

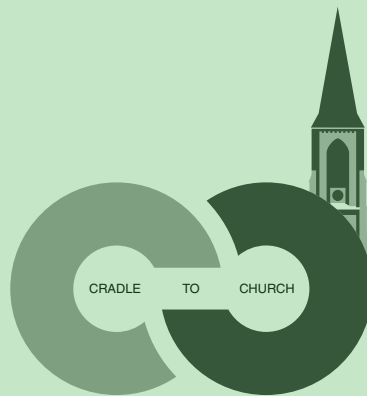
GRADUATION PLAN

CRADLE TO CHURCH

A SUSTAINABLE RESPONSE ON RELIGIOUS HERITAGE
REVITALIZING THE JACOBUSKERK

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Faculty of Architecture and the Built Environment
MSc 3/4 studio Heritage and Architecture - Revitalizing Heritage

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GENERAL INFORMATION

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| Choice of the studio | <p>Heritage and vacancy rates are an ongoing problem on a large scale. The revitalization of vacant buildings is essential for a sustainable future building environment. Vacant buildings form a large part of the aspects that make our current building environment unsustainable in terms of unused space and embodied energy. Vacant buildings often contain a set of reasons why they are unsuitable or simply unattractive for a future life-cycle as they are often inflexible and therefore do not require many needs. Vacant buildings usually contain too much space in an inflexible floor plan formed by a building structure that is not designed for change. Furthermore materials and installations are often outdated, require a lot of relatively expensive maintenance and involve a building performance that unable to meet the current standards of regulations.</p> <p>Solutions that may enable vacant buildings to be revitalized into interesting new life cycles through a new function, involve large potential for sustainable implementations. Sustainability forms the answer to the ecological demands towards the future of which the building environment forms an substantial share, here and now. The importance of sustainability in the future building environment enhances my personal view on the essence of architecture in and for society.</p> |
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GRADUATION PROJECT

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| Title | Revitalization of the Jacobuskerk – A sustainable response on religious heritage |
| Building | Jacobuskerk |
| Location | Winterswijk, the Netherlands |

PROBLEM STATEMENT

The decreasing numbers within the Catholic religion result in a large supply of vacant Catholic churches, and therefore represent a new vacant building typology to the existing heritage within the built environment. These churches often match the character of inflexibility as described in the choice of the studio, but do contain an important set of values that form exceptional architectural opportunities within revitalization. Aside from Catholic churches being iconic buildings that contain important religious values, churches often play important roles in the urban fabric and the historical development of the city. This makes (Catholic) churches altogether an building typology that should not become vacant heritage.

With the ecological problems and the influence of the current building environment becoming more and more clear for the

future and at rapid rate becoming reality to nowadays society, not only the future building environment in the form of new projects is (slowly) changing but also the existing building environment in the form of transformation projects of vacant buildings is responding. With the vacancy rates being an ongoing problem on a large scale, heritage in particular is an important and influential sector to respond. The revitalization of vacant buildings is essential for a sustainable future building environment as vacant buildings form a large part of the aspects that make our current building environment unsustainable in terms of unused space and embodied energy. Vacant buildings often contain a set of reasons why the building should be maintained and revitalized as it contains highly respected values. However, in terms of circular economy an object of heritage and the values it features are initially not at all designed to be circular. They were initially build for a cradle to grave life cycle in a time of linear industrial systems. What currently makes heritage 'sustainable' is the extended lifetime of the building to maintain the values of the building instead of demolishing and forgetting them. This is however a less-bad approach of dealing with sustainability as it is not solving the source of the problem but merely delaying and minimizing the effect. But how can an existing product become a solution to the root of the ecological problem when this solution would rely on a new way of designing according to the concept of Cradle to Cradle? This is exactly the problem that this graduation project tries to stress on and find answers in, or at least gain attention for. Since heritage is designed as linear product in a significantly less advanced linear economical system that is eco-effective and less bad at best, can it become a circular and eco-efficient cradle to cradle product in a building environment, economy and society slowly but surely shifting towards a circular model? Or is less bad the maximal sustainable potential reachable in heritage?

RESEARCH QUESTION

To ensure an efficient process within a large scale project it is needed to structurally define different steps as approaches of the project through a set of research questions. With the goal of this graduation project being to explore the possibilities of circular heritage as a way of approaching the topic of sustainability for the future of heritage, the following research question is formulated to divine and enclose the scope of sustainability towards circularity:

"Since heritage is designed as linear cradle to grave product in a significantly less advanced linear economical system that is eco-effective and less bad at best, can heritage become a circular and eco-effective cradle to cradle product in a building environment, economy and society that is slowly but surely shifting towards a circular model? Or is less bad the maximal sustainable potential reachable in heritage?"

To apply this goal towards the Jacobuskerk in Winterswijk that forms the specific object of heritage as case of this graduation process, the following research question is formulated:

"How can the potential of sustainability deriving from the existing values of the Jacobuskerk in Winterswijk be translated into a circular design for a new building function of education center, to increase the value of ecology from the specific perspective of circularity, in monumental church revitalization?"

As a method of approaching the research question within this graduation project, two frameworks are constructed of which each are supported by a separate research question. For the first framework being the framework of existing values, the following research question is formulated:

"What values does the Jacobuskerk in Winterswijk contain, and what are the potentials of sustainability in which they result?"

The answer to this question is formed by the conclusions of the research report of the Q1 analyses of the Jacobuskerk as is documented in *'The Jacobuskerk Winterswijk'*, and the personal value matrix based on these conclusions and vision on sustainability as described in document *'Personal Value Assessment'* belonging to this graduation project.

For the second framework being the framework of Cradle to Cradle, the following research question is formulated:

"Of which concepts does the principle of Cradle to Cradle exists and how does it relate to heritage?"

The answer to this question is formed by the theoretical study of the principle of Cradle to Cradle as elaborated on in the *'Research Thesis'*, and the practical study documented in *'References'* belonging to this graduation project.

To combine these two questions in a research question for the design concept to systematically lead to the design interventions, the following research question is formulated: *“How can the principle of Cradle to Cradle be implemented in the existing values of the Jacobuskerk in Winterswijk?”*

To be able to conclude on the goal of this graduation project being the eventual potential for heritage to become circular in accordance to the principle of Cradle to Cradle, the following research question is formulated:

“To what extent can heritage become circular in regards to the principle of Cradle to Cradle?”

The answer to this question is formed by the project conclusions in the reflection paper as documented in document *‘Reflection’* belonging to this graduation project.

DESIGN ASSIGNMENT

The research question is formulated as ‘the potential of sustainability in the Jacobus church’ and will be specified within the design assignment for this graduation project fundamentally from the perspective of the Cradle to Cradle principle. This means that the principle of Cradle to Cradle will form as set of guidelines for the design assignment in relation to the research done in the Q1-phase and the personal value assessment based on the findings of this research. This framework is meant to enable the generation of a design solution that results into an example of cradle to cradle sustainable revitalization of heritage for any building type and in particular other Roman-Catholic churches and other buildings with similar architectural features as the Jacobuskerk in Winterswijk. The set of guidelines formed by the Cradle to Cradle principle regarding the revitalization of the Jacobuskerk in Winterswijk are to be generally understood as:

- Design solutions that aim at eco-effectiveness: generate more than ‘less-bad’. Replace linear cycle (cradle-to-grave) into continuous cylindrical cycle (cradle-to-cradle);
- Waste forms resource: no production of waste but materials form pure nutrients for another process. 100% recyclable (upcycling) in either the biological or technical cycle of metabolism. This involves reconsidering the designing of products as unlimitedly recyclable nutrients, material implementation focusing on disassembly, no possibly hazardous additives and emissions;
- Support diversity in local context and flexibility within future lifespans (use, floor plan, materials etc.), generating economical, environmental and social benefits;
- Merely using renewable energy sources;
- Design and building concept motivate for evolution in the shift from linear cycle (cradle-to-grave) into continuous cylindrical cycle (cradle-to-cradle).

METHOD

Q1 RESEARCH

This period forms part one of the foundational research of the project. The research involves the analyzing of the existing building and its context according to the Brand layers with a value assessment. The research is done collectively within the group of the Jacobuskerk, in which the individual Brand layers will be divided along the students of the research group, but will remain a group responsibility involving constant reflection and involvement of the other group members. For consistency of the products, the graphic design for the booklets and the presentations is done in communication with the other groups of the Heritage & Architecture graduation studio. The methods used for the Q1-research are the following:

- Field research (involving communication with guides and the municipality Winterswijk, taking notes, sketches and photographs)
- Archive research
- Literature research

Q2 DESIGN FORMATION

For the formation of the design process it is essential to first specify the field of focus and the design assignment. This will be

done as first step setting up a frame of reference, deciding the function and the framework of designing, and further specifying the position and strategy of sustainability along with the design approach. To be able to gain sufficient understanding to position myself as a designer in the issue of sustainability and to make the possibility for implementation in a design proposal more discrete and academically supported, it seemed essential to do this by means of a literature study. The paper in which this will result is structured according to the sub-research question, as described in chapter 'Research Questions' of this graduation plan.

The methods used for the Q2-research are as following:

- Writing paper within course AR3A160 Lecture Series Research Methods: Self-Assessment on Research Methods: Notion of architectural typological in the search for a relation of sustainability in religious heritage
 - Literature research
- Writing research paper Revitalization of the Jacobuskerk – A Sustainable Response on Religious Heritage
 - Literature research
 - Reference research
- Physical modeling building and urban context 1:100, 1:200 & 1:500
- Sketching
- Reference research
- Field research (visiting renovation projects in Arnhem)

Q3 DESIGN ELABORATION

This phase will be the elaboration of the design proposal and guidelines that are concluded from the relation between the existing values according to the personal value matrix as concluded from the Q1-phase, and the literature study of Q2-phase.

The methods used for the Q3-phase are as following:

- Sketching
- Computer modeling
- Computer editing

Q4 DESIGN ENDING

The design at the end of the Q3-phase will be elaborated if necessary and finalized for the Q4 presentation.

The methods used for the Q4-phase are as following:

- Computer modeling
- Computer editing

Q5 FINISHING PRODUCTS

After the Q4-phase all products of the design will be finalized for the final presentation.

The methods used for the Q5-phase are as following:

- Computer modeling
- Computer editing

REFLECTION

To be concluded from the problem statement as explained earlier in this document, is that there are two factors that form a current problem and will remain a significant problem in the future if unattended, not merely from the specific perspective of heritage but also for the bigger scale of the global building environment. The necessity for sustainable behavior is clear and the influence of architecture in a sustainable building environment can not longer be postponed as it is inevitable for the balance of the future overextending of planetary boundaries caused by global burdens. From my perspective as a designer of the building environment, sustainable architecture should be promoted as an active new movement within the future of architecture, and it is the responsibility of us architects to represent this through our practice.

The existing stock of vacant building is of significant size and contain a number of potentials in relation to sustainable principles like embodied recourses and energy. However, monumental heritage contains a set of important values that form an added factor in comparison with other building types to be taken into account for implementation of sustainable architecture. Throughout the years, multiple examples have been created that represent successful and less successful ways of implementing sustainable architectural solutions within heritage and non heritage building types. However, not many examples of building projects designed around the priority of sustainability has been created that also take into account the implications of heritage and the specific values of a sensitive religious building typology. With religious values playing a specific role of importance it is relevant to form a design that demonstrates the possibilities of sustainable implementation in relation to religious heritage, especially now that the stock of vacant Roman-Catholic churches is increasing in the future.

The reflection, relevance and methodology of this graduation project are further enhanced in the document '*reflection*' belonging to this project.

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