8 – REFLECTION

In this chapter the reflection upon the researched subject, the process and the planning is described. This reflection is part of the graduation process and has as objective to learn from the graduation project and accompanying process.

8.1 REFLECTION ON SUBJECT

In this research the possibility for the implementation of open data in the renovation process of residential post-war serial built dwellings is investigated. The subject has been chosen based upon a personal opinion of the author that the input from open data could be interesting for the building process. Since in a first literature review no sources of this implementation could be found it was decided to investigate this subject and it has been chosen as the topic for this research. To analyse this subject it was chosen to design the research as an exploratory research.

Open data as well as renovation with a focus on energetic sustainability are both rather young topics in practise and in theory. This makes the subject rather hard to research. The findings from the research are thus not very specific and still leave a lot of questions open. There are many bottlenecks in the process, however it is hard to link these specifically to a lack of any kind of data.

To research a topic in an explorative manner is hard for a graduation research. Since so many things are still unknown of in theory and in practise it is hard to analyse it in depth. In retrospect it might have been wiser to choose a subject that is less innovative. However, that might as well not have been a challenge as this research has been.

As the graduation research project continued in time and the interviews as well as the literature review and the case studies were executed more and more information on the process of renovation started to become clear. Generating new insights, yet also raising new questions. In retrospect the subject might be chosen differently. When the research into both subject, thus energy renovation and open data use, got more developed bottlenecks not directly related to data were found. These bottlenecks do not have a direct link to data but are important for the process to succeed. Thus, it might have been better to look at a possible solution for these bottlenecks in a more general sense and not only focussing on open data. An example of this could be the bottleneck regarding the changing stakeholder roles. Furthermore, the same goes for the perspective of open data. A conclusion which can be drawn from this research is that the availability of open data is not known with professionals in the building sector. This bottleneck first needs to be overcome before open data can be re-used in the renovation process, or any other kind of building project for that matter.

The research has been conducted within the graduation lab ‘Urban Development Management’. This lab does focus on the interventions in the existing urban fabric. From an urban perspective the physical-spatial, economic and socio-cultural aspects are analysed. Furthermore, the lab focusses on multiple scale levels and multiple stakeholders in the processes regarding existing urban areas. This graduation research fits within this lab since multiple stakeholders and scale levels are analysed. A process within the existing urban fabric has been investigated in depth and an attempt is made to find its link to a new subject, in this case ‘open data’.
8.2 REFLECTION ON PROCESS

The research has been executed as an exploratory qualitative research which included a literature review, semi-structured interviews and case studies to conduct an user need analysis. Based upon this user need analysis a list of possible needed data sets is created. With this list the open data portal of the Dutch government has been consulted. This methodology has been chosen to answer the research questions. However, in retrospect some process steps might have needed to be conducted differently.

First of all, the literature review, expert interviews and case studies have been conducted fairly simultaneously. This could have led to certain questions not being asked to the first interviewees, since the knowledge of the author has been developing along the process as well.

Due to the qualitative set up of the research it is still possible that not the right interviewees have been interviewed and the answers are thus not generalizable. It might be possible that employees with different housing associations or constructors for example give other answers and identify different bottlenecks.

Since not much has been written on either subject yet, being in this case the process of renovation projects focussing on energetic sustainability and the implementation of open data in process, it was hard to draw substantiated conclusions.

The research has been set up as an exploratory research. This research methodology is difficult to execute, no expert can tell you exactly what the link is between the two subjects since this has not have been investigated in the past.

Furthermore, the research methods have a lack in answering the third sub question exactly, in which it is asked if open data could solve these bottlenecks. In the first research set-up it was chosen to execute a test case; a case study into a project that was in the initiation phase of the renovation project and the author was planning to research possible data sets by herself to see if the data could answer these questions. However, since the relation between the bottlenecks and data needs to go through a few steps and data cannot answer to the bottlenecks immediately, this was not possible to do. In retrospect an expert panel in which the outcomes of the research would be discussed or another kind of method to answer this third question might have been better. With the methods used in the research this research question cannot be answered as much substantiated as would be preferred. However, since there was limited information available on the bottlenecks, since the process is currently changing, and on the implementation of open data, thus this could not have been know at the start of the research.

This research has been executed to achieve the Master of Science degree. In the graduation guide generic 16 achievement levels for the integral curriculum of the MSc track of Real Estate & Housing are mentioned (Prins, 2015). In the next sub section each of these achievement levels are addressed shortly and its results in this research project are elaborated.

1. **Academic contribution;** the ability to make an inspiring and innovative contribution at an academic level. In this research project two new subjects has been combined to see if these two could add value to each other. This research has not been conducted up till now. Resulting in a contribution on academic level which was not there yet.

2. **Academic methods and techniques;** knowledge, understanding and skills in the field of academic research, methods and techniques. During the years at the university attention has been paid to literature review and other research methods. However, never had we
have to execute these methods in such a large scale. Each interview went better than the previous one and I can definitely say that I have learn more on how to research and what kind of research method is appropriate to use.

3. **Integrating disciplines;** the ability to integrate varying disciplines. In this research multiple interviews were held with different kind of stakeholders. For example employees from housing associations as well as constructors. In the interviews different perspectives could be notified with these interviewees. The ability of putting the answers in perspective was something that has been learned during this research project.

4. **Market, actors, processes and procedures;** knowledge and understanding of the various roles, processes and events in the building sector. In this research one process has been investigated in depth, accompanying actors have been interviewed. Knowledge has been created about this specific type of project and its context and actors. However, it does not only give insights in this specific process, it makes it easier to understand other process in the building sector as well now.

5. **History and relationship with other disciplines;** knowledge and understanding of the history and the theory of the building sector and relating processes. The history on the part of the built environment which was the focus of this research has been elaborated in the literature review. Furthermore, a lot of attention has been paid to putting literature sources into context when looking at their publication dates. This is used to describe the traditional process regarding renovation.

6. **The future in an international context;** knowledge and understanding of national and international developments in the real estate sector. The focus of this research has been on the Netherlands to demarcate the context of the subject. However, in both subject some attention was paid to the situation abroad. A recommendation of this research could be to look at the relationship between renovation and open data in other European countries as they had a similar rebuild assignment after WWII and are working on opening up their data as well.

7. **Quality within requirements and preconditions;** knowledge and understanding of the relationship between people and the built environment. In defining the bottlenecks a lot of attention has been paid to the perception of various stakeholders and their relationship with the dwellings.

8. **Designs, processes and methods;** knowledge, understanding and skills with respect to designing objects and processes in the area of building, renewing and managing the built environment and the ability to integrate design methods and design results into decision-making process and evaluation processes in these areas. This knowledge has been attained by the qualitative in-depth analysis of the renovation process.

9. **Social developments;** knowledge and understanding of building projects as social processes. Since the perceptions of all stakeholders has been taken into account attention is paid to the social part of the processes.

10. **Economy and sustainability;** understanding of economic, technical, functional and social expected life of constructions and their components and its relation to the environment. The focus of this research is on energetic sustainability, thus a focus on the environment and the future. Furthermore, one of the reasons why energetic sustainability is an important subject is that the less affluent in our country live in the dwellings that have the lowest energy label. This makes it for this target group a financially important subject.

11. **Life cycle of real estate and management;** knowledge and understanding of the life cycle and the relating processes. The focus of this research is on renovating dwellings which are close to the end of their technical lifespan, and in some cases their financial and social lifespan as well. The focus of this research is renovating these dwellings into renewed
dwellings with a new life. This has been done with the attention to all the building phases and with the focus on the initiation phase.

12. Life cycle of real estate and relationship with other disciplines; knowledge and understanding of other disciplines that have a relationship with building projects. In this research attention has been paid to the roles of different stakeholders such as architects, advisors, the context regarding laws and regulations and so on.

13. Life cycle of real estate and various levels of scale; knowledge and understanding on multiple scale levels. In this research the focus has been on different scale levels. In the analysis constantly zoom in and zoom out has been applied.

14. Communication skills; the ability explain the process by making use of pictures, texts, figures and the spoken word. The research has been written down as good as possibility and will be presented in a brief presentation that captures the essence of the research project and conclusions.

15. Presentation skills, communication skills and computer skills; knowledge, understanding and skills in these areas. To graduate the student must be able to explain the project properly.

16. Professional practice; the ability to work in practise. The research has been conducted within a graduation internship. During this internship a lot has been learned from watching along with the professionals at the graduation company.

8.3 REFLECTION ON PLANNING

The research project has started in February 2015. In the first weeks an exploration into possible research subjects was done. This was followed by a first presentation voor P1 in April. After this first presentation the literature research started. In this first period I lost myself in literature and had troubles finding the right information and staying on track. In June the first P2 attempt was made. Unfortunately, the work presented at that moment was not concrete enough yet and another attempt was offered two weeks later in the beginning of July. In these weeks I have worked hard to get my story straight and the second attempt was successful. In the first period I was not sure what to research and had troubles with finding the right subject and research methods. I was not able to take a step back and think logically about the research subject. In the period up till the second P2 attempt this started to change and the subject got more concrete. In the last week a graduation internship had been arranged which made it easier to choose of a type of case studies and make the project fit into the real world and practise.

After the summer holiday the graduation internship started and the fulltime empirical research period could start. At the internship I mainly focussed on my own research, however due to conversations with professionals that work at the company and small assignment for selection projects that were done in renovation projects a lot of knowledge was created. This would have never been created without the internship and thus I am really pleased with this opportunity and the guidance and freedom that I have gotten in the internship. For 3 months I have worked fulltime, and in some weeks even more than that, on the research. When I started I did not expect that the research took this much time. However, preparing, conducting, transcribing and analysing interviews is a very time consuming job. This was something that I did not expect up front. Furthermore, I wanted to do a lot more during this period, like a test case, however due to the complexity of the process (of renovation) there was no time left to do this. This was a pity, however I learned a lot in the research and I do not see it as a shortcoming to the research in the end.

All together I can say that I am happy with the outcomes of the project and the process and planning that has led to this outcome.