

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	Thomas Blauw	
Student number	5225124	
Studio		
Name / Theme	Revitalizing Heritage: Zero Waste Church	
Main mentor	Catherine Visser	Architecture (Heritage & Design)
Second mentor	Mo Smit	BuildingTechnology
Third mentor	Wido Quist	Research (Heritage & Technology)
Argumentation of choice of the studio	<p>I have chosen for the studio Revitalizing Heritage; Zero waste church because I have always had a fascination for old (monumental) buildings and how different they are from the contemporary architecture. The level of detail and the number of hours of work in these buildings can always be seen when observing these buildings and also the fact that these buildings have already endured and experienced a lot. They have their own history and they can even tell a story, and you can see that, examining them more closely. This way you can often read the different time layers within the building. The fact that nowadays we can no longer even make these kinds of buildings makes them extra valuable, but above all, our monuments are often very impressive to see, especially the churches, which we will work on in this studio, are a beautiful piece of architecture and craftsmanship and it would be a shame if these types of buildings have to disappear in the future because there is no longer any demand for their current function. More and more churches are becoming empty because fewer people still go to church, but that does not alter the fact that they are fantastic buildings. When choosing a graduation studio, it therefore seemed very interesting to me to transform an existing church and accommodate a new function in it. There are plenty of practical examples that have resulted in very nice end results. Together with the fact that nowadays we have to build more consciously and take into account the climate, and counter the creation of waste. This is an additional challenge next to transform a church sustainably without losing existing materials, but to reuse correctly. This assignment also encompasses many different disciplines within the field of</p>	

	architecture, for example; you have to look at the value of different building parts. All this makes this studio a very relevant, fun and challenging choice to complete my master's degree in architecture at TU Delft .
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Graduation project	
Title of the graduation project	Defining and preserving the spatial quality in transformed churches
Goal	
Location:	St. Barbara Church, at Markt 50 in Culemborg
The posed problem,	<p>Church attendance in the Netherlands has been declining for years. "Churches are becoming increasingly empty and that means regular closures. Until 2030, as many as a thousand churches will close." (nieuwsuur, 2018). There are about 7,000 churches in the Netherlands (cultural heritage, 2020) Many of these churches will be without a function in the coming years. An empty church only costs money and may eventually lead to its demolition. However, many people would greatly regret the demolition of these churches. Even though the number of believers is decreasing, a church can be of value to non-Christians as well. Many of these buildings are part of our cultural heritage. "Heritage is often defined as our legacy of the past, by which we live in the present. This legacy we pass on to future generations so that they too can learn from it, admire it and enjoy it"(UNESCO, 2019). The church is often seen as a symbol, a carrier of faith, art and culture, especially now in an increasingly globalized world. Church buildings are like anchors in time; they tell us who we are and where we come from (Reinstra et al., 2020). In many villages and cities in the Western world, the church used to be the most important building. That's where everyone gathered, it was a place for faith but also for gathering. Look at an average church and you see right away that it involved an important function. The building looks important and is still often the tallest building in the place of residence, especially with Roman Catholic churches. Not only the outside but also the inside of a church has a certain spatial quality, it evokes a certain feeling. The high rooms with vaults and the light from the tall stained glass windows gives an atmosphere that other buildings do not have.</p> <p>One way to protect these buildings is to give them a new function. However, this is not always easy, churches often do not meet the requirements of the new function such as daylight and comfort. In practice, it appears that with expertise, this type of radical change can be designed in a good way while respecting the historical and architectural values of the monument (Een toekomst voor kerken, 2011). The challenge lies in the fact that the church building must be adapted to accommodate the new function or functions but the qualities also have to be preserved. For example, a church has a spatial quality that is lost if you close it completely with housing. Also, there are often many ornaments to be found where it is a shame if they disappear. Thus, there are several architectural interventions that can be made in the church but each one</p>

	<p>has a different effect on the experience of space and the characteristic elements of the church.</p> <p>A second challenge that has increasingly emerged in recent years is climate change and the impact it has on the world. The construction industry is responsible for about half of global carbon emissions. When sustainability is discussed, energy and new high-tech buildings and solutions often come to mind. While the very act of creating in itself is bad for the environment. (Treggiden, 2020). One aspiration is therefore to move towards a circular and zero-waste society. Heritage can contribute in this process because the buildings are already there and thus fewer new materials are needed for a new use than in a new construction project. The challenge here is to transform existing buildings in a circular way, which means without creating waste but instead reusing materials and also minimizing energy and co2 emissions.</p>
research questions and	<p>In this Graduation Project, the main question that will be researched is: <i>What are the effects of the most typical spatial interventions used to repurpose Neo-Gothic churches in the Netherlands on the spatial quality and characteristic architectural interior elements of the church.</i> To answer this question the following sub questions need to be answered first:</p> <ul style="list-style-type: none"> - <i>Which attributes of Neo-Gothic churches make up the spatial quality?</i> - <i>What are in general the architectural characteristic interior elements within Neo-Gothic churches?</i> - What are the most common and typical kinds of interventions made when repurposing Neo-Gothic churches?
design assignment in which these result.	<p>The chosen case study; the St. Barbara Church in Culemborg has a beautiful interior with a certain spatial quality to it. The goal of this research is to better understand this spatial quality and to investigate which attributes create this quality and how this quality can be influenced by architectural interventions. On top of this, the task of the design assignment is to create your own design approach in transforming this building. To aid in choosing an approach, multiple design attitudes of different architects are being analyzed. This is all done by examining various existing transformations of churches and drawing lessons from them which can serve as input for the design brief. The design brief consists of transforming the St. Barbera Church in Culemborg into a new function while maintaining or even improving its spatial quality.</p>
Process	
Method description	
<p>Several methods of research will be done. To answer the main question, the sub-questions will have to be answered first.</p>	

The focus of this research is first to identify the aspects that determine spatial quality of a neo gothic church and define the characteristic interior elements in Neo-Gothic churches. Subsequently, it is analyzed how different applications of spatial interventions respond to the spatial quality and to the characteristic interior elements

In order to preserve spatial quality in transformed churches, it will first be necessary to determine which aspects affect the spatial quality in Neo-Gothic churches. This will be done on the one hand by means of a literature study on the concept of spatial quality and spatiality. And on the other hand, by making a self made visual analysis of the spatial aspects within a Neo-Gothic church. Examples of these aspects include the proportions of space; length width, height, sightlines and use of materials (Ching, 2014). The characteristics of Neo-Gothic churches also play a role in this, these will be addressed in the next sub-question. Since the concept of spatial quality is a very complicated concept and many books have been written about it with no clear definition, the main attributes that define this concept and are also most applicable in Neo Gothic churches will be established.

Subsequently, the architectural characteristic elements of Neo-Gothic churches will be summarized. These elements largely determine the spatial experience and are also valuable because of their aesthetic and historical value. Examples of these elements include verticality, pointed arches and cross vaults (Lier & van Lier, 2009). This question will be answered by conducting a literature review of Neo-Gothic architecture and what architectural interior elements are associated with it.

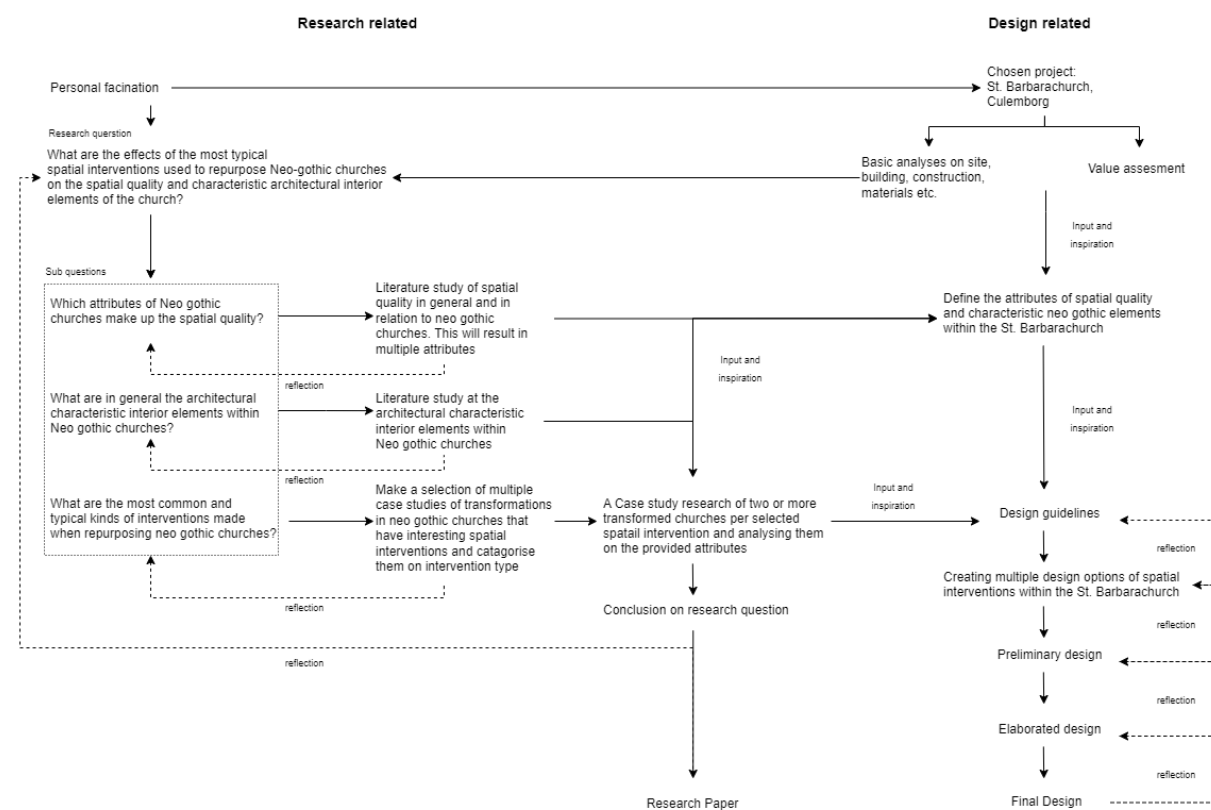
After the attributes of spatial quality and Neo-Gothic architecture have been determined, multiple case studies will be collected and filtered on different types of spatial interventions and the most interesting ones will be analyzed. De criteria voor de case studies zijn: alle case studies zijn getransformeerde kerken naar een nieuwe functie of functies. De kerken zijn in neo gotische stijl gebouwd of erg vergelijkbaar in opbouw, plattegrond en stijlkenmerken. In the document: Een toekomst voor kerken, 2011 prepared by the central government of the Netherlands, ten spatial solutions are presented on how to deal with the space in and around a church to create new functions. These ten solutions are described in the research paper.

In the early stages of the research, the idea was to select a number of these spatial solutions and find case studies to analyze. During the research it appeared that in practice often a combination of several solutions are applied in one transformation and therefore it was decided not to stick too much to these solutions but to make a selection of case studies in which the spatial interventions differ as much as possible in approach and are focused on the interior and not on additions, demolition and there must be an architectural intervention. The spatial solutions used in the case studies will be mentioned.

Once the Case Studies are selected, they will be visually analyzed for how the architectural intervention that was made has had an effect on the spatial quality and whether the characteristic elements of the neo Gothic are affected. This will result in an assessment per case study from which conclusions can be drawn as to which type of intervention deals well with the spatial quality and characteristics of the neo gothic and which type of intervention responds less well to it.

This will include looking at the design attitude of the architect of the transformation and how the intervention responds to the existing building. For example, whether a contrast has been made between new and old or whether a continuity has been established and what the effects are.

The entire process is shown in the diagram below:



Literature and general practical preference

Spatial quality and case study related references:

Ching, F. D. K. (2014). *Architecture: Form, Space & Order* (4de editie). Wiley.

Versloot, R. (2021). *Repurposed church buildings and its changing public perception through the course of history in the Netherlands* | TU Delft Repositories. <https://repository.tudelft.nl/islandora/object/uuid:5d981b42-d294-4371-870f-86c0dd4c60f8?collection=education>

Reinstra, A., Strolenberg, F., Megens, M., Boer, J., Westerman, J., Loeff, K., van Damme, M., Wansing, R., Grootswagers, L., & Schaap, M. (2020). *Kerkgebouwen : 88 inspirerende voorbeelden van nieuw gebruik - van appartement tot zorgcomplex* (1st ed.). Blauwdruk.

Haarlem-Amsterdam, B., Asselbergs, F., Rotterdam, B., Projectgroep Belvedere, Bisdom Haarlem-Amsterdam, Bisdom Rotterdam, Roeterdink, N. & Projectgroep Belvedere. (2008). *Onderzoek herbestemming kerken en kerklocaties: een inventarisatie vanaf 1970/ Fons Asselbergs*. Projectbureau Belvedere.

Ahn, Y. K. (2007, August). Adaptive reuse of abandoned historic churches: building type and public perception. Office of Graduate Studies of Texas A&M University. <http://hdl.handle.net/1969.1/ETD-TAMU-1677>

Clark, J. (2007). "This Special Shell": The Church Building and the Embodiment of Memory. *Journal of Religious History*, 31(1), 59–77. <https://doi.org/10.1111/j.1467-9809.2007.00545.x>

Netsch, S., & Gugerell, K. (2019). Reuse of Churches in Urban and Rural Dutch Landscapes. *Acta Horticulturae et Regiotecturae*, 22(1), 48–55. <https://doi.org/10.2478/ahr2019-0009>

Rijksdienst voor het Cultureel Erfgoed. (2012, January). Een Toekomst Voor Kerken: Handreiking voor het aanpassen van kerkgebouwen in religieus gebruik. <https://www.cultureelerfgoed.nl/publicaties/publicaties/2012/01/01/een-toekomst-voor-kerken-een-handreiking-voor-hetaanpassen-van-kerkgebouwen-in-religieus-gebruik>

Rijksdienst voor het Cultureel Erfgoed. (2019, May). Bouwstenen voor een Kerkenvisie. Xerox/OBT. <https://www.cultureelerfgoed.nl/onderwerpen/religieus-erfgoed/documenten/publicaties/2019/01/01/bouwstenen-vooreen-kerkenvisie-handreiking-2019>

van Damme, M. (2013, September 26). Nieuw leven in lege kerken. *ArchitectuurNL*. <https://www-architectuur-nl.tudelft.idm.oclc.org/inspiratie/nieuw-leven-lege-kerken/>

Vdovychenko, N. (2019, June 28). Reusing Churches in the Netherlands. *Diggit Magazine*. <https://www.diggitmagazine.com/articles/church-buildings-reused>

Fernanda Acre, Annemie Wyckmans, Dwelling renovation and spatial quality: The impact of the dwelling renovation on spatial quality determinants, *International Journal of Sustainable Built Environment*, Volume 4, Issue 1, 2015, Pages 12-41, ISSN 2212-6090, <https://doi.org/10.1016/j.ijbsbe.2015.02.001>. (<https://www.sciencedirect.com/science/article/pii/S2212609015000023>)

Fernanda Acre & Annemie Wyckmans (2014) Spatial quality determinants for residential building renovation: A methodological approach to the development of spatial quality assessment, *International Journal of Sustainable Building Technology and Urban Development*, 5:3, 183-204, DOI: [10.1080/2093761X.2014.923793](https://doi.org/10.1080/2093761X.2014.923793)

Key, S., Mark, M. D. & Do, E. Y. (z.d.). *Computing Spatial Qualities For Architecture*.

Alkemade, F. & Iersel, M. van. (z.d.). *Rewriting Architecture: 10+1 Actions for an Adaptive Architecture*. Samenwerkende Uitgevers Vof.

Kleine, H. (2017). *The Drama of Space: Spatial Sequences and Compositions in Architecture*. Birkhäuser.

Prina, F. (2008). *Architecture: Elements, Materials, Form*. Amsterdam University Press.

Unwin, S. (2020). *Analysing Architecture: the universal language of place-making*. Taylor & Francis.

Characteristics of Neo Gothic churches related references:

Hislop, M. (z.d.). *De bouw van kerken en kathedralen: Geïllustreerd overzicht van de constructie van middeleeuwse bouwwerken*.

Lier, S. van & van Lier, S. (2009). *Het kerken boek*. Waanders.

Toman, R. (1999). *Gotiek. De Kunst Van De Gotiek. (Architectuur. Beeldhouwkunst. Schilderkunst.)* (1ste editie). Konemann.

Reflection

Spatial quality is a concept often found in architecture and always difficult to define or visually demonstrate. Nevertheless, it is a very important aspect within the field of architecture. Every building has a spatial quality and as an architect you want people to be impressed by your design, this is largely determined by this. In the studio; Revitalising heritage was commissioned to transform an existing church into a new function. The first thing I think of when I walk into a church is what a special space it is inside, with high ceilings and lots of light from above. These kinds of buildings have a certain quality that other buildings don't have. Therefore, it is important to maintain that quality in these types of buildings. In this research, an attempt was made to get to know the concept of Spatial Quality better and also demonstrate it visually in different churches. In addition, an attempt was made to understand the effects of interventions in space on this quality. This can be very helpful in the design process of myself but also for other people working on a similar design assignment or interested in this topic. Design assignments in other types of buildings can also learn from the conclusions and analyses from this research. While there are theories on spatial quality and also examples of transformations of churches in the existing literature, these two topics have not yet been brought together or clearly defined. This has been addressed in this research. It was difficult here to assess effects on spatial quality but this was attempted as much as possible through visual analyses and by answering self-formulated questions related to this topic to assess this objectively.