

RESEARCH PLAN

Final version 03-12-20

Daylight ingress in former V&D department stores

AR3AH105 Graduation Studio Adapting 20th Century Heritage
AR3A010 Research Plan (2020/21 Q1)

Mark van der Blom
4596080

Main mentor: Lidy Meijers
Second mentor: Frank Koopman
Research mentor: Hielkje Zijlstra

Research plan index

1. Introduction	p.3
1.1 Context of Vacant Heritage: department stores V&D	p.3
1.2 Personal motivation for Heritage studio: Vacant Heritage	p.3
2. Focus/Personal research topic, Problem statement & Goal	p.5
3. Research questions and Sub-questions	p.6
3.1 Collective SBT research question	p.6
3.2 Personal research question and sub-questions	p.6
4. Methodology	p.7
4.1 Research methodology	p.7
4.1.1 Collective research methodology	p.7
4.1.2 Personal research methodology	p.8
4.2 Reflection of research methodology	p.12
4.3 Design methodology	p.12
4.4 Diagram: relation between research and design	p.13
5. Expected results of research	p.14
5.1 Expected results of collective SBT research	p.14
5.2 Expected results of personal research	p.15
6. Relevance of the graduation research and its contribution to knowledge	p.15
6.1 Collective SBT research	p.15
6.2 Personal research	p.15
7. References (historical, theoretical and practical)	p.17

1. Introduction

1.1 Context of Vacant Heritage: department stores V&D

V&D is a Dutch department store chain where every Dutch person went to, whether it was for your household items, your school supplies, to eat in the restaurant or just browse through the almost endless range of products, the V&D had something for everyone. The V&D was characterized by the many different departments, the long escalators and the famous restaurant "La Place". This was all present in an imposing building with a lot of allure. The department stores of V&D were, like other department stores, a symbol of consumption. They were big in scale, consisted of many window displays and offered many different products (Hondelink & Otto, 2016) (Berkers, 2016).

The V&D concern was part of the Dutch retail market for more than 100 years, until the company went bankrupt in 2015 (Hondelink et al., 2016). The bankruptcy of V&D was seen as a great loss. As a result of the bankruptcy, dozens of buildings were vacant, which of many were located in the city centre. These monumental buildings cover a lot of floor space and many floors, which, together with the location, is an excellent opportunity to develop something new. A solution was found for a new infill of the former department stores, the Canadian department store chain Hudson's Bay came to the Netherlands and took over some of the department stores. However, they did not last long on the Dutch retail market (RTL Nieuws, 2020). After the departure of Hudson's Bay, the buildings were vacant again. A new strategy with a new infill will have to be devised for the former department stores of V&D, on the one hand to prevent further impoverishment of the buildings and therefore negative influence on the city, and on the other hand to preserve the important historical and cultural value of the buildings. The city also has an interest in a lively, versatile centre and the former department stores of V&D are an extremely suitable opportunity for this.



Figure 1: The V&D in Leidschendam after the bankruptcy (Omroepwest.nl, 2016).

This brings us to the present, where the task lies to devise a new strategy for these vacant buildings so that they can once again become a successful part of the city and city life. The question here is what exactly should be done with these buildings. Whatever happens, it is crucial that the building's characteristic elements are preserved, as well as its historical and cultural value.

1.2 Personal motivation for Heritage studio: Vacant Heritage

During the years I noticed the vacancy of many existing buildings in the Netherlands, which is increased by the Covid-19 pandemic. It is a shame to see that existing buildings are neglected, while new buildings are popping up like mushrooms. It is important to make a switch towards the reuse of existing buildings and not only build new buildings. This is crucial because existing buildings have a social, cultural, economic and historical importance in society/the city. A building could reflect a

period in history, a solution to a certain social problem of a time or a certain way of construction (De Jonge & Kuipers, 2017). It would be a pity if such importances would not be fully reflected anymore due to deterioration or vacancy. Also, vacant buildings offer possibilities to house new programs and to aid in solving current societal problems, like the dwelling shortage. They could therefore become a functional part of the city again.

I am interested in the reuse of existing buildings and I think it is fascinating to see that there are architects who transform vacant buildings into new lively buildings and what is the result of that. Because of various projects, such as the Fenix 1 warehouse transformation by Mei architects, I became passionate about transforming existing buildings. I really want to experience what it is like to transform an existing vacant building and would like to do this in my graduation year. I still have little experience in this field, so it would be an excellent opportunity for me to increase my knowledge, insight and experience during my graduation, and to continue this in practice after graduating.



Figure 2: Fenix 1 warehouse after transformation (own photo, taken during CSI course).

After hearing that one of the topics of the heritage graduation studio was the transformation of former V&D department stores, I immediately got enthusiastic. The V&D formed an important part of my life as a child and teenager when growing up. Over the years, I went there at least once a week to go for shopping or visit the restaurant La Place. Each time when visiting the building I was amazed by all the different goods and floors. This impression and countless others resulted in fond memories of the V&D. Nowadays when I think back of that time, I have feelings of nostalgia. I would like to combine this experience with the V&D's and the challenge of transforming an existing building in a graduation project. Therefore I chose Vacant Heritage as my graduation studio.

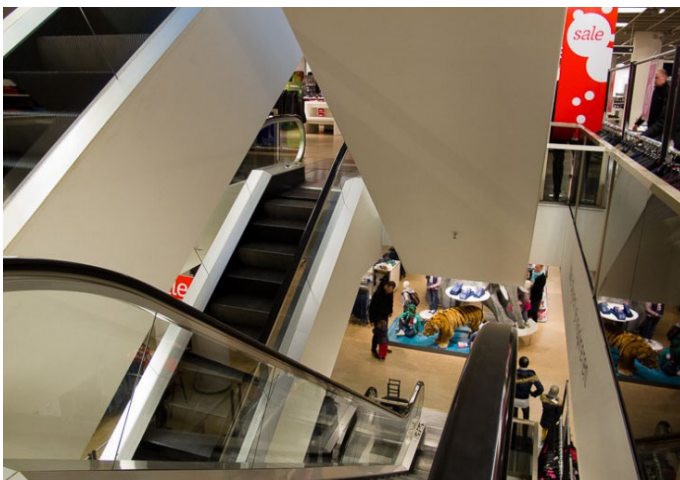


Figure 3: Memories of the V&D with the different escalators, floors and goods (Jouwstad.eu, 2015).

2. Focus/Personal research topic, Problem statement & Goal

During my youth I went to the V&D a lot. When you walked in the city and approached the V&D, you immediately noticed the monumental appearance of the building, it worked as a landmark in the city. When you entered the V&D a world opened up to you, full of colours, scents and different products. You imagined yourself in a completely different world than when you were outside the building. This world was directed inwards so that the focus was put on consumption and there was hardly any relationship/interaction with the city. The layout of the facade, which was completely or largely closed, contributed to this. Even if there were windows in the facade, these were often blocked with clothing racks or walls. Consequently, there was hardly any daylight in the building. The interior was illuminated with artificial light.

On October 9, 2020, I went to the former V&D in Leiden and saw the building as a landmark in the city again. I found that the appearance of the building's facades had hardly changed. While visiting the ground floor of the building where the Action is now located, an employee gave me the opportunity to view the other floors. I was deeply shocked that my experience of the V&D, which was so deeply engraved in my memory, has completely changed. The former world of V&D, so colourful and lively, had turned into a cold, dark and lifeless building. I immediately thought how the spaces in this building could be experienced differently if the spaces in the building have more access to daylight, also the spots further away from the facade. The problem of the lack of daylight, especially deeper into the building, was the case at the time, but has now become more prominent due to the current state of the building (vacant) (see figure 4). On the other hand, as seen in figure 5, I noticed that there can also be too much daylight on some spots. This was sometimes the case near openings where daylight entered unimpededly. So, as I have experienced, daylight has an influence on the perception/experience of the spaces in the building.

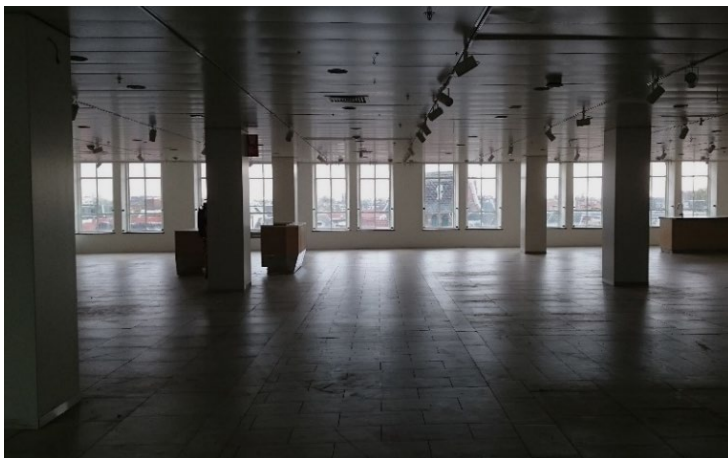


Figure 4: Dark interior of the former V&D in Leiden (own photo).



Figure 5: High amount of daylight near opening in former V&D in Leiden (own photo).

In short, department stores consist of deep spaces and usually have largely closed facades and roofs, resulting in little to no daylighting at spots further away from openings. On the contrary, the amount of daylight in the building can be too much, for example nearby openings. This difference in (amount of) daylight influences the perception of the spaces and the possibilities of the transformation of a building into new functions. The aim of my research is to investigate the role of daylight ingress in the perception of spaces and also the influence of daylight entry on the possibilities for the transformation of former V&D department stores. My research is therefore focused on daylighting in this type of buildings and what the consequences are for the re-use and re-design of those buildings. In the collective spatial building typology (SBT) research a building typology, based on spatial aspects, is developed for the former department stores of V&D. I will use this as an input for my personal research while I focus on daylight.

3. Research questions and Sub-questions

3.1 Collective SBT research question

This individual research is part of the collective research of spatial building typology as basis for re-design. This collective research aims to develop a spatial building typology for the former department stores of V&D and to find out how spatial aspects at different scales influence the possibilities for the redesign. The general research question is as follows: *How and why do specific series of spatial aspects on multi scale levels influence the design possibilities regarding the redesign of a specific group of buildings with the same original function?*

3.2 Personal research question and sub-questions

The focus and goal of the individual research is described on the previous pages. This raises the following research question: *What role does the ingress of daylight into a building play in the perception of the building and how does daylight ingress influence the possibilities for the transformation of a former V&D department store in a re-use?*

This research question is divided in the following sub-questions:

Sub-question 1: *How is the perception of a space influenced by daylight ingress and what role does the quality and quantity of daylight play in this?*

Sub-question 2: *How is daylighting in the eight former department stores now and how could daylight ingress be adjusted (increased or reduced) in the chosen location for the redesign?*

4. Methodology

4.1 Research methodology

The methodology part of the research plan is separated in the collective and individual research.

4.1.1 Collective research methodology

For the first phase of the collective SBT research, eight different locations of the former V&D department stores are documented and analysed. This is done in collective research by three groups of three students and one group of four. This is executed according to the four scale levels with four spatial aspects we focus on. The methods which are used for this research are archival research and data collection. Multiple archives are contacted and/or visited and various internet sites are used as source. The way the different spatial aspects are represented in drawings, is mostly done according to the drawing techniques used by the book: *Paris Haussmann*, written by Benoit Jallon and Umberto Napolitano (Jallon & Napolitano, 2017). This book analyses Haussmann's design for Paris and visualises that by making use of a clear and simple drawing style (see figure 6). It focusses on the same scale levels and spatial aspects as in our collective SBT research. His drawing style is therefore usable to implement for our SBT research. Another reason why we chose his drawing style is that, due to its clear and simple character, it can be used to compare the spatial aspects of the locations in the next phase. For the representation of the different spatial aspects also other sources are used, like the book *Precedents in Architecture* by Clark & Pause (Clark & Pause, 2012) and the book *Townscape* by Gordon Cullen (Cullen, 1961). This research is combined in eight location documents (one per documented department store) and shows the documentation and analysis of all spatial aspects. This will be a digital and physical book.

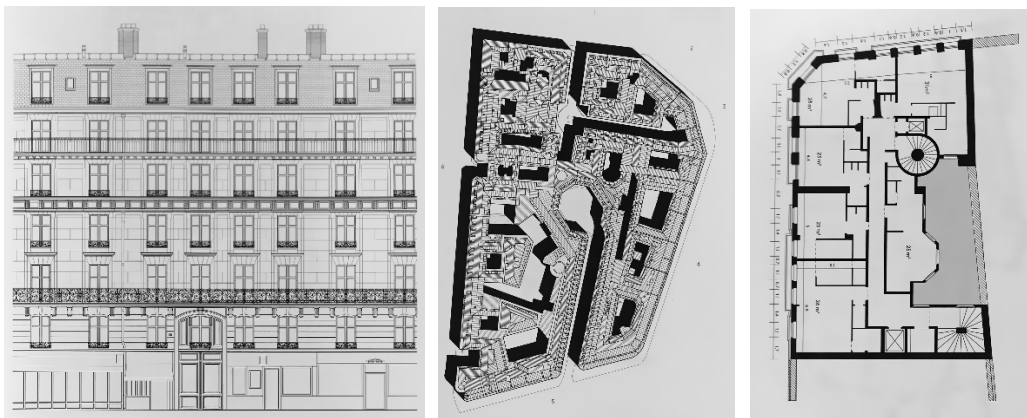


Figure 6: Examples of drawing style of the book: *Paris Haussmann* (Jallon ea, 2017).

The second phase of the collective SBT research is an individual comparison of one or more spatial aspects for all eight locations. This with the goal to find the corresponding/common characteristics of each spatial aspect for the eight locations. This also contributes to the general goal of the collective SBT research: to develop a spatial building typology for the former department stores of V&D.

For the second phase of the collective SBT research, I will focus on the spatial aspects of facade and roof configuration and building object configuration, because these are directly related to my personal research topic of daylighting. The comparison of these two spatial aspects for the eight locations is integrated in the execution of the second sub-question of my personal research. The book of Jallon ea (Jallon ea, 2017) will be used as a method to visualise the findings. His drawing style is clear and simple and thus it is useable to compare the different drawings. This is also done to represent the findings in a similar way as the analysis in the first phase so it creates a whole.

4.1.2 Personal research methodology

In addition to collective research, personal research is also conducted. This tries to find an answer to the main question and is divided into two sub-questions. The way in which these two sub-questions will be executed is described below.

Sub-question 1: How is the perception of a space influenced by daylight ingress and what role does the quality and quantity of daylight play in this?

In this sub-question there will be looked into the influence of daylight ingress on the perception of spaces in a building and the role of the quality and quantity of daylight in this. This will be done on the basis of (scientific) literature research. This sub-question is positioned in the field of sensory perception and atmosphere, it focuses on visual perception while this is related to daylight. Firstly, research is carried out on the influence of daylight ingress on the perception of a space. Different literature about daylight (also shadows) and perception is consulted for this. The following literature is relevant here: Baker & Steemers (2002), Bille & Sørensen (2016), Cuttle (2015), Pallasmaa (2005), Ramos (2015), Rasmussen (1959), Salve (2019), Steane (2011), Steemers & Steane (2004) & Tanizaki (2001). Secondly, research is conducted into the role of the quality and quantity of daylight on the perception of a space. Literature that can be used for this are Evans (1981), Laganier & van der Pol (2011), Sorcar (1987), Steffy (1990) & Tevfikler (1996).

The aim of the research for this first sub-question is to gain knowledge about daylight and its influence on perception and to provide a toolkit, based on the qualitative and quantitative aspects of daylight ingress that play a role in influencing the perception of a space. This toolkit, consisting of qualitative and quantitative aspects of daylight resulting in influencing the perception of a space, can be used for the design to test a certain idea/concept. The testing is done with the help of design tools, like sketches, models, etc.

Sub-question 2: How is daylighting in the eight former department stores now and how could daylight ingress be adjusted (increased or reduced) in the chosen location for the redesign?

This sub-question examines the current situation of daylighting in the eight former department stores (the same locations as chosen for the SBT research) and how the daylight ingress could be adjusted (increased or reduced) in the chosen location for the redesign. To carry this out, the research for this sub-question is divided into three parts, each with its own question and methodology.

The comparison of two spatial aspects (façade- and building object configuration) for eight locations, as part of the collective SBT research (phase 2), is integrated in the execution of this sub-question of the personal research.

1. How is the current daylight situation in the eight former department stores?

In this part of sub-question 2 all eight former department stores are analysed on their current daylight situation. The results of the documentation and analysis of the eight locations from the first phase of the collective SBT research will be applied here. Firstly, different daylight related elements are analysed per building to distinguish similarities and differences among the buildings. Plan analysis will be used as a method here. Examples of daylight related elements are the presence of skylights and voids and the percentage of open façade in relation to the total façade (open and closed). These elements will be documented in quantitative data (a table) as well as shown in drawings. Different drawings that are produced in the first SBT research phase, like floorplans, roofplans, sections and facades (related to the chosen two spatial aspects), will be used as a base for this. Examples of drawings are shown in figure 7-10.

Secondly, the locations with corresponding daylight related elements will be grouped in 2 or max 3 types. Thus a type consists of (a few) buildings with common daylight related elements. This is done with the aim of developing a typology based on building characteristics which are related to daylight ingress. The results of this can be used for the third part of SQ2. Also, the outcome of the comparison of daylight related elements per location (similarities and differences) will be linked back to the SBT research.

As an addition to the analysis of daylight related elements, a more thorough daylight analysis will be carried out for my chosen location for the redesign. The computer program Dialux will be used as a tool to map the current amount of daylight ingress in the building. In this program a 3D version of the chosen location will be created by making use of the drawings produced in the first SBT research phase. The results this program gives for the daylight quantity will be used for the third part of SQ2.

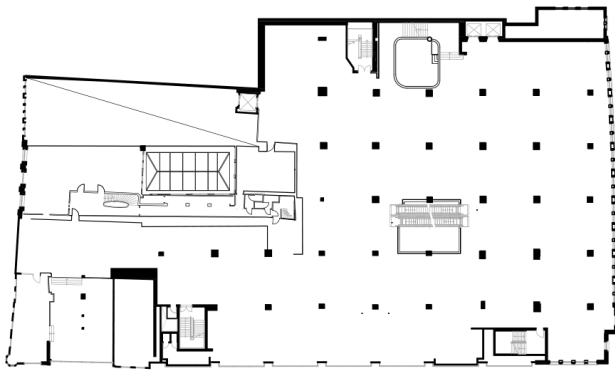


Figure 7: 2nd floorplan of Leiden (made by building scale group).



Figure 8: Roofplan of Leiden (made by façade&roof scale group).

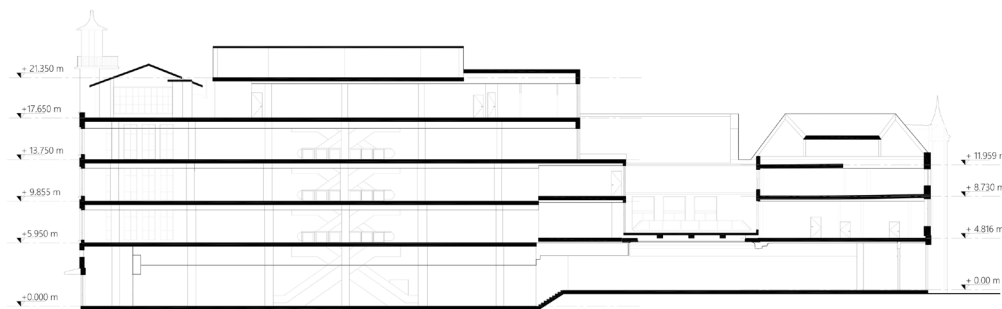


Figure 9: Longitudinal section of Leiden (made by building scale group).

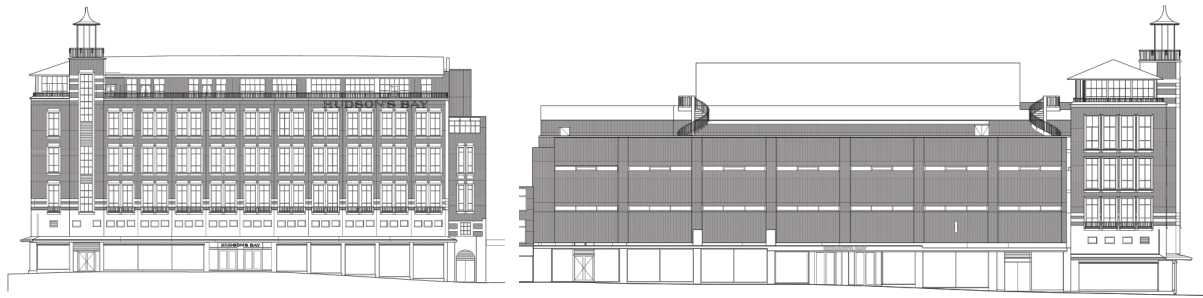


Figure 10: Two facades of Leiden (made by façade&roof scale group).

2. What are the measures to adjust (increase and reduce) daylighting and how could they be implemented in an existing building?

For the design a certain program will be tested. This program exists of functions which character determines the need for (the amount of) daylight ingress. For example a dwelling must have access to daylight while and archive rather doesn't have any daylight ingress. Because I am dealing with an existing building with an existing daylight situation, research needs to be carried out for the measures to increase and measures to reduce daylight ingress. This question examines those two kinds of measures and shows how these could be implemented in an existing building. This is carried out through (scientific) literature research and case-study research. The (scientific) literature research is applied to find daylight-enhancing and daylight-reducing measures. The following sources are relevant for the (scientific) literature research: Baker & Steemers (2002), Barret (2007), Barret (2008), Littlefair et al (1994), Evans (1981) & Energy Research Group (2013). The case-study research is not only carried out with the aim of discovering measures that either increase or reduce daylighting. It also provides information on where the measures are applied in the building and what consequences this has on the existing building with regard to the structure, possible future functions etc. So both the what and the how of the aforementioned question are addressed in the case-study research.

In Yin (2018) the following definition for a case-study research is stated: "A case study is an empirical method that investigates a contemporary phenomenon (the "case") in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident." (Yin, 2018, p.45). In this definition they state that a case study exists out of a phenomenon and a real-life context. In my research the phenomenon is the intervention(s) to increase daylight and the real-life context a transformed building. Next to this, Yin (2018) mentions the following reason for doing a case study: "you would want to do a case study because you want to understand a real-world case and assume that such an understanding is likely to involve important contextual conditions pertinent to your case" (Yin, 2018, p.45, 46). This is in line with what I want to research here because I want to understand how architects coped with daylight enhancing measures in transformation projects: so what measures they used and what impacts they had on the building. Thus case-study research is the right method to achieve the desired result. Yin (2018) also mentions that a case study can consist of one or multiple cases (Yin, 2018, p.47, 48). My case-study research consists of multiple cases, because I analyse different transformed buildings.

The case studies, which will be chosen, should be transformation/adaptive reuse projects in which adjustments have been made to an existing building. It is important to look at projects that cope with different needs for daylight before and after the transformation due to different functions. For example the transformation of a warehouse into dwellings requires more daylight ingress, while the transformation of a post office into an archive requires less/no daylight ingress. This with the aim of obtaining daylight-enhancing measures as well as daylight-reducing measures.

The case studies that are going to be studied are as follows:

- The transformation of the Sint Jobsveem by Mei Architects and Wessel de Jonge Architects (Rotterdam);
- The transformation of the Entrepotdok by A.J. & J. van Stigt (Amsterdam);
- The transformation of the Bazel by Claus & Kaan Architecten (Amsterdam);
- The transformation of the Koning Willem I warehouse by Atelier Pro (Amsterdam).

More case studies will be considered during the research itself.



Figure 11: The Sint Jobsveem in Rotterdam (Mei architects, n.d.).



Figure 12: The Entrepotdok in Amsterdam (Architectuurgids.nl, n.d.).



Figure 13: The Bazel in Amsterdam (Herbestemming.nu, n.d.).



Figure 14: The Former Koning Willem I warehouse in Amsterdam (Atelier Pro, n.d.).

3. Which daylight-adjusting measures can be used for the chosen location and what effect do they have on the amount of daylight ingress?

For this question, it is investigated which daylight-adjusting measures (increasing and reducing) can be used for the chosen location and what effect/impact they have on the quantity of daylight entry. Firstly, I will describe which daylight-enhancing and reducing measures can be used for the 2 or max 3 types as set up in part 1 of SQ2. This will be determined based on the daylight related elements per type (as found in part 1 of SQ2). It will result in a general conclusion about which daylight-adjusting measures can be used for which type. This outcome could provide useful information for redesign possibilities of all the locations and will thus be linked back to the SBT research. A type consists of (a few) buildings with common daylight related elements. One type embeds the chosen location and thus also the daylight-adjusting measures for that location. These daylight-adjusting measures will, as a second step, be applied on the chosen location to see what effect/impact they have on the amount of daylight ingress. This will be tested in the computer program Dialux. In this program the outcome of the existing daylight quantity (part 1 of SQ2) will be used to show the effect/impact of the measures. In the end this will lead to an overview of what effects/impacts each applied measure has on the amount of daylight ingress in the chosen building. The location of the implemented measures on the building will be indicated on drawings. Drawings from the first phase of the collective research will again be utilized as a base here (see figure 7-10 as examples) and plan-analysis again as a method.

The daylight-adjusting measures with the effects on the quantity of daylight ingress for the chosen building are used as input for the redesign options (with taking into account the values of the buildings (value-assessment)). Here the appliance of various daylight-adjusting measures and their quantitative effects are tested against a chosen program. This determines where which daylight-adjusting measure will be implemented in the building, because each function has a certain need for an (less of high) amount of daylight ingress. It could be that with the researched daylight-adjusting measures, a function of the program cannot be realized at the chosen location in the building. As a result, the position of the chosen function should be changed.

4.2 Reflection of research methodology

This will be described in the reflection paper, which will be handed in at P4.

4.3 Design methodology

As a result of the first sub-question a toolkit is made, consisting of qualitative and quantitative aspects of daylight resulting in influencing the perception of a space. These factors can be used for the design to test different ideas. For testing these ideas different design methods can be applied, like sketching and model making. Regarding model making to test daylight ingress, multiple sources

(Moore (1985) & Evans (1981)) address an approach for this. A decision in these approaches will be made before making daylight models. Next to the model there are other design tools to assess daylight quality. These tools, as well as quantitative daylight tools, are described in Steffy (1990). Other sources about quantitative daylight tools will be consulted as well.

As a general guide for making physical models in the design process, Mills (2011) could be used. This book offers information about different types of models and using models in the design process. This literature could be useful when exploring ideas and testing them with physical models. This source could as well be consulted for the, previously mentioned, daylight models.

In the design process multiple precedents will be studied and analysed. Radford's et al (2014) way of analysing buildings could be used in the design process when studying/analysing precedents. This source also contains different drawing techniques which might be helpful when analysing.

The methods mentioned above are possible design methods. During the design process a choice will be made whether to use one or not. Also other methods will be studied.

After I have chosen a location for my redesign, location specific research will be conducted. As part of this research a value-assessment will be employed. For this the book of De Jonge et al (2017) will be used as a base/method for doing the value-assessment.

4.4 Diagram: relation between research and design

The following diagram shows the relation between the research and design of this graduation year. It highlights the different steps of the collective research, personal research and design as well as the moments of reflection. The different steps are positioned in relation to the different presentation (P1 till P5) moments of this year.

COLLECTIVE RESEARCH

Introduction topic
Vacancy among department stores in inner cities

Problem statement
Typologies made based on form or function, building is vacant so function is gone

Goal
Developing a spatial building typology for former V&D department stores

Research question
How and why do specific series of spatial aspects on multi scale levels influence the design possibilities regarding the redesign of a specific group of buildings with the same original function?

Methods
Phase 1: archival research, documentation and analysing existing drawings in relation to spatial aspects on four scale levels (result: eight location documents)
Phase 2: comparison of spatial aspects of four scale levels for eight locations (plan-analysis)

Conclusions SBT department stores

PERSONAL RESEARCH

Research topic
Daylight ingress in former department stores and consequences for re-use

Problem statement
Little to no daylight ingress deeper in building and too much quantity of daylight ingress nearby openings

Goal
Investigate role of daylight ingress in perception of spaces and influence of daylight ingress on possibilities for transformation of former department stores

Research question
What role does the ingress of daylight into a building play in the perception of the building and how does daylight ingress influence the possibilities for the transformation of a former V&D department store in a re-use?

Sub-question 2
How is daylighting in the eight former department stores now and how could daylight ingress be adjusted (increased or reduced) in the chosen location for the redesign?
Sub-question is threefold
-How is the current daylight situation in the eight former department stores?
-What are the measures to adjust (increase and reduce) daylighting and how could they be implemented in an existing building?
-Which daylight-adjusting measures can be used for the chosen location and what effect do they have on the amount of daylight ingress?

Methods
Plan analysis existing situation daylight eight locations + current quantity of daylight ingress in chosen location

Methods
(Scientific) Literature research and case study research measures adjusting daylight ingress.

Methods
Plan analysis applying daylight-adjusting measures on chosen location + effect on amount of daylight ingress

Methods
(Scientific) Literature research influence of daylight ingress on perception & role quality and quantity of daylight on perception

Results & conclusion

Reflection of research results

A research based design

DESIGN

Design assignment/ problem statement
Redesign of vacant department stores

Design goals
Adaptive reuse of vacant department stores in relation to daylight ingress

Physical models: essence
exploratory study for finding out and highlighting essence of buildings (research through design)

Location choice

Location visit

Value-assessment
Mapping and prioritisation of the values and qualities, found dilemmas.

Location analysis
Analysis of building and location/site looking at different themes.

Design brief

Test daylight-adjusting measures for chosen location with value-assessment

Re-design options
Investigating different scenario's with combining values and program requirements, program options.

Intervention strategy

Conceptual design

Reflection of design

Preliminary design (Arch, BT & Climate)

Reflection of design

Elaborated design (Arch, BT & Climate)

Reflection of design

Final design (Arch, BT & Climate)

Reflection on final design solutions (paper)

Fascination

Initial design ideas/concept

Testing Result Evaluating

Designing + research through design (models, sketches, precedents etc.)

Testing Result Evaluating

Designing + research through design (models, sketches, precedents etc.)

Testing Result Evaluating

Designing + research through design (models, sketches, precedents etc.)

Testing Result Evaluating

Designing + research through design (models, sketches, precedents etc.)

R&D Diagram version 03-12-20

Mark van der Blom

4596080

5. Expected results of research

5.1 Expected results of collective SBT research

First phase: documentation and analysis

The first phase of the collective SBT research is a first step in coming to a spatial building typology for former V&D department stores. During this phase a group of thirteen students will document and analyse eight locations of former V&D department stores. The documentation and analysis is divided in four scale levels, each containing four spatial aspects.

At the end of this phase I highly expect that the research results in a collection of analytical drawings showing the twelve different spatial aspects of all eight buildings. Some of these drawings, like the floorplans, roofplans and facades, will be used as a base for the current daylight situation of the eight locations (part of own research methodology, sub-question 2).

I assume that, before doing the actual comparison in phase 2 (after p1), we can already tell some similarities and differences between the different locations, because the analysis takes place in a sequential order and every person focusses on the same spatial aspect(s) every time. These initial similarities and differences could contribute to the redesign.

During this phase I expect that at all locations certain events can be traced that resulted in a spatial change. This could have caused changes in the facade and/or the interior of the building. Certain events could not only have happened at one location but also at other locations. If these changes influenced daylight entry then this could be interesting to include in my personal research and design. For example I can consider of rolling back daylight related changes if these are in favour with the daylight requirements of the new program. However before doing this there should be an investigation into the nature of the event/intervention, did it strengthen or weaken an existing value and why was it done in the first place? On the basis of this answer and the importance/effect of the daylight-adjusting measure, a decision can be made to roll back the change or not.

Second phase: comparison

The second phase of the collective SBT research is the second step in developing a spatial building typology for former V&D department stores. During this phase all twelve spatial aspects will be compared for all eight locations. For the comparison it is the intention to find the corresponding characteristics of each spatial aspect for all locations. These characteristics will be used to set up a spatial typology.

In our choice and documentation of the locations, we included buildings that are designed by less than eight different architects. This means that multiple buildings are designed by the same architect. Due to this, I expect that the result of the comparison phase will indicate similarities between buildings that are designed by the same architect. These similarities might also contain elements that are part of the signature of a specific architect. These elements are important to take into account for the value-assessment and redesign of an architect-related building.

We will most probably find spatial similarities between all the eight former buildings because they are all built for the same client, V&D. However there might also be differences per location because the mindset/demand of the V&D corporation could have changed during the years. Differences in architectural style could as well be spotted, but I assume this chance is low because all the buildings we chose are somewhat related to Amsterdam School and not to another style which is completely different like modernism. For the sake of the collective SBT research there will primarily be looked at corresponding characteristics of each spatial aspect for all locations. These indicate the possibilities and limits for the redesign of the buildings. The differences which are found per location might also

be of interest for the redesign, because these highlight the building's distinctive character among the other department stores.

5.2 Expected results of personal research

The expected results of the personal research are included in the methodology chapter (4.1.2).

6. Relevance of the graduation research and its contribution to knowledge

6.1 Collective SBT research

My graduation research is linked to the collective SBT research, which is executed for the graduation studio Vacant Heritage. For this collective research an investigation is done to develop a building typology based on spaces. In the second sub-question (part 1) of my personal research a typology is created based on building characteristics which are related to daylight ingress. This will provide new information to the collective research.

In the history of architecture, typologies are often based on function or form and not on space. Also typological research that is done focusses on the building's function(s) or forms instead of the spaces. Nowadays, many buildings become vacant, so their function is not there anymore. This raises the question how to research a building's typology, a new approach is needed for that. After becoming vacant, the spaces in the building remain, so a building's typology could be researched based on the spaces. In this research the spatial aspects of a few buildings with the same original function are analysed and compared. The corresponding spatial characteristics provide a framework which can lead to possibilities for the redesign of those buildings. In the Vacant Heritage graduation studio, the former departments stores of V&D will be taken as a case to research a building's typology based on spaces.

This typological research forms a basis for future research and could later be applied in practice for vacant buildings with a different former function.

6.2 Personal research

Societal/ wider relevance

My graduation project deals with the transformation and reuse of an existing building. This is a frequently recurring topic in 21st century cities. Many buildings are vacant and don't contribute to the city life anymore. It is unfortunate that these buildings are left in this state because they have a social, societal or historical importance. Also the transformation and reuse of these buildings can contribute to solving current societal issues, like the lack of dwellings and the transition to an energy neutral society. For example, last year, 12,5 thousand new dwellings are added to the existing stock by transforming existing buildings, like vacant offices (CBS, 2020). It is therefore prominent that solutions are found for the reuse of vacant buildings.

In my graduation research I am involved in transforming former department stores of V&D into a mix of functions. These department stores have been an important part of our society for the past 100 years. The department stores of V&D, largely located in the inner city of various cities, are now vacant, impoverished and have a negative impact on the city. The transformation and reuse of the department stores can form an important part of a lively, versatile centre. The department stores also have important social, societal, economic and historical values that can be preserved through transformation. It is therefore necessary for these department stores to get a new program.

The ingress of daylight plays a crucial role in the transformation of former department stores, because it affects the possibilities of redesigning a building into a new program. Department stores consist of deep spaces with little to no daylighting in spots far away from openings, while nearby

openings there can be too much daylight. This could hinder the reuse of the building for new functions. In addition, daylight also plays a role in the perception of spaces, so it is of great importance that attention is given to this aspect when transforming department stores. All in all, my graduation research focuses on daylighting in former department stores and on the consequences for the re-use of those buildings.

Relevance for myself

This graduation topic is relevant for my future work as an architect because then I will also have to deal with existing buildings and daylight ingress. This graduation project could therefore lay a basis of knowledge, experience and insights for my future in architecture practise.

Scientific relevance (contribution to knowledge) + relevance for practice/design

For the first sub-question I consult and study different (scientific) literature about perception and daylight to try to create an (deeper) understanding on the relation between daylight and perception. I will combine the knowledge of different literature to find out how daylight ingress influences the perception of a space. This might lead to new knowledge. Subsequently, it is investigated, by means of different (scientific) literature, what role the quality and quantity of daylight play in perception of a space. This is done with the aim of setting up a toolkit, based on the qualitative and quantitative aspects of daylight ingress that play a role in influencing the perception of a space. This toolkit can be used during the design process to test a certain idea with the help of sketches, models etc. This toolkit is, next to my own design, also useful for other architects who have to deal with daylight, because this toolkit will consist of generally applicable tools. The development of this toolkit makes use of information in literature about daylight and its influence on perception and based on this information the qualitative and quantitative aspects of daylight, resulting in influencing the perception of a space, are determined. The toolkit thus contributes to new knowledge.

In the first part of sub-question 2, daylight related elements are analysed for the eight locations. The locations with common daylight related elements are grouped in types, resulting in a typology based on building characteristics related to daylight ingress. My research thus creates a typology based on daylight. The SBT research creates a typology based on spaces, but we both use the same buildings. The results of my typology research could then be applied to the SBT research (because space and daylight are related), the same as the conclusions from the SBT research informed my research.

The second part of sub-question 2 investigates daylight-adjusting (increasing and reducing) measures for buildings with deep spaces. (Scientific) literature about those measures are consulted and transformation projects are analysed to extract such measures. This leads to a framework of measures that can be deployed to better illuminate deep spaces and measures that reduce daylight ingress. This framework can also be applied for the transformation of other existing buildings, where there are struggles with implementing new functions that have other requirements for daylighting than the existing building offers.

Sub-question 2 is set up with the goal to map the existing daylight situation of eight former department stores and to get to know which daylight-adjusting measures could be applied to the chosen location. It is investigated with a certain methodology, which is divided in three parts, each with its own method(s). This methodology (as described in the methodology chapter of this RP) could be used for daylight related research for the transformation of buildings with other former functions, for example a former bank. In this way my research adds new knowledge to dealing with daylight in the transformation of existing buildings.

7. References (historical, theoretical and practical)

- Architectuur Amsterdam. (n.d.). *Westerdokeiland & Silodam*. Retrieved on 17 October 2020 from <http://www.architectuuramsterdam.nl/node/115>
- Architectuurgids.nl. (n.d.). *Verbouwing Entrepotdok*. Retrieved on 17 October 2020 from http://www.architectuurgids.nl/project/list_projects_of_architect/arc_id/922/prj_id/501
- Aries, M., Aarts, M., & Rosemann, A. (2016). Invloed van daglicht in de gebouwde omgeving. *TVVL Magazine* 06, 4-7.
- Atelier Pro. (n.d. a). *International Instituut voor Social Geschiedenis (IISG), Amsterdam*. Retrieved on 14 November 2020 from <https://www.atelierpro.nl/nl/projects/88/internationaal-instituut-voor-sociale-geschiedenis-iisg>
- Baker, N., & Steemers, K. (2002). *Daylight design of buildings*. James & James.
- Barrett, R. J. (2007). How well do New Zealand Architects Understand Systems and Methods for Re-Directing Natural Light into the Deep, Windowless Spaces of Buildings? *Architectural Science Review*, Vol. 50.2, 163-172.
- Barret, R. J. (2008). Natural lighting of deep architectural space: the perception of New Zealand architects. *International Journal of Architectural Research (Archnet-IJAR)*, 2(2), 103-124.
- Berkers, W. (2016). *Leegstaande V&D-panden: middelgrote steden in het nauw?* Universiteit Utrecht.
- Bille, M., & Sørensen, T. (2016). *Elements of Architecture: assembling archaeology, atmosphere and the performance of building spaces*. Routledge.
- Büttiker, U. (1994). *Louis I. Kahn: light and space*. Birkhäuser.
- CBS. (2020). *12,5 duizend woningen door transformatie van gebouwen in 2019*. Retrieved on 2 November 2020 from <https://www.cbs.nl/nl-nl/nieuws/2020/44/12-5-duizend-woningen-door-transformatie-van-gebouwen-in-2019>
- Clark, R. H., & Pause, M. (2012). *Precedents in Architecture*. Wiley.
- Cullen, G. (1961). *Townscape*. Taylor & Francis.
- Cuttle, C. (2015). *Lighting design: a perception-based approach*. Routledge.
- De Jonge, W., & Kuipers, M. (2017). *Designing from heritage: Strategies for Conservation and Conversion*. TU Delft.
- Descottes, H. (2011). *Architectural Lighting: Designing with Light and Space*. Princeton Architectural Press.
- Energy Research Group. (2013). *Shading systems: solar shading for the European climates*. Energie.
- Evans, B. H. (1981). *Daylight in architecture*. McGraw-Hill.

- Herbestemming.nu. (n.d.). *De Bazel, Amsterdam*. Retrieved on 14 November 2020 from <https://www.herbestemming.nu/projecten/de-bazel-amsterdam>
- Hondelink, P., & Otto, R. (2016). *Vroom & Dreesmann: de opkomst en ondergang van het warenhuis (1887-2016)*. Tens media.
- Jallon, B., & Napolitano, U. (2017). *Paris Haussmann*. Park books.
- Jouwstad.eu. (2015). *Verliest centrum Groningen V&D?* Retrieved on 14 November 2020 from <https://jouwstad.eu/verliest-centrum-groningen-vd/>
- Laganier, V., & van der Pol, J. (2011). *Light and emotions: exploring lighting cultures: conversations with lighting designers*. Birkhäuser.
- Lam, W. (1977). *Perception and lighting as formgivers for architecture*. McGraw-Hill.
- Lau, B. (2008). The Poetics of Sacred Light - a comparative study of the luminous environment in the Ronchamp Chapel and the Church in the Monastery of La Tourette. *Conference on Passive and Low Energy Architecture (PLEA)*, 25. Retrieved from http://web5.arch.cuhk.edu.hk/server1/staff1/edward/www/plea2018/plea/2008/content/papers_2.html
- Littlefair, P., Aizlewood, M., & Birtles, A. (1994). The performance of innovative daylighting systems. *Renewable Energy*, 5(2), 920-934.
- Mei architects. (n.d.). *Jobsveem: herbestemming rijksmonument*. Retrieved on 17 October 2020 from <https://mei-arch.eu/projecten-archief/jobsveem/>
- Millet, M. S. (1996). *Light Revealing Architecture*. Van Nostrand Reinhold.
- Mills, C. B. (2011). *Designing with models: a studio guide to architectural process models*. John Wiley & Sons.
- Moore, F. (1985). *Concepts and practice of architectural daylighting*. Van Nostrand Reinhold.
- Omroepwest.nl. (2016). *Verdwijnen V&D ook klap voor andere winkeliers*. Retrieved on 28 November 2020 from <https://www.omroepwest.nl/nieuws/3065838/Verdwijnen-V-D-ook-klap-voor-andere-winkeliers>
- Pallasmaa, J. (2005). *The Eyes of the Skin: Architecture and the Senses*. Wiley.
- Philips, D. (2004). *Daylighting: Natural light in architecture*. Architectural Press.
- Pierson, C., Wienold, J., & Bodart, M. (2017). *Discomfort glare perception in daylighting: influencing factors*. Elsevier.
- Plummer, H. (2009). *The Architecture of Natural Light*. Thames & Hudson.
- Radford, A., Morkoc, S., & Srivastava, A. (2014). *The elements of modern architecture: understanding contemporary buildings*. Thames & Hudson.

- Ramos, E. V. (2015). *Light in architecture: the intangible material*. RIBA Publishing.
- Rasmussen, S. E. (1959). *Experiencing Architecture*. MIT Press.
- RTL Nieuws. (2020). *Hudson's Bay Nederland nu officieel failliet, alle zaken dicht*. Retrieved on 15 November 2020 from <https://www.rtlnieuws.nl/economie/bedrijven/artikel/4972626/hudsons-bay-nederland-failliet-bankroet-zaken-dicht-avontuur>
- Salve, M. A. (2019). *What matters is light – light as matter*. Marywood University.
- Sorcar, P. C. (1987). *Architectural lighting for commercial interiors*. John Wiley & Sons.
- Steane, M. A. (2011). *The architecture of light: recent approaches to designing with natural light*. Routledge.
- Steemers, K., & Steane, M. (2004). *Environmental diversity in architecture*. Spon Press.
- Steffy, G. (1990). *Architectural lighting design*. Van Nostrand Reinhold.
- Tanizaki, J. (2001). *In praise of shadows*. Vintage books.
- Tevfikler, A. B. (1996). *Daylighting and its effects on interior atmospheres*. Bilkent university.
- Yin, R. (2018). *Case study research and applications: design and methods*. SAGE Publications.
- Zumthor, P. (2005). *Atmospheres*. Birkhäuser.