Challenges in collaboration and communication between different professions within the built environment and construction industry

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ABSTRACT

This study investigates the communication between the architect, project manager, planner and construction engineer, and how their professional roles affect their collaboration, dialogue and working process. The aim of the study is to give an insight into some of the common challenges, and an understanding of the factors that contribute to both miscommunications as well as functioning collaborations between these professions.

Construction projects within the built environment get more and more complex with an increased outsourcing of competences, which requires better and more efficient collaboration among the involved professions. These issues have through spread knowledge become a highlighted subject in today’s debates. Published articles and books argue for a more collaborative approach, effective communication and a better understanding for other professions in the field and their work.

The study focuses on a particular phase during the construction process, which is part of the more comprehensive and extended planning process. This is according to the Swedish system called projektering, but will be referred to as the pre-construction phase in this study.

A literature review and qualitative interviews has been used as primary methods. Interviewing selected professions of certain interest has been the main method for collecting data. The selection of professions is based on their different perspectives, tasks and responsibilities, for example whether they work with soft or hard values.

The literature review is based on theories linked to communication in the construction industry, planning and project management. Literature written by Dainty et al., Innes & Booher and Hallin & Karrbom represent the main references for this study. The selected authors discuss characteristics and challenges in the construction industry from a communication perspective (Dainty et al.), collaboration and planning theory (Innes & Booher) and how to achieve successful project management and efficient communication (Hallin & Karrbom).

The responses from the interviews indicate that some professions usually work and understand each other better than others and all interviewees state the importance of having and working towards a shared vision. Other findings indicated aspects such as educational issues, seclusion, jargons, failed communication and lack of motivation and willingness to collaborate. Most of the findings correspond to discussions brought up by the authors. Results show that the awareness exists in both theory and practice but the complexity and uniqueness of the projects make it difficult to overcome barriers, challenges and to find applicable and formulate strategies and designs that successfully support all projects. Projects within the built environment- and construction industry will probably always stay complex with its unique and context specific networks of clients, stakeholders, professions and additional needed competences. Increased knowledge about other professions’ roles, the importance of open dialogues and positive outcomes of collaboration at an educational stage could result in more efficient processes with less conflicts and misunderstandings.

Keywords: Collaboration, Communication in construction, project communication, project communication planning, collaborative planning, profession groups and roles,
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1. INTRODUCTION

1.1 AIM AND OBJECTIVES
The aim of this study is to investigate and understand the communication and collaboration between different disciplines within the built environment and construction industry, and how their professional roles affect the dialogue, collaboration and working process. With the objective to present some descriptive insights into how the different professions approach and understand other profession groups and suggestions for how to overcome the common barriers within the field. The study primarily focuses on the interaction between four different professions during a certain phase of the construction process – the so-called pre-construction phase.

RESEARCH QUESTIONS

- 1. What are the main characteristics of the communication and collaboration between different profession groups working within the built environment and construction industry?
- 2. When does the communication and collaboration work well, and what are the main challenges?
- 3. How can barriers in communication and collaboration among different profession groups be addressed?

1.2 SCOPE
The study is delimited to grasp the communication between different profession groups and how this affects their collaboration, behavior and the working process. The study focuses on a particular phase during the construction process, which is part of the more comprehensive and extended planning process. In the Swedish system it is called projektering, but in this study it will be referred to as the Pre-construction phase. Another made selection for this study is the four chosen professions that all, to some extent, play a central role in this stage of the process. Those are: the project manager, architect, construction engineer and planner.

Selection of professions
The project manager is involved during the whole process and has a major role in making sure that the project is executed according to the requirements and needs of the client but also to motivate the team and their collaboration. The architect is design oriented and represents soft and aesthetical values and is mainly responsible for the visual aspects and that those meet the client’s desires. The construction engineer is more scientific oriented and looks at constructional calculations and hard facts and needs to make sure that the project will be feasible to construct and last. The planner, who usually joins this group partly, is responsible for the pre-work and investigations and sets the framework of the project and promotes the soft values. In this study the planner represents the municipal sector.
2. BACKGROUND
The chapter presents the background for this study and starts with an introduction to the industry and its ongoing debates. It provides background information about the Swedish system and its processes, and introduces some basics of what communication is and why improved collaboration is important within the field of built environment.

2.1 THE CURRENT SITUATION
The need for increased collaboration and better communication within the built environment-and construction industry is a highlighted subject discussed in the current debates of the field. Recently published articles in architecture, planning and construction forums argue and discuss different perspectives on the challenges and how to tackle them.

One issue that is discussed in the debates is the role of the architect, and there are for example suggestions that the Swedish architect should operate as a main project manager as in other countries (www1). Another example is a recent article reviewing the differences between the education for architects and engineers that states that architects are dealing with creative solutions for complex situations and that construction engineers should calculate according to architectural solutions (www2). Yet another example that indicates the need for a change is a project conducted in Örebro, where the architect has stepped in and become main responsible for the project and its site instead of a stakeholder. This project is based on common raised questions about the professions, such as; does the architect get enough authority and influence? Why do architects focus so much on design instead of how the space works and is used? And why do exploiters think that architects don’t show any interest in economics or realization? And why do they talk about architecture in a way that others don’t understand? (www3). The recently published and very popular book Retorikens Kraft – Hur arkitekter talar med beställare (The power of rhetoric’s - How architects talk to clients) is also a result of the miscommunications within the field (www4). Impacts of communication is also discussed by the authors of the book Communication in construction, and they stress the importance of the project manager operating as an effective communicator, because miscommunication has been the primary factor in failed construction projects (Dainty et al. 2006:12-13). One article from last year promotes the importance of kindness at work and argues for that it is especially needed in the architecture and construction industry. It explains how respectful, knowledge sharing and open working environments lead to successful projects and satisfied clients (www5).

2.2 THE SWEDISH SYSTEM

The planning process
The Swedish planning process is legally regulated according to the Planning- and Building Act (2010:900) (plan- och bygglagen, PBL). Other phases in the process concerns formulating a program and public consultations. The Environmental Code (1998:808) (miljöbalken) and other law restrictions share together with PBL a common view of how to create conditions for a good life. These laws explain how we should use land, natural resources and water to maintain good and healthy living conditions for our coming
generations and us. PBL is brought up by appropriate assessments and takes several different interests into account and promotes an open planning process (Boverket 2002:23-35).

The Construction process
The construction process looks different depending on the project. In comparison to the planning process, the construction process is rather more project oriented and is one part of the comprehensive planning process, which is commonly related to urban planning and development practices in general. Nordstrand explains the construction phase in his book *BygprocesSEN* (2008). To simplify the process its phases can briefly be introduced as (1) a client makes an order and this is the start of a construction project, which in the end will be a finished product (a building, bridge etc.), the second (2) phase is the determination of the product, then (3) the production starts and the (4) last phase is the product use (Nordstrand 2008:7). This is as mentioned a simplification of the stages, which all include several more phases within them.

Along the process all requirements and standards from the client need to be followed up. This means that several different actors with their specific competences need to collaborate and work close together within a limited period of time. Even though each single work moment is not clear in advance they still need to be planned for within the set frame of both time and budget (Nordstrand 2008:77-84).

The Pre-construction phase
The pre-construction phase (*projektering*) includes the cooperation between several different participants, who importantly need to have close collaboration during the whole process. The architect, construction engineer, project manager and the planner are just a few competences within the team that need to constantly keep each other informed and updated. This is needed to control that all components and decisions are working well together and to avoid collisions or conflicts when constructing. This collaborative teamwork requires according to Nordstrand a well functioning communication system (Nordstrand 2008:77-84).

The pre-construction phase includes the work behind the construction of a building that meets the client’s requirements according to the formulated building program and then to present the building in drawings and descriptions. The pre-construction phase is often difficult and highly complex and the produced construction documents from this phase are then to be used for the construction work (Nordstrand 2008:77-84).

Projects often start with different opinions and solutions. The architect’s important task is according to Nordstrand then to among the varied options find the “best” design solution that meets most of the involved interests and perspectives. During this phase, which is called the design phase, the architect needs to collaborate with several other professions that are involved in the pre-construction phase to together design the interior as the exterior of the building (Nordstrand 2008:77-84).
According to the Swedish system, development projects can be executed in a number of organization types, called *Entreprenadform*, where each has different structured organization and hierarchy regarding decisions and responsibilities. These are Totalentreprenad, Delad Entreprenad, Generalentreprenad and Samordnad Generalentreprenad, Utförandeentreprenad and Funktionsentreprenad (Nordstrand 2008:77-84). This is worth mentioning because the role and influence of the selected professions look different and are dependent on the chosen organization type.

## 2.3 WHAT IS COMMUNICATION?

As explained by the authors of the book *Communication in construction* (Dainty et al. 2006); communication as a primarily social activity in working environments include conversations, discussions, networking, transferring information and knowledge in different ways, listening to others, collecting information, directing and motivating other group members. When defining communication the authors refer to Axley (1984), who sees it as a “metaphorical pipeline” where information of different kinds get transferred from one person to another and they call it as “the lifeblood of any system of human interaction” (Axley 1984, cited in Dainty et al. 2006:5). It is though difficult to define and explain what communication actually is since it is most likely everything. It is as Dainty et al. describe it, “a multidimensional and nebulous concept” (Dainty et al. 2006:5). that has varied meanings, contexts and impacts and means different things for different people in different situations. This fact is what according to them is the main reason for the construction industry’s complexity and difficulties. They state this with saying: “Construction can be seen as a series of transactions between the parties involved. Facilitating these transactions has been widely recognized as a key issue for the industry to address if it is to improve its performance in the future” (Dainty et al. 2006:5).

To treat the concept or term *communication* the authors have listed six summarized characteristics as follows:

- The transfer of information including knowledge, processed data, skills and technology.
- “*To communicate is to bridge a distance*” of all kinds of descriptions, both short and simple or long and complex.
- Social skills lead to successful communication and effective interaction between people.
- Interpersonal communication in terms of transferring facts, values, opinions and feelings.
• Communication in bigger scales, which means between groups and organizations.
• Communication as a transactional process with exchanges between involved parts (Dainty et al. 2006:5).

The formulated perspectives together tell that communication is fundamentally about information transfer between people. It is a two-way process where people translate meanings to utilize and understand the transferred information. Communication involves a person sending out a message to a person who receives it and gives another as response. These can as explained by the authors take place in terms of speech, body language, and writing or through electronic devices (Dainty et al. 2006:3-6).

2.4 WHY DO WE NEED TO COLLABORATE?
The need for collaboration becomes more and more obvious. Our cities are going through huge changes where the increased globalization, information technology and environmental requirements are just a few examples of the many challenges we are facing. These challenges show according to the authors of the book Stadsplanera the importance of an increased collaborative planning process, where we need to take advantage of the possibilities that planning actually provides and bring all aspects and interests into consideration at the same time instead of focusing on (Boverket 2002:334-335). They call for an improved collaboration between and within the different sectors as beyond all levels in both society and urban development. This kind of dialogue planning has according to the authors in recent years becoming increasingly popular, which requires more efficient and stronger collaboration than before (Boverket 2002:129-134).

3. METHODS
This qualitative study is conducted through a literature review of articles, disputations and other publications along with interviews with professionals working in the field, which will be further presented and explained in this chapter.

3.1 LITERATURE REVIEW
To find relevant literature and useful references I started my literature review with searching for similar thesis projects, interesting disputations, research reports, and recent articles to find prominent researchers and authors within the field and their publications. Topics I started to look into were collaborative and communicative planning, project communication, challenges in the construction industry and correlations between profession and collaboration. After the theoretical framework was set I started formulating an interview guide and questions based on the selected literature and theories. The theoretical framework for this study is primarily based on following publications:

• Hallin, Anette. & Karrbom, Gustavsson, Tina. Project Communication (2012)
• Innes, Judith E. & Booher, David E. Planning with complexity (2010)
These were selected of several reasons and even though they are not all closely connected, they discuss and treat topics that are related. The authors also bring different perspectives on collaboration, communication and project management. Dainty et al. provide the study with information about communication, characteristics and common challenges in the construction industry. Hallin and Karrbom present and discuss conditions, challenges and how-to approaches within project management and provide useful suggestions for improved communication and collaboration. During my literature review I realized that project management has a central role within the built environment and construction industry because of its strong project-based organization. Due to the more general nature of this study specific management methods such as agile or scrum are not further investigated or looked into within the frames of this study. Innes and Booher present theories on collaborative planning with their concepts such as collaborative rationality and process design. Even if they have more of a policy-oriented approach, I curiously decided to experiment and apply their concepts regarding collaboration and open dialogues on this study. Boverket’s book Stadsplanera represents a planning perspective, particularly according to the Swedish system, and presents why it is important with improved communication and collaboration.

3.2 INTERVIEWS
The main method used for collecting data is qualitative interviews with selected professions of certain interest. Qualitative interviews were considered as appropriate since the study concerns collaboration, communication and teamwork, which are socially and psychologically influenced. Interviews are according to Brinkmann & Kvale (2015) suitable when investigating human experiences and conversational everyday life and when questions are formulated to seek answers about how something is experienced (Brinkmann & Kvale 2015:127). Qualitative interviews are not open everyday-conversations; it is rather a professional conversation focusing on a topic and is influenced by power (Brinkman & Kvale 2015:37-38). This means that me as an interviewer can by having the theoretical knowledge define the conversation and to steer the conversation towards relevant subject by choosing which answers to follow up and not.

The process
The selection of the professions is based on their different perspectives, tasks and responsibilities, for example, whether they work with soft or hard values and to what extent they are dependent on communication. The selected professions represent, among varied interests, also different and to some extent varied educational schools and are during their period of studies secluded even though their cooperation is a necessity. The interview questions were therefore formulated to reach answers about when and between whom conflicts and misunderstandings are common, in which situations it works well and what the participants think about the communication and collaboration in their work (see appendix A). Interviewing is as Kvale and Brinkman state an active process where two parts together produce knowledge. Contextual and pragmatic parameters and narratives influence the knowledge, which needs to be considered when analyzing the data. They argue for that the process of gaining knowledge through conversations is intersubjective, social and involves both participants as constructors of the produced knowledge (Brinkman & Kvale 2015:21-24).
The interviewees received an interview guide, a summary of the interview questions, in advance to get informed about the topics and to be able to prepare relevant answers. This is useful and improves the interview and produced knowledge by taking both thematic and dynamic dimensions into account (Brinkmann & Kvale 2015:158-159). To reach as personal and true answers as possible I aimed for a relaxed atmosphere and tried to make the interview situation and participants feel comfortable. When using a more everyday and less formal language the more spontaneous descriptions arise (ibid.).

All interviews were recorded and transcribed but slightly different processed. One interview was held face-to-face at an office, one through Skype and the other two on the phone. This has also been taken into consideration when analyzing the data, but has not in this case played a major role for the results or conclusions. To be aware of possible differences in live interviews and phone interviews is also mentioned by Kvale and Brinkman (2015:79).

Kvale and Brinkman highlight the importance of ethical issues in an interview process. This concerns keeping the interviewees informed and to ensure confidentiality and anonymity by not revealing private data that can identify the person (Brinkmann & Kvale 2015:85-86). In this study all interviewees are anonymous and have only been presented with their profession title, and have agreed upon the publishing information. Transcriptions have been read and analyzed by me and partly seen by the supervisor.

Validity and Reliability
When analyzing and interpreting collected data it is important to be aware of its validity and reliability, which means how reliable and valid the given information is. Kvale and Brinkmen obey the traditional concepts of reliability and validity. They see reliability as, “…the consistency and trustworthiness of research findings: often treated in relation to the issue of whether a finding is reproducible at other times and by other researchers.” (Brinkmann & Kvale 2015:281). This means to what extend the interview could have lead to other answers depending on time and researcher. They refer to validity as, “…the truth, the correctness and the strength of a statement. A valid argument is sound, well grounded, justifiable, strong and convincing.” (Brinkmann & Kvale 2015:282). Findings from this kind of interview research of everyday social interaction seldom result in generalizations, and this is according to the authors not the aim. They question the demands on this kind of social knowledge being applicable and valid for all humankind, in all situations at all times. This is also the case for this study, which is supported by statements presented by Kvale and Brinkmann that, “…social knowledge as socially and historically contextualized modes of understanding and acting in the social world” (Brinkmann & Kvale 2015:295). Limitations and drawbacks of chosen methods and how it may have affect outcomes will be further analyzed in the discussion chapter.
4. THEORETICAL FRAMEWORK

The theoretical framework is based on literature and theories about planning, communication in the construction industry and project management and its impacts on collaboration and communication. This chapter presents and describes the selected theories and their concepts in depth.

4.1 COLLABORATION FROM A PLANNING PERSPECTIVE

The authors of the book Stadsplanera say that it is necessary to listen to each other and treat each other with respect to manage creating sustainable cities and public life (Boverket 2002). This applies to both the several actors, disciplines in the field but also the citizens. Furthermore, everyone who works within the field of urban planning and development, no matter what role, has to gain knowledge about how the city works and its citizens. When this is accomplished we will, according to the authors get a more united and common ground to work from. Coming over the barriers means to look beyond diverse cultures, organization, educational backgrounds and professional languages, which is needed to understand and respect each other’s knowledge and arguments. This also includes looking into other discipline’s knowledge and references. As Boverket highlights, if not the politicians and professionals that are working with city development can communicate and work together how can we then communicate with and invite the citizens that are our very prime users and target group (Boverket 2002:23-35).

A comprehensive strategy that overlaps all sectors can be used to collect and analyze the different aspects of sustainable development. In this scenario planning means to document existing values, describing possibilities and problems, taking the different conflicts of interest into consideration, and to find compromising solutions to make the most appropriate decisions. For these analysis and decisions the formulated planning- and construction law (PBL) in the Swedish system is playing a central role (Boverket 2002:23-35).

A shared comprehensive overview

New societal organizations and businesses are getting more and more actively involved in the planning process, which is seen as a kind of partnership. The dialogue needs to rely on mutual respect for each other’s competences and experiences, which is according to the authors the best way of gaining trust in the collaborations along the process. They also call for cooperation between and within the different sectors but also levels in both society and urban development. To tackle the complexity of the raised questions because of the several and varied interests from each sector and contradicting goals it is important to have a structured distribution of responsibilities (Boverket 2002:129-134).

According to the authors this kind of dialogue planning has in recent years become more and more popular. This progress has also given the municipal planner a new and complex role, which requires a lot more and stronger collaboration than before and they also become a major accommodator of knowledge and ideas to other disciplines. At the same time they need to be good listeners, pedagogical leaders, mediators and supporters of several processes. Since today’s urban development projects often concern redevelopment or expanding existing city structures; well functioning cross-disciplinary work processes are required. The new role
of the planner also requires a high ability to work with other professions and to balance the different interests while mediating this with respect for the raised questions, interests and issues as for the people who are involved (Boverket 2002:129-134).

4.2 COMMUNICATION IN THE CONSTRUCTION INDUSTRY

Why is effective communication needed?
Achieving an effective communication is as explained becoming more and more important. Dainty et al. (2006) explain that people at both an individual and team level find it very difficult to operate and to fulfill their tasks if they do not develop a mutually agreed communication routine in their work. This means that communication issues are as important for the project groups as for the organizations. Dainty et al. refer to Armstrong (2001) who summarizes the importance as follows:

- *Achieving coordination skills* – where coordinated outcomes demand effective communication.
- *Managing change* – concerns employee’s willingness to accept changes and this requires good communication.
- *Motivating employees* – organizational responsibility to motivate the employees to work efficiently.
- *Understanding the needs of the workforce* – the organization’s ability to respond to the employee’s needs. This involves communication in terms of feedback and encouraging an open dialogue between and beyond all levels (Armstrong 2001, referred to in Dainty et al. 2006:6-8).

The fact that the industry is going through a knowledge revolution with increased outsourcing of competences where employees operate as “knowledge-workers” and the expertise becomes the capital, the communication becomes even more vital. This way of working creates as Dainty et al. call it, “communities of practice” which they explain by referring to Wenger et al. (2002) who says that; “…groups of people who share a concern for the same issues, or set of problems, come together and interact on an ongoing basis” (Wenger et al. 2002, referred to in Dainty et al. 2006:7). This way of project-based working will be further explained in the next part. Achievement of effective communication requires a change in the construction industry’s both work and attitude, which has according to Dainty et al. been very “silo like” since the past. The industry is pervaded by strong structural and cultural conditions that make changes processing very slow and difficult to achieve. Increased collaboration and more efficient communication would help to break down these common barriers and is a vital milestone for the industry’s future, but how to use theories of effective communication does according to the authors depend upon the organization and people’s interpretations. The importance of communication is also highly needed because of the complex networks of involved actors and unique characteristics of each single project (Dainty et al. 2006:6-8).

The Project manager
The project manager has the main responsibility to oversee the whole construction process. His or her role is to manage systems regarding the scope of the work, the project’s organization and it’s quality, costs and duration where communication is essential for
managing these four aspects. The project manager needs to operate as an effective communicator especially since miscommunication has been the primary factor in failed construction projects. As explained in the previous chapter, the communication process is mainly about decoding and encoding. Dainty et al. refer to researchers in the field who explains encoding as the process of sending messages that are produced by the sender while decoding concerns actively listening to the sender and his or her message but also the interpretation of the message by the receiver. The project’s results therefore become dependent on the project manager’s competency of encoding and decoding (Dainty et al. 2006:12-13).

Hallin and Karrbom also discuss the project manager’s role in their book Project management (2012). They explain that the project manager is often just one among several leaders in a project, especially in project-based organizations where each area has its specific manager. It is therefore important to clarify who is leading and responsible for what duties and to communicate each person’s role, to avoid misunderstandings. It is common that each person only look into his or her specific task or smaller part of the project. The authors state that it is essential to maintain a holistic perspective to ensure good work. The situation-specific aspect of the project management means that the management needs to be adapted in a way that it supports every specific project’s organization, concerning stakeholders, team members, competences and personalities (Hallin & Karrbom 2012:143-144). The authors state, “[t]his implies that the leadership may have to focus on supporting and communicating the direction of the project rather than managing in detail” (Hallin & Karrbom 2012:144).

Project based organizations & Organizational communication
Since the construction industry is a project-based industry the communication plays a central role. Effective communication in organizations has been highly promoted over the last two decades but these approaches has according to Dainty et al. been totally ignored in the construction industry. The questions the authors ask are why the modern construction industry is unable to effectively communicate and what are the barriers that prevent good and well functioning communication to take place. Some of the challenges are mentioned, but the industry’s complex project organizations suffer from several factors. The projects are temporary and attempted to create unique products and they get confronted by different sets of challenges and contexts, which means that each project needs its unique management and process. Dainty et al. refer to Turner’s (1998) definition and arrange it into five aspects and difficulties in the projects, which include:

- **The organization of human, financial and material resources** – which puts pressure on the project manager to organize resources and to achieve the aimed objectives. These tasks require people that may need additional competences or skills, which need to be well managed.

- **Novel forms of organization** – includes the fact that every project needs to be treated with a different approach, which requires it’s own coordination and management.

- **A unique scope of work and specification** – closely related to the previous aspect; that construction projects always face specific conditions, limitations and opinions, which demands the project manager formulating a customized communication strategy for every project.
• *Constraints of cost and time* – the fact that project-based work also means a limited budget and time frame, which also contributes to the need of a communication strategy.

• *Quantitative and qualitative objectives* – construction projects are also complex in that sense that they need to take several parameters and aspects into account, both hard and measurable objectives but also softer criteria that represents (subjective) qualities (Dainty et al. 2006:20-21).

They also say that it is equally important to be aware of projects being permeated by transience because of short-term involvement of participants, which delimits possibilities for the group to manage a continuous and fluent communication. Therefore they suggest that the transitory nature of projects requires involved participants to use written protocols to ensure that information and communication flows are functioning effectively. This needs to be done until an adapted communication strategy is established for that specific project. Another challenge is the often varied and contradicting objectives that are different according to the profession’s specific perspective, which also calls for different kind of communication needs during the process (Dainty et al. 2006:20-21).

**Group dynamics and Team roles**

The challenges that arise in construction projects are not a surprise with the wide range of parameters and involved actors. Regarding the people and the working process Dainty et al. refer to Loosemore (2003) who summarizes some of the characteristic features as follows:

• “Their unique, one-off nature
• Their tendency to be awarded at short notice
• The labour intensiveness of construction activity
• Jargon, semantics and the potential for misunderstandings.
• The reliance on a mobile workforce
• An integrated male-dominated culture
• An increasingly diverse labour market” (Loosemore 2003, cited in Dainty et al. 2006:22-24)”.

In this study the first, third and fourth aspects are of high relevance. The first one concerns the fact that the projects are designed to meet a client’s certain product and needs. Challenging is that all involved individuals have their own challenges, conditions and logistical limitations. In addition to that, these different parts also represent behaviors that create different interrelationships for each phase and the repetitively change of workplace and colleagues can lead to stress. The third aspect stands for the relation between the intensiveness and costs, where staff costs requires the most. Furthermore, the employees in the projects are a diverse range of people with varied professional cultures depending on their positions and tasks. In this industry the projects tend to bring together people to a shared vision that all have their organizational and individual goals, which are not necessary mutually supportive. This leads according to Dainty et al. to competing demands and desires among the involved professions, which makes the construction industry one of the most challenging working environments. The fourth aspect regarding jargon and attitude plays a central role in this study. Since the construction industry has such fragmented cultures and temporary structures along with technical developments, the creation of informal languages
and attitudes among the participants become a fact. One example, brought up by Dainty et al., is the vocabulary used by managerial levels that can have negative impacts on the communication but also collaboration. Within these profession groups jargons and technical languages are common and they may differ between the groups. This is also represented in drawings, specifications and other project documents. The authors explain that it sometimes may be ineffective and time consuming if the language is too complex, which creates noise and may stop the transfer of information to the receivers. They add that, “…particular terms may be intended to create confusion or embarrass the receiver or can be used to communicate an occupational identity” (Dainty et al. 2006:24). Successfully tackling these mentioned challenges by improving the communication can have enormous impacts on the project’s results (Dainty et al. 2006:22-25). Related aspects that cause difficulties in communication are brought up by Baguley (1994), these are as follows:

- *A lack of clear objectives*
- *Faulty transmission*
- *Perception and attitude problems*
- *Environmental problems*
- *Chinese Whispers (when a message gets distorted because of a long message chain)* (Baguley 1994, referred to in Dainty et al. 2006:27)*.

These relate to previous descriptions of common problems with varied objectives and goals among the participants. When participants lack information, a shared meaning or shared understanding it leads to confusion. The last two aspects represent problems in situations where people work from a distance and cannot meet face to face or when information has to pass along several parts before it arrives at its receiver (Dainty et al. 2006:27).

**Verbal and Non-verbal communication**

Dainty et al. list the different forms in which communication can occur and these are Speech/verbal, Non-verbal, written, audiovisual and electronic and they can all be expressed in formal or informal ways depending on the context and its present circumstances (Dainty et al. 2006:65). When looking at different communication modes it is again worth mentioning the wide range of people being involved at different stages that have many borders influenced by positions, stereotypes, social expectations, promised roles and obligations between them. These also lead to misunderstandings and communication barriers, even though the mix is, according to the authors, what makes it highly interesting to study the industry from a communication perspective. They state, “…it can never be guaranteed that verbal exchanges are founded on common understanding” this because the professions have developed their own language that does not have to be matching with the other professions’ (Dainty et al. 2006:80). At the same time are discussions and conversations according to them the most effective types to ensure that participants feel involved and seen in the working process (Dainty et al. 2006:65). Dainty and his colleague Moore conducted a study about those issues, which resulted in that, “…those from different parts of the supply chain may speak ‘different languages’ insofar as their interpretation and understanding of roles and responsibility are rooted in their occupational role context” (Dainty et al. 2006:80). They exemplify with an engineer that can more likely communicate and discuss with other engineers than with a landscape architect, since they have no mutual professional language (Dainty et al. 2006:79-80). The researchers Culp and Smith (2001) states with their studies that individuals with
varied personalities approach engineering projects differently. They developed an analysis scale that measures different personal parameters. However, the authors draw the conclusion that, “…regardless of whether a sophisticated measurement tool is used, it is incumbent on all people attempting to communicate with others that they tailor their approach in such a way that it accords with their individual needs and personal frame of references” (Culp and Smith 2001, referred to in Dainty et al. 2006:82).

Research about non-verbal communication is, according to Dainty et al., merging among several fields such as psychology, sociology, management and others. However, after referring to some research results about its impacts the authors say that the studies show that, “non-verbal communication cues have major role in face-to-face interaction” (Dainty et al. 2006:84). They refer to Sheldrick-Ross and Dewdney (1998) and conclude that, “[n]on-verbal messages are conveyed through ‘behavior’, which comprise a range of direct and indirect cues” (Sheldrick-Ross and Dewdney 1998, Dainty et al. 2006:65) and say that these can be conscious and unconscious. One type that in most cases happens unconsciously is body language, which often is outside people’s control. This means that people can neither contradict nor neutralize the messages. Other non-verbal cues brought up the authors are ways people dress and behave. They refer to Riemer (1979) and explain that professionals and craft workers in the construction industry often communicate their profession identity through their way of dressing and jargon, which is an unspoken indicator of their profession’s socialization. Stereotyping in this way does affect and can limit the communication between different parts because of their perceived roles (Riemer 1979, referred to in Dainty et al. 2006:86).

4.3 PLANNING WITH COMPLEXITY

Collaborative rationality
Innes and Booher are experts and researchers in the field of planning theory. In their book Planning with Complexity (2010) they give insights in a synergy between theory and practice of the complexity of planning, democratic and effective public decisions. Even though their work is slightly more policy oriented and tackles issues regarding public participation and planning, the theories concerning collaborative decision-making are transferred and used in this study. They announce a concept called Collaborative rationality, which is based on Habermas work (1981) about communicative rationality (Innes & Booher 2010:6). They explain that it has to do with the process of deliberation and describes it as, “A process is collaboratively rational to the extent that all the affected interests jointly engage in face to face dialogue, bringing their various perspectives to the table to deliberate on the problems they face together… all participants must also be fully informed and able to express their views and be listened to, whether they are powerful or not” (Innes & Booher 2010:6). The authors explain further that techniques need to be used to mutually ensure the legitimacy, honesty and clarity of what they say. They do admit that all aimed conditions can impossibly be achieved since it is not possible to always fully include all actors at all points, and this applies to achievement of complete consensus as well. Cases can also be regarded as collaboratively rational as long as a substantial agreement has been reached among the predominant majority of efforts for satisfying all participants, before reaching closure. Furthermore, the rationality is also dependent on if the group mutually created a prior agreement in advance about what consensus is in their case or project (Innes & Booher 2010:6).
Process design

Innes and Booher explain their concept *process design*, which partly correspond to Dainty et al.’s statements of a project’s complexity and uniqueness, which calls for adaptive and custom strategies. As mentioned, Innes and Booher see face-to-face interaction as an essential and required part of a collaboratively rational process, which requires that all participants must hear everything. To achieve this they explain that the dialogue needs to be held in diverse smaller groups with members (who represent their group of actors or professions) joining the dialogues and those can then inform and report to the rest in their groups. These kind of collaborative dialogues should according to the authors evolve from the specific context and issues and explain that these have to develop like, “…complex adaptive systems, as conditions and knowledge change and as partial agreements are reached or new tasks and information needs emerge. There is no one-size-fits-all approach.” (Innes & Booher 2010:106). Even though professional managers propose the design it has to be mutually agreed upon and developed with the rest of the group. This means that each project and its group of participants need its own process design, this certainly applies to urban development and construction projects as these belong to this constantly changing project based nature, as explained previously in the chapter.

Enhancing *collaborative dialogues* where all participants and their messages get heard and respected can also according to Innes and Booher build social capital among commonly competing parts and opinions. This flow of dialogues creates linkages between the involved people and professions, which can increase understandings of the raised issues. The authors add that the dialogues often allow shared purposes and can manage to steer conflicts into becoming constructive strategies (Innes & Booher 2010:210). One main reason they state, which is important to highlight, is the fact that collaborative development and knowledge sharing is essential since there is no single information source that can solve all issues and challenges. The diversity of players is a necessity and it provides according to the authors the many faceted perspectives that are needed. The interdependence among them also generates options for inventions and moves beyond today’s discussions that lead to conflicts (Innes & Booher 2010:209-210). They state that, “…different participants see through different lenses, each of which offers valuable information. Finally, such jointly developed information is essential to assuring trust among diverse players” (Innes & Booher 2010:210).

Power is a social construction

Innes and Booher discuss the role and outcomes of power and how this affects the collaborative dialogues and its participants. They state that some professionals in decision-making positions are worried about handing over too much responsibility to other involved, because decisions in a diverse group could threaten their own power and authority (Innes & Booher 2010:108). The authors explain that one major problem with power is that it has different meanings for different people and in different contexts, and they describe power as, “…a relationship which can shift with the context as well as with the participants. It is intersubjective and socially constructed… Power is a social construction, not a brute fact” (Innes & Booher 2010:109). They refer to what they call *network power*, which can be generated from a group. This power is much stronger because it evolves through participants starting to understand the other professions’ and stakeholders’ issues, which make themselves more powerful as well. When the group manage to develop shared purposes they get empowered by each other (Innes & Booher 2010:109).
The praxis of collaboration
Effective collaboration depends according to Innes and Booher on its ‘extended practical experience’, which they call praxis. They say that people who engage in collaboration also build their capacity of how to proceed, deliver and how collaboration work. From their perspective successful cases are the ones that manage to create both social and intellectual capital and generates organized capacity. They add that these are, “…adaptive to changing circumstances and evolve along with knowledge and conditions” (Innes & Booher 2010:89)

Worth mentioning is that it is not only about meeting conditions and goals, the praxis of collaboration is also highly dependent on a project’s management (Innes & Booher 2010:90).

Issues regarding collaborative planning are also brought up by Brand and Gaffikin (2007) in their article Collaborative planning in an un-collaborative world. They summarize and reflect upon several associates’ research and discussions within the field and draw some conclusions that refer to other mentioned theories in this chapter. They state that collaborative planning requires, “…arenas for non-adversarial discourse where value systems can be articulated, where shared strategic conviction can grow, where conflicts are re-framed in a less antagonistic manner and where the discourse shifts from the competitive bargaining of fixed interests to a mode of negotiative problem definition and consensus building” (Brand & Gaffikin 2007:291).

4.4 PROJECT COMMUNICATION PLANNING

Quality planning
Communication can as mentioned occur in formal and informal ways, and takes place in several ways. Hallin and Karrbom present some of the communicational aspects in their book Project Management (2012). They treat, among other strategies, a concept they call project communication planning and quality planning. Communication occurs for example through planned contact, digital contact, weekly meetings or status reports etc. and these provide as the authors say, structure to the project work but it is also important with the more spontaneous, personal, informal interaction and social events because these represent the kind of contact that builds trust. The authors suggest formulating a supportive communication plan for each project, which describes the project’s communication infrastructure. This tool should make sure that stakeholders and participants are well informed at the right time during the process. It should be based on the stakeholder’s requests, needs and expectations. It tells what type of information, how frequently and who is responsible for communicating it, so it should be designed in a way that it answers questions such as; To whom?, Why?, What?, How?, and Who? (Hallin & Karrbom 2012:133).

Regarding the concept of having a quality plan, the authors explain that it ensures the project’s results and that it is carried out as promised. This plan emphasizes how to manage to deliver the project as promised. Following listed information can be included in the plan:

- How changes are to be made in the project plan
- Whether some standard is to be followed and/or met in and through the project work
- How and by whom the quality follow-up is to be done (Hallin & Karrbom 2012:134).
In most cases the project and its requirements change during the process, due to either misunderstandings among the participants or changed conditions. In these scenarios it is very useful to have a supportive and well-formulated quality plan with information about how to tackle changes (Hallin & Karrbom 2012:134).

The Johari Window-model and increased self-awareness

The reflection of self-awareness may be a difficult topic, but though important in project groups and working processes. Hallin and Karrbom present a model, called *The Johari Window*, which was developed by Joseph Luft and Harry Ingman (1955). This model describes, ”…how openness in communication increases between people at the same time as transparency and perceptiveness increase, and how openness decreases when we are not transparent and sensitive towards each other” (Hallin & Karrbom 2012:148). The model describes that feedback and sensitivity are in line with ability to listen, which are important parameters to achieve good cooperation. While listening to others feedback to us and to know how others perceive our work and us, increases our self-awareness. The authors formulate some questions according to the *The Johari Window model* to reflect upon, these are:

- Who am I?
- How do others see me?
- How are others affected by my behavior?
- How am I myself affected by the behavior of others? (Hallin & Karrbom 2012:148)

The need for communication in projects

The crucial role of communication is obvious. Hallin and Karrbom states, as the other authors, that good and well functioning communication can prevent misunderstanding and conflicts from happen. Good communication is about both informing and listening. That the members in a project team often change during its process can be seen as both an advantage but also a big challenge. The project manager plays a central role of making sure that the work is processing towards the right vision, which can be done with good communication. In construction projects these are expressed through oral and visual, such as drawings and models where more advanced digital tools and 3D can help other involved members to better understand (Hallin & Karrbom 2012:165). Successful communication is according to the authors “…based on shared trust, commitment and interest on the part of those who communicate” (Hallin & Karrbom 2012:166).

While formal communication often is planned the informal happens spontaneously, which takes places when people who share interests interact. The formal often happens through meetings and has a planned agenda, with the aim to follow up and inform. The informal on the other hand strengthens the relationships and can according to Westling (2002) create a situation where new ideas and opportunities get tested, which can increase the feeling of support and contribute to better problem solving in the group (Hallin & Karrbom 2012:169). A lot of meetings take place during the working process; these have different agenda and can for example consider decision-making, planning or follow-ups. It is though expensive and people often think that meetings are waste of time and inefficient work, but according to Hallin and Karrbom can the meetings be more effectively done and these face-to-face meetings are necessary from a trust building- and collaboration perspective. They add that
meetings need to be focused, clearly led by the manager and followed according to a prepared agenda (Hallin & Karrbom 2012:170-171).

Today most of the communication happens through digital media where team members often due to geographical circumstances have to communicate through the virtual world. Hallin and Karrbom call those virtual teams. They can be constituted of national or international members and are in most cases dependent on the electronical flow of communication. The authors refer to the theorists Lea and Spears (1991) who developed a theory regarding people’s feelings about solidarity and social identification. They say that, “[i]f the expectations are positive and confirmed, their sense of identity and belonging is strengthened” and they add that it takes more time to build trust in virtual teams (Hallin & Karrbom 2012:172).

5. FINDINGS

The following presentation of results might seem long and extended, but by presenting detailed information and narratives from the interviews (see Appendix A), the study’s transparency increases and lets the reader interpret the interview data and to reflect upon the stated conclusions and their reliability and validity. The last question refers to an article published on arkitekten.se, which is an interview with the CEO of the big consultancy firm Tyréns, who wants the Swedish architect like in other countries become the major project manager (www1).

- Project manager = PM
- Construction Engineer = CE
- Planner = PL
- Architect = AR

5.1 WHEN DOES COLLABORATION AND COMMUNICATION WORK IDEALLY?

**Project manager:** The PM prefers to have meetings, because participants can explain what they think and make sure that everyone understands. The PM says, “...when the involved people have different kind of information about the project, misunderstandings are an obvious fact. It’s much easier when they know each other a bit”. The PM states that it is important that everyone comes to the meetings and explains that, “...It is usually more complicated between the AR and the CE. It can also be difficult for us as PMs because the ARs have often very vague, unclear, fuzzy, and visionary proposals and no one else understands what they want. If they for example propose a hovered roof the CE will definitely say no”. Since the PM has a certain budget from the client he/she needs to make sure that it is safely constructed and economical feasible. The conflicts are often not outspoken, they are rather a question of attitude among the participants according to the PM, who sometimes have to step in as a facilitator. The PM explains that, ”The AR can of course also be very solution-oriented, because we share the idea of ending up with an excellent project as fast as possible.” This is according to the PM also the main goal for the PL, who has several rules and laws to follow and puts great effort in conducted pre work with complex issues. The collaboration always
depends on project, and the PM explains, “…if it’s an iconic building for the city the AR and PL may work closely together. But if it’s an ordinary housing development, the situation may be slightly different. Most of the things and issues really depend on what kind of project it is”. The PM says that the AR often feels a stronger sense of pride with the projects than the CE. In overall is the process and work according to the PM rather slow in the beginning, but when the pressure increases towards the end the participants start to work harder and more efficient.

Construction engineer: During the interview the CE was adhered to that communication and collaboration is not dependent on the profession, and strongly indicated that it is a question of personal and individual differences, and if people have a good working chemistry or not. The CE explains that there is most communication happening towards the end, when people start to feel the pressure right before deadline. In the beginning everyone in the project works more individually with solving his or her own tasks. The CE works closest with the AR, because they often are responsible for coordination, but he/she has also continuous contact with other consultants, such as ventilation consultants who are according to the CE a bit special. The CE admits some problems and says, “My older and more experienced colleagues (also CEs) are often responsible for our part of the project and I would say that the older generations are a bit more insular and they rather say no too “early” to the AR, instead of trying to come up with new accommodating solutions and compromises”. From what he/she experienced so far younger professionals are more service- and open-minded. The CE reveals that his/her current PM is extremely bad at communicating. To work more efficient and to avoid problems the CE and other colleagues try to keep this PM outside as much as possible. The CE’s current collaboration works very well, probably because the AR has an academic background in construction engineering, which makes him/her aware of common construction issues. The CE adds, “Another project I’ve been involved in had stronger focus on design and that project group had more difficulties with coming along.” Regarding the common reputation about the tension between ARs and CEs, the CE laughs and says, “It strongly depends on people and I may be one of few aesthetical CEs that have a strong interest in architecture so I guess that contributes to a better understanding for each others’ work, especially when working with a more practical oriented AR” and admits from own experiences that when the professions’ visions and interests are disjoined there is problem.

Planner: The PL feels that most of the contact and communication among the different professions are often happening on higher levels, between managers and leaders. This is problematic since the PLs are the ones actually working with the project. They have more knowledge about the several issues and conducted investigations, and should therefore be involved in the discussion about solutions and decisions. The PL explains, “In this kind of stately owned and political organization the major communication is happening outside our work. The different professions mostly pursue their own interests and goals at the meetings, without really inviting other involved participants.” The PL thinks it is important to see and meet all co-workers face-to-face and to get an impression in real life of the person you actually work with and are in contact with.

Architect: The AR is pleased to see the PL and the municipal sector being part of the study, since they play a major role and can control if projects are happening or not. The AR has mainly contact with the PM and there are seldom problems. The AR also communicates with the CE and other consultants by email and at meetings, which is according to him/her a very slow process. In the current project the AR has been waiting for replies from the CE and other
consultants for weeks, which leads to several days of work with redrawing and redesigning. Miscommunication is according to the AR common between ARs and CEs, which is extremely time consuming and expensive for the client. The AR gets frustrated when he/she needs to do other consultants’ work, because they are either slow at replying or not do their job, but agrees that these situations are not enough to base conclusions upon because it is dependent on personal differences. The AR states though that, “…since I started working I’ve seen a pattern among the different profession groups.” and adds that these chosen professions have to be able to collaborate and come along well. The AR agrees with the other interviewees regarding the correlation between generation and collaboration and says that, “Usually the younger and more newly graduated co-workers are more open minded, sees a lot of solutions and are willing to find the best compromises”. The collaboration with the PM is the least problematic, even though PMs sometimes force them to do things they do not want to. The AR comments, “It would be nice if we could all, including CEs and PLs, be on (the same) board and help each other instead of working against each other”.

5.2 HOW DO YOU USUALLY COMMUNICATE?

**Project manager:** In addition to meetings and emailing the PM explains that they also use digital platforms for communicating. These are used occasionally, but not by everyone, because some prefer not to use the more digital programs (older colleagues according to the PM). It is good for sharing files but less good for communicating, since some do not give enough information.

**Construction engineer:** The CE says that contact and communication happens primarily by mail but if there is something urgent they call. Meetings are not happening very often, and the CE would prefer more meetings even though it can interrupt the working flow.

**Planner:** The PL explains that most of the contact happens by mail, and there are always several changes happening back and forth constantly. At the municipality they do not use any digital platforms. At the PLs previous job, they used a kind of platform, which was according to the PL annoying because it was so active that the notifications got distracting and annoying.

**Architect:** The AR explains that communication is primarily happening by mail and by phone when it is more urgent, and occasionally at meetings. Emailing makes it easy to share files but it is also frustrating when participants do not reply. The AR often emails the PM who usually responds quickly that she/he will get back with comments the day after. The fact that the PM wants the project to be finished as soon as possible might be a reason for the quick answers according to the AR, who adds, “The CE on the other hand often lumbers the process and does not seem to be aware of that things need to be quickly done.”

5.3 VIEWS OF ENHANCED COLLABORATION

**Project manager:** The PM believes that most of the involved professions are not aware of the others’ conditions, possibilities, tasks, knowledge, skills and role, which contribute to conflicts and misunderstandings. The PM says, “It is highly important and needed with better
collaboration.” The PM thinks that the involved professions need to be much more integrated to reach a better working environment but also that it is important to spread an understanding for the varied and often strong ideas. The PM adds, “…the more people meet, are mixed and learn from each other but also about each others roles, less misunderstandings would occur”.

**Construction engineer:** The CE works at a company with only CEs, but in his projects she/he works with different professions, mainly with the AR. One good effect of working closer in physical terms is according to the CE the good possibility and convenience to have quick and spontaneous meetings, which can make the process more efficient and save time.

**Planner:** The PL thinks that an increased and closer collaboration is highly important. The PL explains that, “All profession groups get strictly shaped during their education, by their classmates and then at work by their colleagues, which leads to this kind of homogenous group that does not like when other experts confront or question their work”, which she/he thinks applies to all involved profession groups.

**Architect:** The AR sees enhanced collaboration as very important and would like to see everyone sitting together in the very beginning to discuss and make sure that everyone is going to work towards the same vision, and says “…this would also generate good understanding for each others work and better collaboration. This is essential for a good project” and adds, “…it would be much easier with closer collaboration if the CE was more involved and present in the project, today they only take part during the early phases.”

5.4 WHAT IS MISSING TODAY?

**Project manager:** The PM thinks it is important to have a good start meeting and to clarify who is responsible for what duties. The PM adds, “Some kind of gathering forum could be good, but this is also difficult for consultants who jump from a project to another.” The project team is always picked according to the client’s project goals and requirements. The PM says, “It would be good to have some kind of kick-off, which again is of course dependent of the project size… And during the first introduction meeting to have the client present and to let them to introduce the project and to be very clear and specific when presenting their vision, goals and requirements.” The PM would prefer working more with the architects and another problem that she/he mentions is that everyone works individually and separated from the rest of the group and explains, “They never meet to work or produce material together”. The PM strongly believes in better and developed 3D-visualization tools and closer collaboration at some stages so that the professions do not need to redo their work as often as they do today. The PM would like to see universities organizing theme days were students in different programs get mixed and in collaboration have to work with a case. In that way the students would learn about the other professions and experience how it will be to work with these competences in the future. The PM suggests some kind of external communication expert, joining the first two meetings to organize exercises in communication or group dynamics but unfortunately is there a strong attitude among the professions that these kinds of exercises are waste of time. The PM adds that, “Probably I can see the positive outcomes of this since I’m a project manager and involved during the whole process while the specialists only take part during a small part and can therefore not see the effects in a longer perspective in the same way”. Another thing that the PM strongly suggests is to during the
first meeting formulate rules or terms that will apply for the project group during the working process.

**Construction engineer:** The CE is overall positive and does not have many complaints, but is disappointed that participants often do not show the willingness to collaborate. The CE thinks though that communication is time consuming, and would therefore only prefer enhanced communication to some extend.

**Planner:** The PL wants to see closer collaboration and more communication among the people on lower hierarchal levels who are the ones with the actual expertise and most knowledge about the project, but unfortunately they do not have any influence in the decision-making. The PL feels that involved participants often join meetings to watch their own specific issue or “their territory”, and says, “This is not good for the collaboration at all and it is often the CE who gets his/her will”. The PL wants other profession groups to be better at putting their own interests aside to focus on compromises instead, and calls for more additional competences in the proposals. The PL explains that it becomes very obvious what expertise that has been involved in a project or not and adds, “Continuity in meetings is very important for good collaboration and efficient work”.

**Architect:** The AR explains that there is always someone who slows down the process and that the working hours could be heavenly reduced through better collaboration. More meetings could be a good initiative according to the AR, who also wants to see all participants being more engaged in the project from the start. The AR explains that, “In a shared vision all profession group’s own interests for the specific project needs to be clear. In the formulated vision it should be possible to see the CE’s vision, what the municipality wants but also that the project needs to generate money. The municipality has to understand that the client wants to make money, the CE needs to respect that the AR wants to design something nice and the AR needs to understand the required construction. Everyone needs to know the goals and vision!”

5.5 PROFESSIONS AND BEHAVIOR

**Project manager:** The PM changes behavior when meeting the different professions. In Sweden there are two ways of pronouncing architect/architecture, where one of them is most common in everyday life and among people outside the architecture sphere and the other pronunciation is used only by “real architects”, who “knows architecture”. This pronunciation has a hard K, instead of the softer sch-sound. When meeting and talking to architects the PM uses the hard K-pronunciation but when talking to CE’s and other engineers the PM uses the standard pronunciation, to get the participants’ respect and appreciations so that some of them can sacrifice ideas and accept compromises. This kind of behavior is according to the PM needed to get everyone on board and to steer everyone towards the same goals and says, “No one wants to openly disrespect or be disrespected at meetings, so I try to inform the different and several parts as much as possible.” The main reason why conflicts arise is according to the PM the different schools. This becomes especially obvious in the Swedish system and how it is organized, where the education for these groups is very different compared to other countries. The PM explains, “Here the architects are educated in a strong artistic school, but lack technical knowledge. Since the CEs mostly look at hard facts, numbers and logic they
seldom understand the AR’s proposals that represent aesthetical values and then the CE gets all other engineer groups on his or her side, since they are educated in the same scientific school.” The PM thinks that architects often seem to be strong individuals. ARs present according to the PM in a less fuzzy way and relate to the client’s goals differently when presenting for the project group, than when presenting for the AR colleagues, which is often better performed by the more experienced architects. The PM has in most cases to “play the budget card”, since they represent the client, which often also wins. The PM often arguments why some ideas are better than others and to what extend they correspond to the requirements and after resonating about the ideas out load the PM makes sure to ask for the group’s opinions and thoughts. These technics and communicative balances are according to the PM essential to get a collaborative project group that work closely together.

Construction engineer: The CE admits that when the PM joins meetings there are things and issues they keep unrevealed. The CE wants to perform a good job and keep a proficient facade towards the PM, because the PM represents the client. The CE reveals, “We want to show that we know exactly what we are doing, even if we don’t always do”. When meeting craftsmen the CE enters one jargon and when working with the ARs there is another one, which is not very different from the common atmosphere with the colleagues. The CE’s role has different kind of respect and power, depending on the project and what the client wants. The older generation of CE’s is often extremely narrow-minded according to the CE, who implements ugly, practical and easy construction solutions. The PM explains that, “…they might take advantage of their power in these scenarios”.

Planner: The PL is disappointed that aesthetical values often get dismissed and less prioritized because most of the participants and politicians only look at hard facts, numbers and measurable results. The role of the PL is often about promoting soft values and trying to convince the other parts why it is important, but then the engineer consultants often confront them. The communication works usually pretty well between the PL and AR because they prioritize same values and have common interests in the project. The difficulties rather arise from the political part according to the PL. When it comes to behavior, the PL thinks that all professions change unconsciously and explains that when external persons or higher bosses join their meetings there is a more strict behavior among the workers. While at other times, they have a relaxed and easy-going jargon and atmosphere. The PL thinks that economical responsible participants, who control budgets, often tend to answer questions to their own favor, and says, “…they don’t answer others questions without answering with their own assertions.”

Architect: The AR explains that they are operating as PMs as well, because they have to be in contact with all involved experts, and says, “We need to make sure that the project goes towards the right direction. We always send out all the material to everyone and need to control and make sure that everything works and fits together”. The AR would like to see more interest and engagement from the municipal participants, because they often do and act, as they want. The PL wants, according to the AR; create a nice city while the PM only thinks in terms of business and best selling. The AR states that the PL has a very important and strong role, in that sense that the municipality can quiet easily stop the whole project, but is annoyed that the PLs often have the prejudices about projects ending up catastrophic. The AR state, “As an architect we can’t just do anything, it’s against our profession to design and draw things that are not in line with what we stand for or can be proud of, we can’t design
ugly and cheap buildings. That’s why we always have to clarify the vision together with the project manager and client”. When the group is working towards a shared vision, the project and the process always ends up very great according to the AR, who adds that he/she strongly appreciates clients who see the extra qualities as important. The AR believes that the PM always wants to please the municipality so that the municipality approves the project.

The AR says, “…So the AR has a major role at meetings and the CEs doesn’t say a lot” and continues with the role of the AR with, “The AR has a big role, a very big and important role and deserves taking a lot of space. It’s we who create something visually that people will see. So the CE is a bit below and put aside, but they don’t have this big role, they just do their little part of the project”. When talking to the PM the AR is always very market oriented and explains how much money they can earn from the different solutions and ideas. When talking to CEs the AR rather explain in construction terms, so they don’t ruin the architectural qualities and admits that, “Of course, we act differently regarding on who we meet and talk to. I think all groups do! We want everyone to be on our side and of course it’s always very important to come along with the PM…”

5.6 ARCHITECTS AS PROJECT MANAGERS

**Project manager:** The PM does not see how it would be any better. The strongest reason is that the AR is primarily interested in the creative design process and less in administrative work, which they often want and need help with from others. The PM says, “They should focus on what they are strong at, which is designing. Usually the ARs are also afraid of handing over work to other external parts because those could then change their visionary proposals. Well, they are artistically educated and should then not work with administration or economics.”, but the PM mentions the importance as a client or PM to listen to and involve the AR more in iconic projects, even if it will cost. In Sweden the AR has less influence and responsibilities, but they also lack education and knowledge for doing this, according to the PM, who says, “…it would be weird if the AR was on the top and took the lead without being able to deliver and fulfill their missions. They don’t know enough about aspects regarding economics, construction or technical solutions”.

**Construction engineer:** The CE believes that it would not be a huge difference from today, since the ARs are responsible for the coordination. The CE does not see any problems with this organizational change as long as the ARs are good, but it would also lead to less architectural tasks for the AR. On the other the CE is not totally convinced about handing over the major role to the AR since a good, safe and long lasting construction is still the essential part of a building.

**Planner:** The PL is very positive about the idea of handing over more responsibility and to give the AR the role as major PM. They would according to the PL, help and take care of their pre-work and interests in a better way, and it would definitely create better architecture and nicer cities. The PL explains, “Today, it works like this: I’m responsible for the totality at an early stage and when I hand over my work and investigations to the next part all my work either gets ignored or totally split into pieces. This leads to poor built environment, which is the reason why I think the AR would do a great job as a PM. We would together create the best built environment!” The PL though agrees upon that being head responsible also comes
with several issues that can be problematic for the AR such as budgeting, but the PL wants the architect to have the last word.

**Architect:** The AR’s first answer is “Yes, of course and I feel that we already have that role. We operate as a kind of semi-project manager, and we need to know everything and what all involved persons want. I don’t think we lack any competences or knowledge. Since we have this very important role I definitely agree with her”. The AR also admits that this change would probably mean less economical win, because they would design and built more expensive projects. After resonating a bit, the AR carefully adds that there are maybe a few things that they need to learn and ends with saying “…But we would have way better and nicer architecture, for sure!”

6. ANALYSIS
This chapter begins with a summary of the professions’ main concerns and core aspects that were highlighted by the interviewees. It also presents in-depth analyses of the key findings and their correlations to theories.

6.1 THE PROFESSIONS’ MAIN CONCERNS
Each of the interviewed professions has his or her major concerns and core aspects that they highlight and want to address. The PM thinks the infrastructure of communication and aspects regarding project planning are the most essential factors. With suggesting how to formulate a custom communication plan for each project, kick-off events and that a change in the educational phase is essential, the PM indicates a strong effective-communication and collaboration approach. The CE does not really approve the tension between engineers and architects, even though he/she admits that it can be problematic when these two groups have extremely different visions. The CE reflects more upon aspects regarding differences in generations and states that younger professionals are often more open minded and collaborative. The PL is disappointed at the decision-making processes and wants to see more related competences invited and involved during the planning process. The PL also has a feeling that their work is not always taken into consideration and calls for a needed and increased prioritizing of soft values in the projects, such as cultural, aesthetical and social sustainability. The AR is having some troubles with engineers, but is highly promoting closer collaboration and effective communication. The AR wants the other participants to be more engaged and motivated in the projects and sees a crucial importance in sitting together with the group and mutually agree upon a shared vision.

6.2 MAJOR THEMES FROM FINDINGS AND THEORY

**Face-to-face interaction, motivation and open dialogues**
All interviewees highly suggest to meet earlier or to have more meetings throughout the whole process. It is especially the PM and the AR who wants the group to sit down together early in the starting phase to discuss the project, its process and to mutually agree upon a shared vision. The fact that they request this early collaboration indicates the issues with

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everyone focusing on their own interests and their work according to their specific perspective, which results in contradicting objectives (Dainty et al. 2006:20-21). The affirmed importance with this first meeting and a shared vision is an expression of the need for a collaborative rationality approach (Innes & Booher 2010:6). When deciding upon a shared vision that corresponds to all involved professions’ interests, in the way that the AR suggests, a collaborative dialogue could evolve.

Both the PL and PM state the importance of everyone involved being present at all meetings and they also promote inviting additional competences earlier in the process, where the PL strongly believes that face-to-face meetings have positive effects on the collaboration. The statement is in line with Hallin and Karrbom’s suggestions about the correlation between face-to-face interaction and trustbuilding collaboration and that the sense of identity gets more strengthened by meeting face-to-face than virtually (Hallin & Karrbom 2012:170-172). Even though the flow of communication is dependent on the project’s type and size the PM sees this as an essential part of the process. The communication plan proposed by the PM, correspond to all authors’ ‘guidance’ as needed for a better communication and collaboration.

All interviewees indicate split and unclear visions as the main issue, which leads to involved participants working towards their own goals. It is especially the PL and PM who mention the problematic issues of the professions being separated from each other during their period of studies and how this homogeneity of each profession creates seclusion, which refers to the existing ‘silo-like’ approach stated by Dainty et al. Surprising is that even though this awareness seem to flourish on both the theoretical and practical side of the field, nothing changes (Dainty et al. 2006:6-8).

The PL and AR want to see more involvement and engagement from the other professions and the CE thinks that people often lack the willingness to collaborate. This issue is also tackled in the praxis of collaboration, which promotes that engagement in collaboration makes participants learn how to proceed and deliver better work which will generate an organized capacity (Innes & Booher 2010:89-90). Managing change through motivating employees plays according to Dainty et al. also a crucial role (Dainty et al.2006:6-8). The PM’s suggested involvement of a communication expert and communication plan may not be a surprise with his/her holistic view, but formulating this and adapt it for each project would reduce working time, costs and negativity along the process (Hallin & Karrbom 2012:143-144, Dainty et al. 2006:6-8). As the PM states, when having that kind of overview of the process it becomes clear where implementations are needed.

The PL wants to see a change on hierarchical levels in the decision-making processes and an increased involvement of the actual experts, and not only politicians and the people with power. Today’s hierarchical decision structure is an example of what Innes and Booher explain; that higher professionals get worried when handing over responsibilities. But to take more and integrated decisions with involved experts, as suggested by the PL, a network power could evolve where better shared purposes (among all) make the group more powerful (Innes & Booher 2010:109).

The PL and AR are disappointed that other participants seldom prioritize aesthetical values even though they put a lot of effort in promoting these as strong qualities. The AR states that when clarifying the vision according to requirements and interests within the group, the
project turns out great. Answers from the PM and AR express this holistic view as stated by Hallin & Karrbom (Hallin & Karrbom 2012:143-144), which also indicate their roles as project managers.

The PM’s idea of organizing a kick-off for everyone who is involved and to invite the client to explain the vision would probably facilitate the following working process. Then people would meet face-to-face under less strict and formal conditions, which can generate a trust building but also a more consensus seeking approach when they all together hear the formulated vision, requirements and needs directly from the client (Hallin & Karrbom 2012:171; Innes & Booher 2010:6,106). Agreements in advance and strengthened trust among the participants would give better conditions for reaching a collaborative rationality (Innes & Booher 2010:6-7). To mutually formulate a comprehensive strategy is also important since it takes challenges and interests into consideration, which builds a better ground for compromising and consensus-seeking solutions (Boverket 2002:23-35; Innes & Booher 2010:6,210).

The involvement of the architect and other competences depends as the PM says on what kind of project it is. The fact that each project requires its own complex network of involved actors and short-term involvements and periods of outsourcing (Dainty et al. 2006:20-21) indicates as all authors state, a custom strategy. Innes and Booher see this as the Collaborative dialogue, which has to evolve from the project’s context through a complex and adaptive system (process design) (Innes & Booher 2010:106). Since all interviewees often started their answers with, “It’s difficult to say, it strongly depends on the project, but…” verifies together with the theories that a one-size-fits-all approach is impossible.

The PL explains that most professions are too into their own interests and cannot concede their territory for any kind of compromises. This demonstrates the different perspectives that are according to Innes and Booher needed (2010) and they are an essential part of the project-based organization (Dainty et al. 2006). This should be treated with a successful collaborative dialogue that is shaped by transparency, respect and knowledge sharing, which generates better understandings and collaboration (Innes & Booher 2010:209-210). It is important to understand that all professions have their own challenges, conditions and limitations (Dainty et al. 2006:22-25) but if working according to the process design, the knowledge sharing leads to respected messages and an open dialogue where social capital can bridge these differences (Innes & Booher 2010:106). The different created interrelationships are also recognized in the responses about who is working well with whom. These relationships are as stated in both literature and interviews highly influenced by interests and values, but also by the professions own languages. Profession’s languages seldom match since interpretations and understandings are rooted in their professional roles (Dainty et al. 2006:79-80).

Another way to avoid misunderstandings and to support knowledge sharing is to clarify who is leading and responsible for what duties (Hallin & Karrbom 2012:143-144). Since participants in most cases lack knowledge about the other’s roles and responsibilities the PM sees this clarifying part of the communication plan as crucial for a well functioning collaboration. The fact that the interviewed CE’s architectural interest in combination with an engineering AR resulted in great collaboration and project results, indicates how better understanding improves the working process. This is linked to the organizational importance of communication in terms of feedback and encouraging an open dialogue throughout the
whole process (Dainty et al. 2006:6-8). Better understanding for other professions is also dependent on the participants’ self-awareness and could be analyzed through the Johari Window model (Hallin & Karrbom 2012:148), which can support a transparent and open dialogue. According to the responses in the interviews, this is seldom the case today, where the CE for example explains that they do not reveal all information and want to maintain a good façade for the PM, but also the AR’s less respectful answers regarding CE’s.

**Attitudes, jargons and occupational identity**

Risen conflicts are according to the PM seldom outspoken but are rather expressed in attitudes where the PM sometimes have to step in as a facilitator. It is common that professions do not understand each other, due to different languages and lenses and it is the PM’s task to through supporting and communicating steer the process (Hallin & Karrbom 2012:144). That the temporary structure, fragmented cultures and attitudes negatively affect the work is clearly stated among the authors as the interviewees. The PM explains how using different communication technics and changing approach is useful to make everyone working towards the same vision. It is his/her major task as a facilitator to successfully manage encoding and decoding (Dainty et al. 2006:12-13). It is in other terms, about informing and listening, and stepping in to clarify and transform messages when it is needed (Hallin & Karrbom 2012:156-166; Dainty et al. 2006:12-13). The interviewed CE also confirms, from own experiences, the importance of a communicative PM.

The AR explains several times how problematic the collaboration with CE’s is. Even though the AR thinks these factors are highly personal and individual he/she can identify a pattern among the professions regarding behavior and attitudes. All interviewees indicate the correlation between willingness to collaborate and generation. One example is that recently graduated are more solution oriented. The authors do not discuss generational aspects, but if the newcomers of the field happen to be more collaborative along with raised acceptance of communication strategies and face-to-face meetings the industry could head towards a more collaborative and efficient future.

There is a strong attitude among all profession groups that extra meetings and communication exercises etc. are time consuming, this is especially stated by Hallin and Karrbom (Hallin & Karrbom 2012:170-171) and the PM, who though believes it would create better team work and working environment with fewer conflicts.

One main factor for the different approaches are the different schools, where architects are educated in an artistic school while the engineers come from a very scientific oriented school. This leads to that the different professions look at contradicting values and aspects.

All interviewees admit to some extend that they change their behavior or enters different jargons depending on which profession they meet. The jargon in the construction industry is a clear but unspoken social indicator of the profession where stereotyping is common, which affects and limits the collaboration (Dainty et al. 2006:86). The reason for changed behavior is according to the PM and AR; the need and desire for everyone’s acceptance, trust and belief in their ideas. Dainty et al. explain that all people tend to adapt their approach so it accords with their own interests, needs and preferences when communicating with others (Dainty et al. 2006:82, 22-25). This is also the case explained by the PL who says that people with power tend to speak and answer questions suitably for their own favor. The PL, AR and
CE all state in line with Dainty et al. that everyone changes behavior consciously as unconsciously (Dainty et al. 2006:65). The PM’s way of reflecting out load at meetings to make sure that no one gets dismissed by motivating decisions, is another example of both an open dialogue where everyone feels involved and seen, and of the usage of special communicational technics. That the AR uses a more selling approach when talking to the PM and a more constructional when talking to the CEs are other examples of how to tailor the spoken language so it supports own interests and how to communicate an occupational identity through using specific terms (Dainty et al 2006:22-25).

During the interviews some factors of stereotyping and attitudes got clearly revealed. The AR for example express an clear attitude that they have a big role and that their work is more important, because it is visual, while the CE does not have a big role because they ‘only’ do their small part of the project. That prestige and pride distinguishes their profession, role and work is confirmed by both the PM and the AR. The group jargons seem occasionally to be strong and that older CE’s seem to take advantage of their power as CE’s by stopping the AR’s work just because they can, indicates a way of expressing an occupational identity (Dainty et al 2006:22-25). It also indicates the professions power in different situations and a common attitude among the professions. That the AR says, “The PL often expects projects turning out catastrophic…” and that PMs work hard to please PLs to have a good reputation at the municipality, are some narrative examples from the interviews that show how barriers are influenced by expectations, stereotypes, promised roles and how different profession’s interpretations of a role and responsibility is rooted in their occupational context (Dainty et al 2006:80). This is strongly influenced by their school and education, which is indicated by the PM as a main issue.

Other opinions that reveal these kinds of occupational influenced attitudes are the responses about giving the AR more power where the AR, PL and partly the CE agree upon the idea while the PM says that projects would not turn out well. The PM thinks ARs lack economical knowledge and that they are too scared of handing over responsibilities, which are common concerns (Innes & Booher 2010:109) of collaborative and shared power. Since the AR’s role differs between countries, we can according to the PM see which knowledge and skills that are needed from an AR to operate as a PM. The PL supports the idea because it would result in an improved built environment where the PL’s work would be carried out and developed in a better way. If the AR would get more influence and decision-making power, changes in the education and an improved understanding about others’ roles would be highly needed to overcome the common conflicts and barriers of today.

7. DISCUSSION

In this study the architect had the most stereotyping and partly disrespecting responses but is also strongly promoting a shared vision. If the case is, as explained among the interviewed, that CE’s often ‘say no to early’ just because have that power even if they could work on compromising solutions, the AR’s frustration is more than fair. The statement is also clearly confirmed by the interviewed CE, who explains that his (often) older colleagues do this. These issues are linked to problems in the educational system, which has been more silo-like
but seem to be heading towards an approach of increased understanding for each other’s work. The culture of blaming other professions could be understood as an indication that there is a lack of both trust and self-awareness among the professions. The importance of self-awareness, sense of identity and belonging and open dialogues seem to be central for an efficient and well functioning collaboration according to the authors but less promoted among the interviewed professions. Another challenge that comes with this change is to raise awareness of the importance of meetings, face-to-face interaction and effective communication and how this saves time and costs in the end.

Since the different lenses provide valuable information and are crucial and needed to achieve successful projects it is rather a question of how to increase the acceptance and understanding of other’s roles, than trying to figure out and separate the professions that usually not come along well. Since these kinds of studies can give an insight in which profession that have to improve knowledge and understanding for other professions’ perspectives, conditions and actual role to facilitate compromises, they are both useful and needed.

A changed role of the architect is an interesting topic since they have a major coordination responsibility, but do not have lot of power when it comes to taking decisions. Since three of the four interviewees agreed upon giving ARs more power and a main project management role, the suggestion from the CEO in the article seems not completely irrelevant. Even if that would result in better architecture and improved built environment the PM’s statement regarding the AR’s limited knowledge calls for a change in both the education system as in the management organization. Since both of them experience their collaboration as often good and well functioning, a change in the management positions where the architect operates as a semi project manager through some kind of shared leadership could lead to successful outcomes.

7.1 LIMITATIONS
Since only one person from each profession group was interviewed, the study does not result in material for generalizations. It gives an insight in how the collaboration and communication can be and discusses suggestions for improvements of how to overcome common barriers. Qualitative interviews as conducted in this survey and in social science do not have the main purpose to result in generalizations, since there is no real answer of the lived world (Kvale & Brinkmann 2015), where validity and reliability is often seen as more important in quantitative research. This study has focused on few but in-depth qualitative interviews. To reach more quantitative and generalizing results a complementary questionnaire survey could have been sent out to companies. More interviews would also have increased the validity and reliability partly, but this was not possible due to time limits. In further research it would be interesting to interview senior professionals or additional profession groups as well, to get a better understanding of the generational aspects and the complexity of actors. Another aspect that has not been discussed is the different organization types that are used in Sweden, these may have big impacts on how the management, responsibilities and decisions are being made, which has not been investigated any further in this study. In further research of the issues I would also suggest to conduct observations and join meetings to analyze actions and jargons more in depth.
8. CONCLUSION

I have performed a study on how collaboration and communication may happen in the working processes of development- and construction projects. The awareness of the problematic situations that often occur among the different professions within the built environment and construction industry seem to exist, both among people in the field as in published literature. The complexity of its project-based nature and the wide range of involved actors, stakeholders and competences is one major factor that makes it difficult to manage a change. The fact that each single project has its unique set of competences, challenges and working process indicates that a one-size-fits-all strategy or approach does not work. The mentioned generational shift of increased openness and awareness of the positive outcomes of closer collaboration and better understanding has so far contributed to a less ‘silolike’ working environment and mindset. If this recognition continues along with educational changes, better understanding for other professions and developed project communication, it can hopefully result in better and closer collaboration in the future.
9. REFERENCES

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Figures

*Figure. 1:* Diagram created by the author

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APPENDIX A

Interview questions

- When does collaboration and communication work ideally, between whom and when during the process? In which situations does it work less well?

- How do you usually communicate, in which way/s?

- What is your view of enhanced collaboration between the different professions?

- What is missing in today’s collaboration and communication that could have facilitated the work?

- Do you experience that the different professions act differently depending on what other professions that are involved?

- What are the main characteristics of the professions’ influence?

- What would you think about the architect operating as project manager?

Interviewees

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