss et al., 2011), and interaction should thus be taken into account when managing creativity and innovation in a lean-environment. One solution must be to facilitate consciousness towards the definition of creativity, and what creative practices are intended to achieve.

CREATIVE PROCESSES

As a possible solution to the challenges regarding problem solving processes in optimization of innovative solutions, lateral thinking should be enabled into practices suited for a given project. A possible practice for creative processes, adjusted to the complexity of multi-disciplinary project teams, is presented in the thesis of Lombardo (2014). The practice consists of four phases; focus, idea generation, assessment and evaluation, and finally choice of solution. Each phase follow a certain layout regarding how they should be carried out. The method emphasizes establishment of a focus rather than a problem, and the use of this as a guide towards creating ideas and further evaluating and choosing possible solutions. The method clearly describes how to facilitate and explore the potential of creative sessions, as well as how ideas and potential solutions should be documented, assessed and evaluated in order to be implemented and executed in real life. Lombardo (2014) also includes experience-based do's and don't's along with every phase, preparing the reader for potential pitfalls in a creative session. It is particularly the idea generation-phase which demands creativity, as the creative interaction between the stakeholders is put at the core of the problem-solving process. The practice aims at leveraging the creative resources by stimulating interaction. Within each phase, a number of actions are performed in order to provoke creativity, requiring

participants to know the usual approach to a problem in order to be appropriate. Absence of previous knowledge – ignorance - is known to be a potential source to creativity (de Bono, 1995), making the practice unnecessary. This type of generation or exploration of creativity requires having an adequate time frame while avoiding an excessive number of participants in the collaboration (Amabile et al., 2002).

METHODOLOGY

The chosen research methods are based on practice as unit of analysis, consisting of data collaboration and data analysis. Initially, a literature study has been performed in order to map current research on the topic field. Data collaboration in the case study is carried out through initial, qualitative interviews in addition to document studies and observations.

Findings from the literature study are presented in the theoretical framework as the current state of research related to the topic of the study (Blumberg et al., 2005). Recommendations from supervisors and search-engines online are the main source to the findings. Chosen literature spans from published conference articles and journal articles to books and theses.

PRACTICE AS UNIT OF ANALYSIS: A CASE STUDY OF TEAM BISPEVIKA

The context for this research is the case of Team Bispevika in Oslo, Norway, a project aiming to contribute to an innovative change of project management in the industry. In Norway, the interest for continuous improvement and Lean Construction is relatively high (Engebø et al., 2017). All interviewees, documents and observations are related to this case. The project is the first in a long-term goal of the main contractor to use innovation in order to increase the added project value by 40%. The plan is to reduce costs by implementing innovative solutions and increasing quality for the end-users. The ongoing project has a cost of MNOK 1109, consisting of constructing 11 buildings over 48.000 m² at the old harbour of Oslo. Areas of innovation spans from partnering with contractors to contract strategies, and the vision affects all aspects of the project. Towards innovation, the project uses creative processes in problem solving incidents. These practices are prominent within procurement and design as chosen areas of this study, but also in production and end sale. The project management has its main workforce from one of the largest contractors in Norway, and the client is heavily involved in project execution.

INTERVIEWS

Interviews are carried out with a prepared interview guide and semi-structured to allow the interviewer to angle the questions and topics toward the relevance based on answers given by the interviewee (Yin, 2014). There are five interviews in total, and all interviewees hold key roles in the project management. The intention of the interviews has been to unveil the mindset of the project, and how they work differently than traditional construction projects. There have been challenges concerning the coordination of information given in the interviews, as the interviewees perceive different perspectives of the project as important.

DOCUMENT STUDY

There are mainly used three project documents to examine the intentional purpose and framework for the practices, contributing and supporting collected data from interviews and observations. All documents are received from the project management on request. The

document related to the tender stage is considered a guideline for every aspect of the project, and there is thus only the chapter concerning innovation which is taken in closer consideration. The document related to creative processes in design is a guideline on how sessions in the optimization process should be carried out. Representing procurement, the chosen document presents an example of how strategies for each discipline are developed and documented for further collaboration.

OBSERVATIONS

Observations consisted of participation in sessions related to procurement and design with the innovation manager operating as the session's facilitator. When planning the observations, the method of Creswell (2012) was used with the intention to follow meetings in procurement and design as a direct link to discover how practice is performed in everyday project life. Published material from the project's innovation manager was used to conduct each meeting, and recording of the observations were made through taking minutes. The phase concerning choice of final solution has been left out, as it is considered to be of less interest to the research questions. A matrix of the observations made within each case, activity and process phase is presented in table 1. The limited time frame made it demanding to follow each case through each process phase, thus a representative number from each phase is chosen.

Table 1: Observations of the case study

| Topic for innovation - Activity | Focus | Idea generation | Evaluation & assessment |
|---|-------|-----------------|-------------------------|
| <i>Waste recycling - Procurement</i> | X | X | |
| <i>Roof construction - Design</i> | | X | X |
| <i>Concrete: Con Form - Procurement</i> | X | X | |
| <i>Discipline Strategies - Procurement & Design</i> | X | | |
| <i>Sunblind - Design</i> | | | X |
| <i>Timber - Procurement</i> | X | | |
| <i>Logistics - Procurement</i> | | | X |

FINDINGS AND DISCUSSION

This section presents both findings and discussion of each research question under the process phases, with an aim of identifying characteristics and experiences of creative, collaborative practices in Team Bispevika and how they can be improved, as presented by the research questions. The guide for observational studies is based on the method of Lombardo (2014), elaborated in the theory section. A simplified presentation of the phases are shown in figure 1.

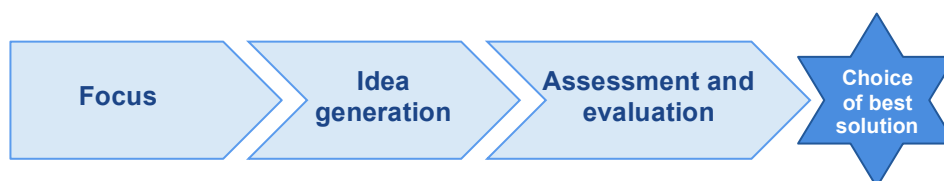


Figure 1: The phases in a creative process, freely based on Lombardo(2014).

FOCUS

Which creative and collaborative practices are identified in the focus phase?

To map the potential of each discipline within the project, the procurement team is developing different strategies for each project area in documents called *Discipline Strategies*, presenting intention and goal of each collaboration and how to work together towards improved solutions. Through process facilitation and method awareness, the project team aims at meeting increasing project complexity and client demands. This is emphasized through spending resources on engaging qualified personnel such as an innovation manager and an improvement manager to follow up creative processes, collaborative challenges and innovation management. By having these key roles on site as a part of the project management team, the chances increases of creating solutions that are tighter connected with market needs and development in a long-term perspective. Throughout the focus sessions, the innovation manager reminds the participants of the session's intention and desired outcome. This strategy is confirmed through the project documents, aiming to contribute in implementation of the creative process in daily problem-solving work:

The Innovation Manager(IM) is responsible for execution and facilitation of the project's innovation processes. IM will also plan and execute collaborative processes.

What are the experiences of these practices?

The interviews and observations unveil variation from procurement to design regarding the time frame of the focus phase, due to the current project phase and nature of the activity. Findings show that the procurement team spends more time on establishing trust and knowledge towards the project's mindset, while the pressured time-limitation in the design team rather makes the collaboration about "getting the job done". This was especially made clear through focus sessions with the concrete supplier and waste recycling, where the facilitator needed to postpone the delivery of focus criteria to the later meetings, and rather spend time on getting the new partners into the innovative mindset of the project. The final outcome of the focus phase for the two collaborations were the highly ambitious goals of 33% increased productivity for the concrete work compared to similar projects, and 99% recycled material for waste management. The observations of design are done on a more detailed level than procurement, which could explain the difference in time use. As a part of the process towards change of problem-solving practices, creating competitiveness in the market is used as a motivation for development of these practices. The project team uses a visual presentation of their long-term goal of cost reduction and quality increase throughout the focus sessions. The main delivery of the phase is a list of criteria corresponding to the problem-solving issue, mentioned and confirmed orally in sessions as well as written in project documents.

How can these practices be improved in future projects?

A change of attitude and perception takes time, and members of Team Bispevika work every day to change the stakeholders' conception of creativity, collaboration and innovation through their vision. As one of the interviewees pointed out:

None of the elements we use here in Team Bispevika are totally new and never tried out before, but the framework around how we do business gives a new perspective on how projects can be managed and executed in the future.

Preparation of the focus phase should consist of creating knowledge and awareness towards the method itself, as it takes time and effort to realize that creativity not necessarily equals

novelty. Interviewees also request a tool to determine deadlines and timeframes related to the creative collaborative practices, and propose a flowchart or timeline as a possible future solution. The tool should cover all project activities, as they are closely intertwined when planning each part and process. In addition, the identification of stakeholders and their interests in the current problem or challenge could be closer examined in the focus phase.

IDEA GENERATION

Which creative and collaborative practices are identified in the idea generation phase?

The traditionally presumed way of executing a creative phase solemnly through a brainstorm determined by individual skills as presented in the theoretical framework, is clearly disproved through observations and interviews of the case study. The project team invites a varied and representative selection of stakeholders to join and collaborate in these sessions, as they believe that different minds spur several associations, yielding more creativity and finally better ideas. Highly skilled and experienced consultants in design emphasizes the need of using constraint-shattering practices, aiming to find new angles to old challenges. This is connected to the concept of crossing established patterns in lateral thinking.

What are the experiences of these practices?

Observations and interviews of sessions in design amplify the impression of a struggle to document each idea as they progress throughout the session. When participants are new to the practice, it seems easy to lose focus and start an immediate evaluation of a presented idea, as opposed to keep focus on preserving the creative aspect of each idea through registration. In the session of designing new solutions to a roof construction, the team used a smart board to register all ideas digital, consecutively and in an organised matter. Regarding idea generation in procurement, all contributions are visibly anchored in the business model of each sub-contractor or collaborative partner. The project team have taken several actions to create a sharing culture where all stakeholders are meant and expected to contribute in creative problem-solving processes. Among the most visible actions are co-location of external design consultants and sub-contractors on site and feedback-surveys to measure the subjective effects and experiences of a session or meeting. These actions aim at creating psychological safety for each and every participant and contribute to a vision of every stakeholder pulling in the same direction. The delivery of the idea generation phase is a list of registered ideas, ready to be further treated and evaluated.

How can these practices be improved in future projects?

High speed and time pressure related to the design process makes it demanding to spend resources on developing creative collaborative practices, and the implementation of the current innovation practice needs adjustments in order to fit the daily workload within design. As the current time frame is limited, new solutions need to justify providing time on implementation. These adjustments should be able to bring out the potential of invested resources in the project and not only become time-consuming. Through focusing on expected preparation from participants ahead of each session, the total creative collaborative contribution can increase, and quality of the ideas could elevate. In addition, challenging participants in expanding their creative space by using techniques for association and value chains should be included in sessions.

IDEA ASSESSMENT AND EVALUATION

Which creative and collaborative practices are identified in the idea assessment and evaluation phase?

The project team have - through stating the practice in tendering documents - chose to focus on creating *winning teams*, aiming to increase the collaborative environment by using an open-minded strategy:

We will work together on a long-term perspective, and time spent on building trust is time well spent. (...) Respect for the skill of one another is another central premise, and not to mention getting acquainted as personal individuals, regardless of position.

This relates to the creation of psychological safety (Edmondson, 2012) as well as affect (Amabile et al., 2002). The project team works from a mindset that implies the following:

I know you → We have an established relatedness → I feel safe → I see more solutions

This implication is particularly visible through the procurement strategy, confirmed by the interviewees. In design, using a matrix to evaluate and map ideas according to chosen evaluation criterias creates a basis for the assessment and evaluation phase, a practice relating directly to the findings of Lombardo (2014).

What are the experiences of these practices?

When discussing and evaluating possible solutions during these sessions, the facilitator encourages an open dialogue between stakeholders to unveil biases and avoid anyone feeling bypassed. This mindset is clearly appreciated by external stakeholders, as feedback is given during sessions and through positive reciprocity in a long-term perspective. Reciprocity is shown through taking risk related to resource use as economical contribution, time spent on development of new, collaborative solutions and follow-ups of the chosen practices. Observations and interviews shows how close and careful guidance from the facilitator is necessary when sorting and categorizing generated ideas, as the practice is new to most stakeholders. During the evaluation phase, the facilitator must keep in mind the existing solution as a full-fledged alternative to consider, in order for the new ideas to be realistic alternatives. When the goal – as stated in project documents - is to leverage the creative resources, the innovation manager creates strength and credibility towards the chosen practice by using methodology recovered from his own research. Making it easier to correct unwanted execution of the practices as well as increasing chances for replication in future projects are desired results of using the framework of Lombardo (2014) in combination with engaging him as head of innovation and facilitator. The session's delivery is a complete list of possible and realistic solutions ready to be implemented to the daily work of design or procurement.

How can these practices be improved in future projects?

By creating an adequate time frame and limiting the number of participants as described in the theory section, the idea assessment and evaluation phase improves in terms of quality and resource use. In addition, observations show that biased and manipulated idea evaluation in design can be avoided by creating and preparing relevant evaluation criteria ahead of evaluation, in order to reveal the difference in advantages of alternatives. Interviewees point out that the effect of *winning teams* should at a given point in the project be measured as a guide of expected success by completion with regard to collaboration. They request a measurement practice limited to the most interesting parametres for success in a multidisciplinary engineering team.

SUMMING UP AND FURTHER RESEARCH

A proposed description of identified collaborative creative practices in production of innovative solutions in a multidisciplinary engineering project are presented in figure 2, based on key takeaways from findings and discussion. Identified practices align well with the proposed structure of Lombardo (2014), but are added adjustments regarding preparations and outcomes from each phase in order to assure continuous development of trust and increased use of creative resources throughout the process. Team Bispevika should pay attention to the importance of continuous process facilitation, as it is critical to the establishment of trust among internal and external stakeholders. As the facilitator focuses on creating awareness towards preparation and delivery of each session, the practice gains ownership and trust from participants. It should be noticed that the presented figure is a preliminary description on how creative collaborative practices are executed in the case study at a given point of the project, made by an external observer. In other words, the practices are not complete or finalized at this point. To summarize, the identified practices which will continue to be developed into the future, could create a form of standardization and process flow, leading to a new way of executing problem-solving processes in multi-disciplinary engineering projects. Despite a traditionally conservative view on the concept of creativity, these practices can - by focusing on collaboration in the creative process - contribute to the lean concept and improve the whole construction industry in a long-term perspective.

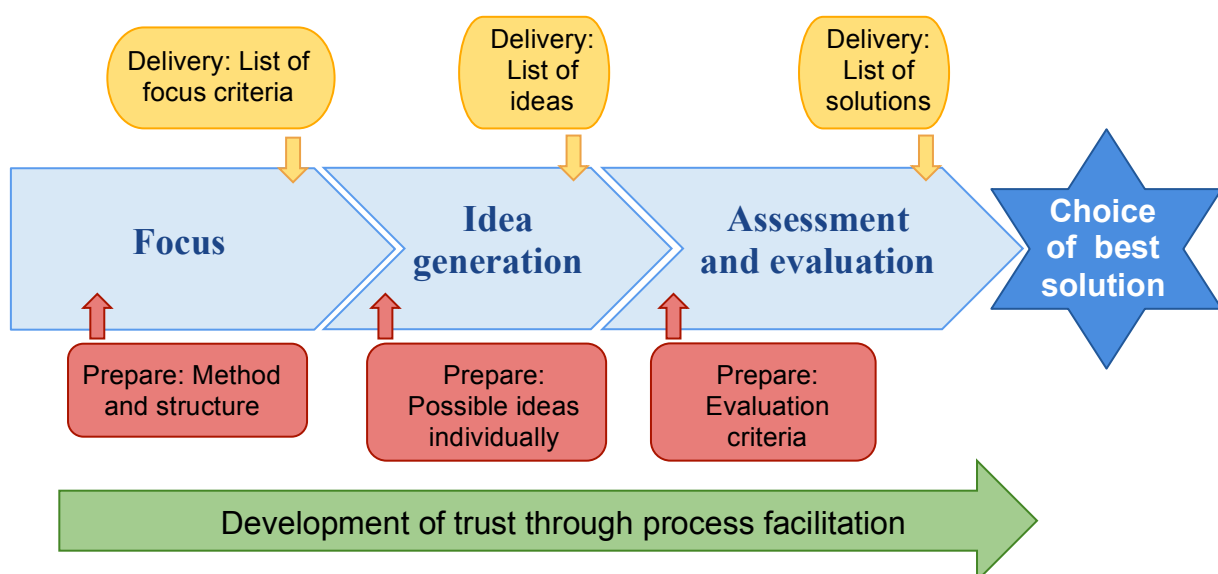


Figure 2: Identified creative collaborative practices in Team Bispevika, freely adapted from Lombardo (2014).

For future research, it would be interesting to take a closer look at how practices evolving creative processes are perceived by different sub-contractors and suppliers as well as the external design consultants to get a larger perspective. To expand the number of project activities from procurement and design to also concern property development, production and sales could result in a broader understanding of practices, as several project activities are intertwined in the daily work. To follow the project through several phases over time would also give more precise observations. Finally, it would be interesting to take a comparative look at existing decision-making practices in the light of a lean-influenced method like choosing by advantages (Arroyo et al, 2016).

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Part 3: Appendix

Appendix 1: Interview guide

Appendix 1: Interview Guide

Økt samhandling i innovasjonsarbeid i Team Bispevika

Bakgrunn for intervju

Jeg er student ved institutt for bygg- og miljøteknikk ved NTNU i Trondheim, og skal våren 2018 skrive masteroppgave med fordypning i prosjektledelse. I oppgaven skal Bispevika B2 brukes som case for å se på hvordan samhandling påvirker innovasjonsarbeidet i et byggeprosjekt. Som en forberedelse til dette skriver jeg i høst en prosjektoppgave på samme tema der jeg bruker intervju som en av forskningsmetodene. Under dette temaet vil det være naturlig med forskningsspørsmål som:

- Hvilke verktøy og tiltak for samhandling er hensiktsmessige å bruke i et byggeprosjekt av denne størrelsen?
- Hvordan påvirker verktøyene og tiltakene den daglige driften av byggeplassen?
- Hvordan kan verktøyene og tiltakene forbedres til senere prosjekter?

I prosjektoppgaven skal jeg gjennom intervjuene forsøke å kartlegge hvordan og til hvilken grad forskjellige tiltak og verktøy er implementert i fire av prosjektets aktiviteter:

- Innkjøp og kontrahering
- Utvikling og salg
- Prosjektering
- Prosjektstyring

Gjennom intervjuene skal det hentes informasjon fra alle nevnte aktiviteter. Det er derfor hensiktsmessig å intervjuer den respektive fra AF Gruppen som er ansvarlig for hver aktivitet. Intervjuene vil bli transkribert og referat vil bli sendt til intervjuobjektet i etterkant.

Både prosjekt- og masteroppgaven vil bli skrevet med NTNU som oppdragsgiver, men gjennom sommerjobb i AF Gruppen har jeg fått kjennskap til konsernet og dets virksomhet. Jeg har også takket ja til fast stilling som prosjektingeniør i AF Bygg Oslo fra høsten 2018.

Oppgaven gjennomføres med veiledning fra førsteamanuensis Ola Lædre ved NTNU, dr.ing. Pål Egil Rønn og i samarbeid med innovasjonsleder i AF Gruppen, Sebastiano Lombardo.

Jeg kommer nedover til Oslo for å intervjuer onsdag 8. oktober, og er tilgjengelig for intervju når som helst torsdag 9. og fredag 10. november. Si gjerne ifra ved å svare meg på denne mailen om når det kan passe at vi tar en samtale, og les gjerne gjennom spørsmålene på forhånd. Dersom ingen av dagene passer, er det mulighet for å ta intervjuet på telefon. Jeg setter stor pris på all hjelp og informasjon jeg kan få om prosjektet, og takker på forhånd for tiden deres.

mvh Ingrid Løvendahl Berg

980 49 668

ingridberg92@gmail.com

Intervjuspørsmål

Spørsmålene besvares ut i fra den aktiviteten som intervjuobjektet er ansvarlig for.

1. Hvilke verktøy og tiltak for samhandling er hensiktsmessige å bruke i et byggeprosjekt av denne størrelsen?

- Hvordan har dere i din aktivitet identifisert behovet for innovasjon? (tidspunkt, omfang i tid, hvem var med)
- Hvordan har utviklingen av verktøy og tiltak for innovasjon foregått i aktiviteten?
- Hvem var med i utviklingen av et nytt verktøy eller tiltak?
- Hvem har evaluert de verktøyene og tiltakene som har vært aktuelle å bruke?
- Hvem har valgt ut hvilke verktøyene og tiltakene som skal iverksettes?
- Er det fokusert på forbedringer eller innovative løsninger i utviklingen av verktøy og tiltak?
- Samlet sett: Hvilke tiltak er gjort og hvilke verktøy er benyttet i aktiviteten for å fremme innovasjon i B2?

2. Hvordan påvirker verktøyene og tiltakene den daglige driften av byggeplassen?

- Hvor kommer endringene som fører med verktøyene og tiltakene? Er det en innovasjon i prosjektets prosess eller produkt?
- Hvem er ansvarlig for de valgte verktøyene og tiltakene i den daglige driften?
- Hva har dere gjort i aktiviteten for å skape samhandling mellom prosjektets aktører?
- Hva er de forventede fordelene ved de valgte verktøyene og tiltakene?
- Hva er utfordringene ved de valgte verktøyene og tiltakene?
- Har du noen anbefalinger til hvem jeg kan snakke med om dette i senere intervju?

3. Hvordan kan verktøyene og tiltakene forbedres til senere prosjekter?

- Hvordan dokumenteres/oppdateres progresjonen av det som er iverksatt?
- Hvilke forum har prosjektets deltakere for å komme med tilbakemeldinger på verktøy og tiltak?
- Finnes det deler av prosessen med å utvikle verktøy og tiltak for B2 som kan være interessant å videreføre til senere prosjekt?
- Hvordan finner dere ut av hvilke verktøy og tiltak som skal videreføres til senere prosjekt?