

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
Name	Michail Mexis
Student number	5035384

Studio		
Name / Theme	Vacant Heritage	
Main mentor	Lidy Meijers	Architectural design
Second mentor	Frank Koopman	Building Technology
Third mentor	Hielkje Zijlstra	Research
Argumentation of choice of the studio	<p>My fascination for the HA Lab and the Spatial Building Typology stems from my experience in academia and in practice, which have shaped my perspective of architecture and the direction it is heading towards in the foreseeable future.</p> <p>Having been raised in Athens, Greece, the built environment, and especially historic buildings, are threatened by the regional earthquake conditions, which limiting the life cycle of the built heritage and raising questions about its future. Meanwhile, since the dense urban fabric cannot tolerate extensive demolition, a different approach is needed to ensure the sustainable city's growth.</p> <p>Transformations of the existing built environment has become a major architectural topic nowadays, whose presence will only become stronger in the future. At the same time, interventions rely more on the spatial aspects rather than the former functions, which closely relates to the SBT research line.</p> <p>With the global population increase, as well as the urbanization and the climate crisis that our planet faces, this will require the adaptability and re-use of the existing built environment. A series of questions then arises that architects need to respond to with their designs, concerning ethics, performance standards, and appropriate response to the history and values of the extant.</p> <p>Although extensive research has already been conducted on the structural role in heritage architecture, no particular emphasis has been given on the case of the</p>	

	<p>Dutch police stations; 30% of the buildings that will become vacant in the near future, consists of heritage buildings. Therefore, apart from an architectural dimension, this problem affects directly cultural and societal values, since these buildings are linked with the history and collective memory of a place.</p> <p>In that way, this graduation research provides a different perspective towards heritage transformation, with emphasis on the structural role and spatial adaptability.</p>
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Graduation project	
Title of the graduation project	Structure & Adaptability: The influence of load-bearing structures on the adaptability of 20th-century Dutch Police stations.
Goal	
Location:	Burgemeester Patijnlaan 35, the Hague, the Netherlands
The posed problem,	<p>The theme of investigation aims to address the potential of structure, as a means of enriching the architectural qualities of former Dutch Police stations, which constitute the topic for this studio. Interpreting structure not by its utilitarian purpose, but by its architectural impact, can provide new insights and perspectives when dealing with existing buildings (Charleson, 2005). Therefore, it is worth investigating structure in terms of its limits and re-design opportunities regarding the adaptation of new functions in heritage architecture. Structure and architecture are two inextricable but not utterly separate domains. Transformations of existing structure are often accompanied by the need of supporting extra loads that cannot rest merely on the extant skeleton, and new supports are needed for the accommodation of new programs. The interference of new supports with the existing ones generates design questions and ideas, of highlighting existing and introducing new spatial qualities.</p>
research questions and	<p>The research question stems from the SBT main question, which is: "How and why do specific series of spatial aspects on four scale levels influence the design possibilities regarding the redesign of a specific group of buildings?"</p>

	<p>Therefore, my individual research question is stated below:</p> <p>“To what extent does the load-bearing structure in 20th-century Dutch police stations, influence their re-design options, in comparison to other office buildings of that era, in the Netherlands?”</p> <p><u>Sub-questions</u></p> <ol style="list-style-type: none"> 1. What are the characteristics of the structures of the 20th-century Dutch police stations and of other Dutch office buildings respectively? to which spatial typology do they belong? 2. Which strategies do architects use in the 21st century when dealing with existing structures in transformation projects of the era and spatial typology of the case studies? 3. How does the structure affect the enclosure and qualities of space in the Hague’s Police station?
<p>design assignment in which these result.</p>	<p>Redesign and change of program, of the Hague Police station.</p>
<p>The specified Design Assignment that needs to be undertaken, is that of creating a redesign of the selected case studies. From the available options, my design will focus on the Hague’s police station. With the completion of location analysis, the individual research initiates, using the knowledge and results of the collective work. The research addresses the theme of structure and how it can contribute to the adaptability and spatial enrichment of heritage buildings. Even if modern materials and construction methods enable for bigger and lighter structures, existing buildings’ structural systems have architectonic attributes too, that need to be considered during the design process.</p> <p>In case of the police stations, these buildings are characterized by privacy, security, and introvert orientation, which limits their adaptability for other uses, both from an architectural and real-estate point of view. Hence, converting them into more permeable and inviting buildings, that can accommodate public functions, contributes to their longevity. The external and internal changes that are needed to accomplish this aim, deal, and interfere with the existing structure, leading to the examination of various spatial ideas for public buildings, and ultimately to a solution that respects, but also enhances the existing.</p> <p>The proposed scheme should respond to the improvement and revitalization of the immediate and broader context of the city.</p>	

Process

Method description

A variety of different methods will be employed for the SBT research and the individual research.

The SBT research departs from the Location Analysis, in which eight case studies in the Netherlands have been selected, that will be analyzed and compared based on four scale levels and eight spatial aspects on each level, using a specific drawing style. Afterwards these drawings will be compared and determine the spatial similarities and differences among the case studies. This research is a continuation of the 1st SBT Volume (2020), which will result in the 2nd Volume of the SBT series. Historical research will also play a major role, as archival material is needed to acquire the required information. Additionally, through model making the essence of each case study will be visualized via physical models, underlining the most essential aspect of each building.

For the design and the individual research, it is vital to conduct a thorough literature research, which will provide holistic overview of the significance of the historic and architectural components of the building and its structure. In addition, through the Value Assessment, I will be able to evaluate the building layers of the Hague's station, from an objective standpoint. By prioritizing the values, I will be able to take an architectural position towards the transformation approach for this project within Heritage & Architecture.

Case-study analysis is another method that will reveal the strategies used in transformations of typologically similar projects. Comparing selected projects in plan and section, will determine the role of structure in creating spatial qualities.

Sketching is a valuable tool that will be used throughout the research. Either with rough or detail sketching, design ideas will be tested in an intuitively and effective manner.

In parallel, physical and digital models will enable a more effective and efficient research procedure, by testing on them, three-dimensionally my transformation proposals.

Finally, technical analysis is a required method of the design process, which will examine what the possibilities of the existing are. Therefore, it will be a method employed from the concept and preliminary stage.

The chosen methodology intends to provide a solid research framework, for a research-based design, which answers to the design question: *"How can structure contribute to the spatial qualities of the Hague's police station?"*. Therefore, the aforementioned methodology will enable me to test various scenarios of structural and spatial configurations that improve the space plan of the case study, and consequently the adaptability of the complex for future uses. The selected methods cover the spectrum needed to answer the research question and fulfil the research goal while engaging with the design process.

Studio theme
Vacancy of Dutch police stations

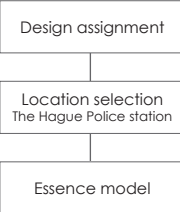
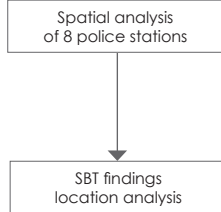
Research

Design

Individual research

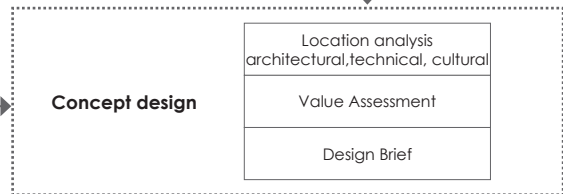
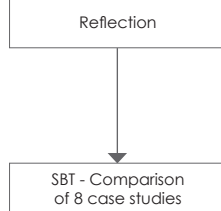
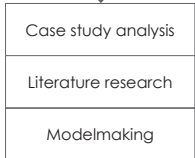


SBT



show the critical aspect through a model

P1

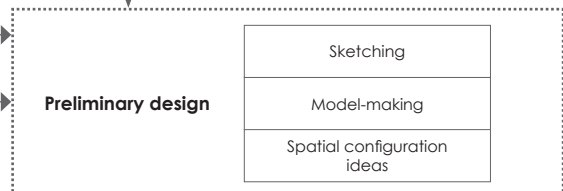
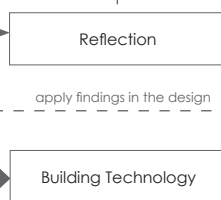


Research paper

SBT findings
Spatial typology conclusions

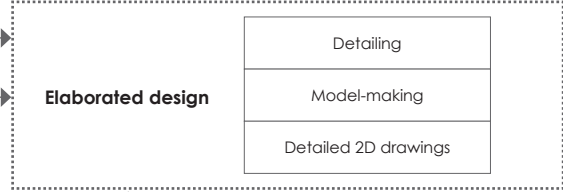
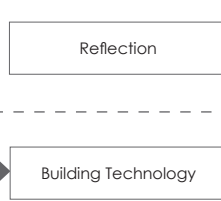
P2

Redesign options

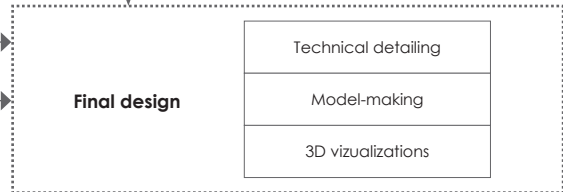
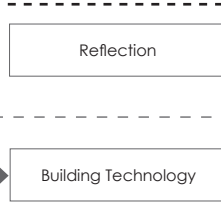


P3

Redesign Types



P4



P5

SBT, findings & R. paper



final reflection & evaluation

reconsider design options & R. goals

apply findings in the design

re-consideration based on feedback

re-consideration based on feedback

final reflection & evaluation

Literature and general practical preference

Setting the theoretical framework upon which, the research will be based, becomes a critical part of the research. Regarding the main theme of structure & adaptability the research departs from the principal theoretical framework of Steward Brand (1994). Brand's Shearing Layer diagram showcases the various interdependent layers that compose a building (Kuipers et al, 2017). Each layer has different properties and life span than the rest, yet all layers operate simultaneously. Kuipers et al. (2017) argue that with the examination of each layer individually, the architect can assess and estimate the impact of his proposed intervention.

Afterwards, specific publications, Ph.D. thesis and literature that revolve around my research question and the studio's topic, will be examined, providing me with new insights and knowledge about the potential of the re-design opportunities.

From a wider scope, the case-study analysis, together with the studio's workshops, lectures, presentations and site visits, contribute substantially to the research and design assignment.

- Azizi M. & Torabi, Z. (2015). The Role of Structure in Creating Architectural Space. Current World Environment.
- Brand A., (1994). How Buildings Learn. What happens after they're built. New York: Viking
- Charleson, A. (2005). Structure as Architecture: A Source Book for Architects and Structural Engineers. Architectural Press.
- Ching, F.D.K. (1979). Architecture: Form, Space and Order. (4th ed.) Hoboken: Wiley.
- Jallon, B., & Napolitano, U. (2017). Paris Haussmann. Paris: Park Books.
- Kuipers M., de Jong W., (2017). Designing from Heritage. TU Delft.
- Lewis, P., & Tsurumaki, D., & Lewis, J. (2016). Manual of Section. New York: Princeton Architectural press.
- Lucas, R. (2016). Research methods for Architecture. London: Laurence King Publishing.
- Meurs P., (2017). Heritage-based design. TU Delft.
- Van Meel J., (2000). The European Office: Office Design and National Context. 010 Publishers.

Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?

There is a direct connection between the graduation project topic, Structure & Adaptability, the studio's topic and the MSc Architecture track. From a broader perspective, the MSc Architecture track offers various directions; one of them is Heritage Architecture. This chair addresses the challenges of dealing with Heritage Buildings and their vacancy from three different perspectives: Heritage & Design, Heritage & Values and Heritage & Technology. The objective is to conduct a research and produce a redesign for one of the case studies.

To achieve a concrete design, the chosen topic examines a building component and its possibilities, by taking into account the present and future values, as well as the Building Technology, which is an integral part of the architectural design. By examining the scenarios of spatial enrichment of heritage buildings based on structural features, achieves a definite connection across the studio's topic and the master track and programme.

Finally, from the SBT research, a book will be produced based on the location analysis, the comparison and the re-design options, which will become a valuable tool for future transformation projects.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework.

The research topic and the overall graduation work, constitute a significant theme not only for the architecture discipline but also for the society and its cultural values. Transforming a former Police station, which is associated with a certain collective memory of the inhabitants of the Hague, becomes a challenging task, exceeding the borders of the architecture domain. Therefore, it is not about fulfilling an architect's ambition, but it is about the configuration of an appropriate response towards the history, the values, the current needs of the society and the accommodation of the needs that the future will bring. Designing is usually assumed as a response to the current demands of our society; but the fast-paced technological development, transforms our way of living rapidly and dynamically; hence, architects need to take into account a number of parameters for a successful design approach.

Even if the research investigates Dutch police stations, the findings of this study can be applied in other projects that share similar spatial characteristics, originating from a specific structural layout. Hence, unveiling the potential of the load-bearing systems constitutes the central theme of the research that relates to the escalating problem of vacancy.

Finally, from the collective research on spatial characteristics, a 2nd Volume will be added in the Spatial Building Typology research series, which aims to highlight the importance of spatial attributes and how these can influence the redesign opportunities of existing buildings.

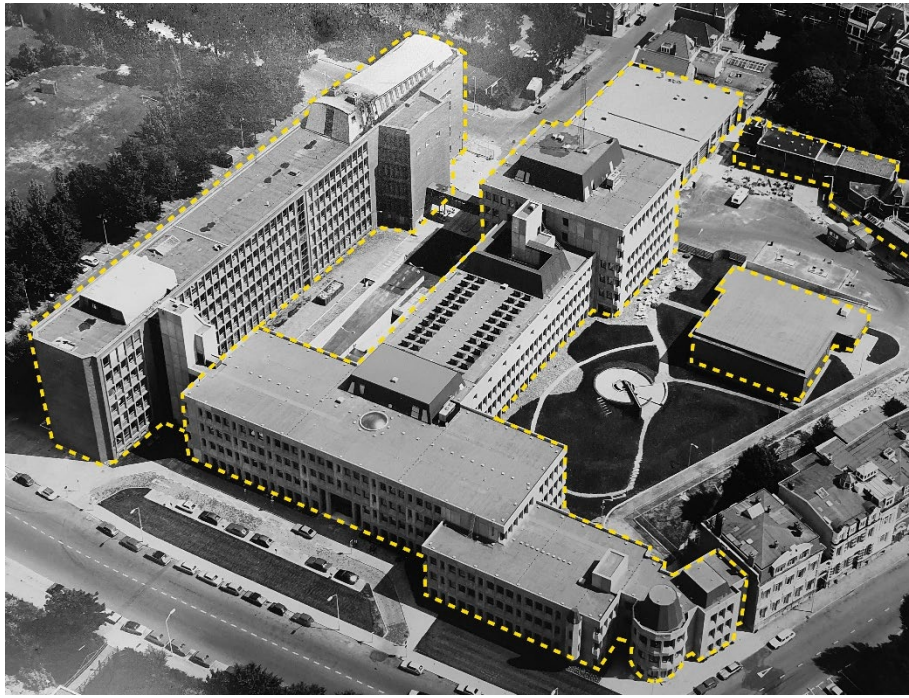


Figure 1, The Hague police station, , Haags Gemeentearchief photo

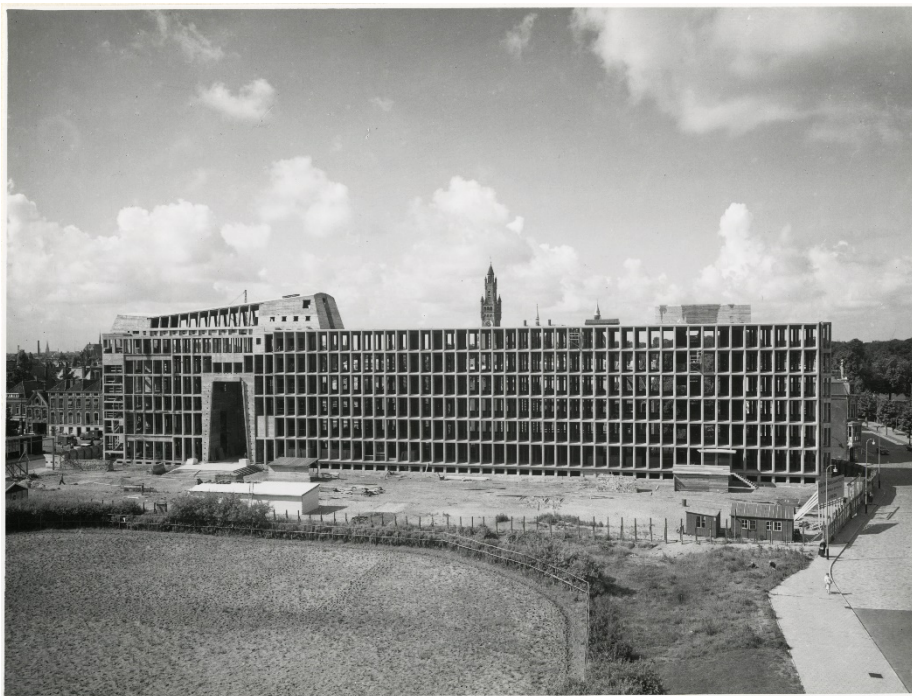


Figure 2, Construction phase, Monumental wing, Haags Gemeentearchief photo