

Biophilic Shopping Mall

Transforming the shopping malls into a biophilic design while preserving the spirit of place

AR3AH105 Graduation Studio adapting 20th Century Heritage

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Introduction

More and more stores are becoming vacant in the Netherlands. It is a complex problem with various causes, the main problems being changes in consumer behavior, the rise of online shopping as well as the impact of the COVID-19 pandemic (Butink, 2015). These problems are mainly visible in the shopping malls in medium-sized cities and the shopping malls in the core of residential areas. People only visit the shopping malls for daily groceries. Other purchases are made online and/or people go to shopping malls that offer cultural, recreational, or historical entertainment in addition to shopping, such as old city centers of large cities (Zandbergen, 2018). If no action is taken regarding the increasing vacancy of shopping malls, these places will become deprived spaces with a negative impact on the quality of life in and around the shopping malls (NOS, 2022).

At the same time, the built environment is turned into stone, leaving no space for greenery, causing several problems. These include that the built environment is less climate-adaptive, there is not enough space for biodiversity, and there is a link between mental illness and physical illness and the lack of greenery (Natuur & Milieu, 2022).



Figure 1. Leyweg (Bolleboom, 2023)

The link between mental illness and physical illness and the shortage of green space can be explained on the bases of human biophilia. According to Kaplan's (2001) research this means that people have an inherent affinity for the natural world since humans have mainly been evaluated with influences from the natural, not artificial or human-made, world. Due to this natural affinity, it takes less effort to focus on biophilic elements such as plants, water, images of nature, etc. This is also called involuntary attention. Whereas, for example, focusing on work on the computer can be tiring, intensive, and stressful. This is also called voluntary attention. Involuntary attention, can allow the user to recover from voluntary attention (Kaplan,

2001). A design concept that is based on this connection that people have with nature is called biophilic design. Biophilic design seeks to connect people with nature through the use of natural materials, plants, and other elements of the natural world (Kellert, 2018).



Figure 2. Example Biophilic Design (Beatly, 2016)

Studies have been conducted by Rosenbaum et al. (2016 & 2018) testing what effect biophilic design has in shopping malls. In the study by Rosenbaum et al. (2016), it was found that 'satisfaction', 'loyalty', and 'intention to recommend the mall to others' had a higher score in a shopping mall with biophilic design than a shopping mall without biophilic design. Another study by Rosenbaum et al. (2018) found that the perceived levels of 'being away', 'extent', 'fascination', and 'compatibility' was higher in a simulated green retail area than in the same simulated retail area without greenery (Rosenbaum et al., 2018).



Figure 3. Biophilic Shopping mall (Rosenbaum et. al, 2018)



Figure 4. Simulated shopping malls with and without greenery (Rosenbaum et. al, 2016)

Thus, it can be concluded from the studies on biophilic design in shopping malls that it can have a positive effect on the user of the shopping mall. These findings make it interesting to transform shopping malls using biophilic design.

The transformation of a shopping mall into a biophilic shopping mall is a challenging task because it means making space in the design of the shopping mall for nature. If this transformation of the shopping mall is not handled carefully, it can affect the spirit of the place. Edward Relph, a researcher within the phenomenological field studying how places are experienced and how they are changing, wrote a book 'Place and Placelessness' (Relph, 1976). This book is about the importance of the spirit of place. Without the spirit of place, a space can feel placeless due to the lack of attachment to the surrounding area. If the transformation of a shopping mall with a certain spirit of the place is not handled carefully, it can have negative consequences for the attachment people have to the place. Therefore, more research is required on the spirit of place of the shopping mall and how the transformation using biophilic design corresponds to it (Relph, 1976).

Academic Debate

The topics of transformations and biophilic design do have some discussion in the academic field.

Transformations that are not carefully carried out can be seen as damaging to the monumental/heritage value (Seekamp & Jo, 2020) while at the same time, almost no monumental/heritage value is granted to post-war architecture (Van Geest, 2023). Since the appreciation of post-war architecture is growing more and more in society, I think it is important to handle post-war architecture carefully, even though it has no official heritage/monumental value yet.

Within biophilic design, there is debate as to when something can actually be called biophilic. The term biophilic design is widely used regarding the application of green and sustainable aspects, but opposing parties in some cases perceive this as 'greenwashing'. This means that the green and sustainable applications make the design appear biophilic but it is not. Biophilic design should also enable ease of interaction within the space to encourage connections and community and create meaningful context (Zakrisson, 2022). I want to support the idea that biophilic design is not only greenery and sustainable applications but also contributes to the community and creates meaningful context.



Figure 5. Example 70's architecture, Bogaard Rijswijk (Indebuurt, 2022)

Problem & Research Questions

More and more stores are becoming vacant in the Netherlands. It is a complex problem with several causes, the main problems being changes in consumer behavior, the rise of online shopping, and the impact of the COVID-19 pandemic (Butink, 2015). The impact of online shopping, in particular, has been significant (CBS, 2022). According to CBS, in the second quarter of 2021, approximately 7.3% of total retail space was vacant (CBS, 2022a). Once a vacancy occurs in a shopping mall, other stores also suffer as visitors tend to avoid the area with the vacancy, which also affects the neighboring shops (NOS, 2022). These problems are mainly visible in the shopping malls in medium-sized cities and the shopping malls in the core of residential areas (Figure 6). This is because people only visit them for daily groceries. Other purchases are done online and/or people go to shopping malls that offer cultural, recreational, and/or historical entertainment in addition to shopping, such as old city centers of large cities (Zandbergen, 2018). If no action is taken regarding the increasing vacancy of shopping malls, these places will become deprived spaces. Taking action concerning the vacancy of shopping malls is therefore crucial to the quality of life in and around shopping malls (NOS, 2022).

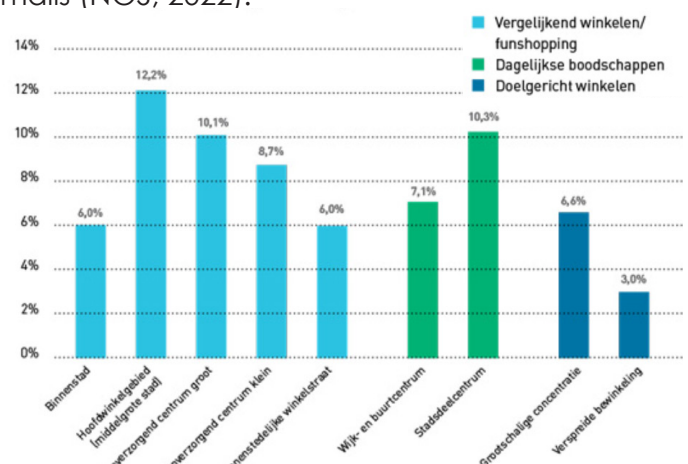
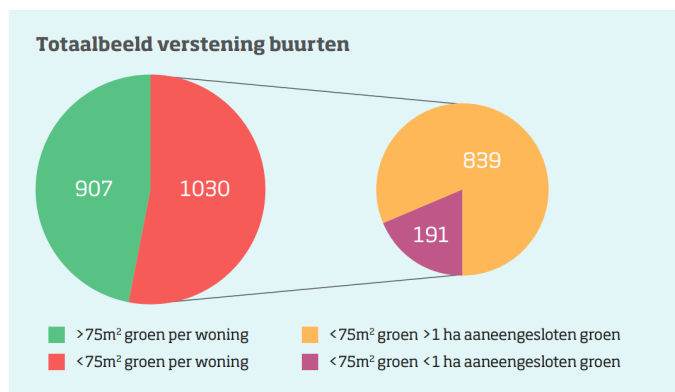


Figure 6. Vacancy in shopping malls (Zandbergen, 2018)

At the same time, the built environment is turned into stone, leaving no space for greenery. Research of Natuur & Milieu (2022) shows that 53 percent of 3.5 million neighborhoods lack green space (Figure 7). The shortage of green space creates several problems. The built environment is less climate-adaptive, more and more we face flooding and heat stress in the built environment. Also, there is no biodiversity in the stone areas which causes an imbalance in nature. As a result, air quality is declining and plagues such as oak processionary moth are becoming more common. Lastly, more and more studies on human health indicate that nature, from our biophilia, is crucial for the mental and physical health of people. The need for nature was highlighted during the COVID-19 pandemic, as parks became overcrowded and had to restrict access because too many people went to the park (Natuur & Milieu, 2022).



Grafiek 1: van de 1030 (53%) versteende buurten (minder dan 75m² groen per woning), hebben er 191 (10%) ook geen aaneengesloten gebied groen van meer dan een hectare. 907 buurten (47%) voldoet aan beide normen.

Figure 7. Amount of stone in neighborhoods (Natuur & Milieu, 2022)

The problem of vacancy in shopping malls and the need for more nature provide opportunities for creating more nature in vacant shopping malls. In order to make this transformation as optimal as possible, it is important to consider the value of a shopping mall and the way nature is implemented. As Relph (1976) emphasizes in his book 'Place and Placelessness', meaningful connections between people and their built environment are important with regard to fostering a sense of identity and community. Relph argues that placelessness is a significant problem in modern society due to the homogenization of the built environment, which can lead to feelings of disconnection and disorientation (Relph, 1976). It is therefore important the spirit of place is not affected by the green transformation. It is also important that these green uses are done carefully because not all green uses have positive effects on mental and physical health (Zakrisson, 2022). That makes it impor-

tant to do the green transformations based on the concept of biophilic design.

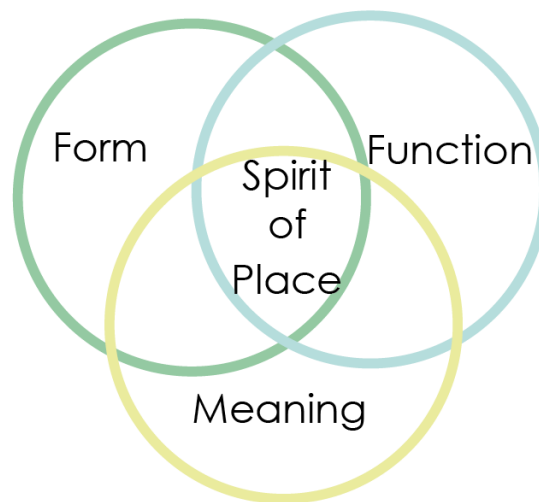


Figure 8. Diagram form, function, meaning based on Relph's Theory (Bolleboom, 2023)

In order to carry out the complex task of the biophilic transformation of a shopping mall, while taking into account the spirit of place, further research is needed. Therefore, the question this research aims to answer is:

'How can residential shopping malls be transformed into a biophilic design while preserving their spirit of place?'

The sub-questions are:

1. What is the societal significance of shopping malls?
2. What is biophilic design and how can it appear in the built environment?
3. According to Edward Relph, what is 'the spirit of place'?
4. What is the spirit of place in a residential shopping mall, based on its form, function, and meaning?
5. What are the strengths/weaknesses/opportunities/threats for the biophilic transformation of a shopping mall taking into account the spirit of the place?

In the research, several choices were made to narrow down the scope of the research. The research will mainly focus on the shopping malls in residential areas as the scale of these shopping malls is more manageable in the limited time available to conduct the research.

In biophilic design, research will focus on the direct experience of nature, such as light, air, water, plants, animals, fire, landscape, weather, and views. These are the patterns most closely connected to real nature and contribute most directly to the climate, biodiversity, and well-being of users.

Methodology

The first sub-question will aim to clarify the meaning of the term "shopping mall" and the role it has played in society throughout history in order to understand its social value. It will be achieved through a literature review of sources such as 'Machine en Theater' (Kooijman, 1999).

The second sub-question explains the concept of biophilic design, how biophilic design can be applied in the built environment and how biophilic design affects the setting. This will be done with a literature review using the book 'Handbook of Biophilic City Planning and Design' (Beatly, 2016). Then the applications and affects that are found will be categorized in 'The Layers of Brand' (Brand, 1994). 'The Layers of Brand' are used in order to better understand the impact that the transformations have on the built environment.

The third sub-question will examine the meaning and significance of 'the spirit of place' as defined by Relph (1976) in his book 'Place and Placelessness' through a literature review. From this, a framework for the research follows in the next chapter.

The fourth sub-question uses the framework of the previous chapter to analyze 'the spirit of place' in three residential shopping malls, namely: Leyweg Den Haag, Bogaard Rijswijk and Schalkwijk Haarlem. The framework consists of an analysis of form, function, and meaning. These three terms together form the spirit of the place:

- > Form is analyzed using photographs and facade drawings from the archive to understand the architecture, composition, and typology over the years.
- > Function is analyzed using floor plans from the archive to map use over the years.
- > Meaning is analyzed using newspaper articles from the archive and interviews with present users in order to find out what has a

value from a user's point of view.

To make the analysis clear, the findings are placed in the categories of 'The Layers of Brand'. From this, it becomes clear on which layers the spirit of place is relevant. In the fifth sub-question, the findings from the second and fourth sub-question are compared. As both chapters conclude with the findings in 'The Layers of Brand', they can be compared. To structure this comparison, a SWOT (strengths/weaknesses/opportunities/threats) analysis is used. The SWOT analysis serves as a recommendation for the biophilic transformation of the shopping mall taking into account the spirit of the place.

The SWOT analysis is then used for the design case: Leyweg Den Haag.

(See diagram in appendix I)

Frame of Reference

In order to conduct this study, a number of studies and definitions are assumed. This forms the framework of the study.

To research 'the spirit of place', the term and framework described by Relph (1976) in his book 'Place and Placelessness' are assumed. Relph is pioneer with his book place and placelessness in the phenomenological studies in Geography. His book has been widely cited and is described 'a Classic' in Human Geography (Wikipedia, 2023a).

For research on Biophilic design, the book 'Handbook of Biophilic City Planning and Design' (Beatly, 2016) by Dr. Timothy Beatly is used as a starting point. Dr. Timothy Beatly is an internationally recognized sustainable city researcher and author (Wikipedia, 2023). In his book, he describes how biophilic design can be applied on different scale levels to make cities more sustainable, liveable, and equitable places.

The research uses the categorization 'Layers of Brand' described in the book 'How buildings learn : what happens after they're built' (Brand, 1994). The Layers of Brand helps to structure outcomes and make them comparable. This categorization is a well-known method within TU Delft and is used in several courses as a method for research within architecture/building. For the research on the meaning of shopping

malls in society, the dissertation ‘Machine and theater’ (Kooijman, 1999) is used. This describes the development of shopping malls and how it relates to developments in society.

Relevance

The answering to the main question and sub-questions will provide an outcome that can contribute to an academic level and a social level. This will be further explained.

academic relevance

The vacancy of shopping malls has been a growing problem over the past two decades. What is seen as a more common solution is partial demolition and replacement by housing. This is happening, for example, in Bogaard Rijswijk (Hoogland, 2022) and in 2024 these are also the plans in WoensXL Eindhoven (Thelesen, 2021) and Megastores The Hague (Triki & Van Son, 2022). There are no studies that take into account the spirit of place in the often drastic irreversible changes. An investigation into the value of the shopping malls can ensure that transformations can take place more carefully while preserving value.

In addition, there are studies on biophilic design in shopping malls that investigate the psychological effects of biophilic design and the application of biophilic design in a specific situation. It is not clear how these effects can subsequently be reproduced. Research that offers tools for incorporating biophilic design can make shopping malls healthier for people and nature.

Social relevance

This research explores ways to transform shopping malls so that it improves the quality of life for its users. This is done by exploring and respecting the value and connection that users have with the place when making transformations. These transformations are done from the concept of biophilic design because this concept is known for its positive effects on both mental and physical health and can also contribute to a healthier climate (Kellert, 2018).

Literature

- Beatly, T. (2016). *Handbook of Biophilic City Planning and Design*. US: ISLAND PRESS. <https://doi.org/10.5822/978-1-61091-621-9>
- Brand, S. (1994). *How buildings learn : what happens after they're built*. Viking.
- Butink, L., (2015) "Toekomst van de Nederlandse winkelstraat.". *AGORA Magazine* 31 (2), pp. 52-54. doi: <https://doi.org/10.21825/agora.v31i2.2175>
- CBS. (2022, December 20). Bijna 32 miljard euro besteed bij Nederlandse webwinkels in 2020. CBS.nl. <https://www.cbs.nl/nl-nl/nieuws/2022/51/bijna-32-miljard-euro-besteeld-bij-nederlandse-web-winkels-in-2020>
- CBS. (2022a, December 14). Minder leegstaande winkels, kantoren en winkels. CBS.nl. [https://www.cbs.nl/nl-nl/nieuws/2022/50/minder-leegstaande-woningen-kantoren-en-winkels#:~:text=Op%201%20januari%202022%20stonden,2020%20\(222%20duizend%20objecten\)](https://www.cbs.nl/nl-nl/nieuws/2022/50/minder-leegstaande-woningen-kantoren-en-winkels#:~:text=Op%201%20januari%202022%20stonden,2020%20(222%20duizend%20objecten)).
- Hoogland, J. (2022, November 7). Megastores wordt gesloopt en er komen betaalbare woningen voor terug. *Indebuurt*. <https://indebuurt.nl/denhaag/winkelen/megastores-wordt-gesloopt-en-er-komen-betaalbare-woningen-voor-terug~247974/>
- Kaplan, S. (2001). *Meditation, Restoration, and the Management of Mental Fatigue*. *Environment and Behavior*, 33(4), 480–506. <https://doi.org/10.1177/00139160121973106>
- Kellert, S.R. (2018). *Nature by Design : The Practice of Biophilic Design*. Yale University Press. ProQuest Ebook Central, <https://ebookcentral-proquest-com.tudelft.idm.oclc.org/lib/delft/detail.action?docID=5340626>.
- Kooijman, D.C. (1999, November 4). *Machine en Theater*. 010 Publisher, Rotterdam. <http://resolver.tudelft.nl/uuid:667ea131-2cc7-4664-b566-ef9b675a610c>
- Natuur & Milieu (2022). *Stad van Steen?*. *Natuur & Milieu*. <https://natuurenmilieu.nl/app/uploads/Rapport-Verstening-Openbare-Ruimte.pdf>
- NOS., (2022, March 24). Winkelstraten steeds leger: "Met alleen verkopen, verkopen, verkopen overleef je niet". NOS.nl. <https://nos.nl/regio/noord-holland/artikel/248287-winkelstraten-steeds-leger-met-alleen-verkopen-verkopen-verkopen-overleef-je-niet>
- Relph, E. (1976). *Place and Placelessness*. London: Pion
- Rosenbaum, M. S., Otolara, M. L., & Ramirez, G. C. (2016). The restorative potential of shopping malls. *Journal of Retailing and Consumer Services*, 31 (1), 157-165. <https://doi.org/10.1016/j.jretconser.2016.02.011>
- Rosenbaum, M. S., Ramirez, G. C., & Camino, J. R. (2014). A dose of nature and shopping: The restorative potential of biophilic lifestyle center designs. *Journal of Retailing and Consumer Services*, 40(1), 66-73. <https://doi.org/10.1016/j.jretconser.2017.08.018>
- Seekamp, E., Jo, E. (2020) Resilience and transformation of heritage sites to accommodate for loss and learning in a changing climate. *Climatic Change* 162, 41–55. <https://doi.org/10.1007/s10584-020-02812-4>
- Thelesen, S. (2021, October 30). Voor sloop nog één keer langs vergane glorie van In de Bogaard: 'Hoogtepunt is oude en verlaten V&D-pand'. AD. <https://www.ad.nl/den-haag/voor-sloop-nog-eeen-keer-langs-vergane-glorie-van-in-de-bogaard-hoogtepunt-is-oude-en-verlaten-vend-pand~a77a4847/>

Triki, F., Van Son, R. (2022). Sloop groot deel WoensXL: leegstaande winkels maken plaats voor woningen. Omroep Brabant. <https://www.omroepbrabant.nl/nieuws/4063911/sloop-groot-deel-woensxl-leegstaande-winkels-maken-plaats-voor-woningen>

Van Geest, J. (2023). Post '65: karakteristieke architectuur 1965-1990. Post65.nl. <https://post65.nl/>

Wikipedia. (2023). Timothy Beatly. Wikipedia. https://en.wikipedia.org/wiki/Timothy_Beatly

Wikipedia. (2023a). Edward Relph. Wikipedia. https://en.wikipedia.org/wiki/Edward_Relph

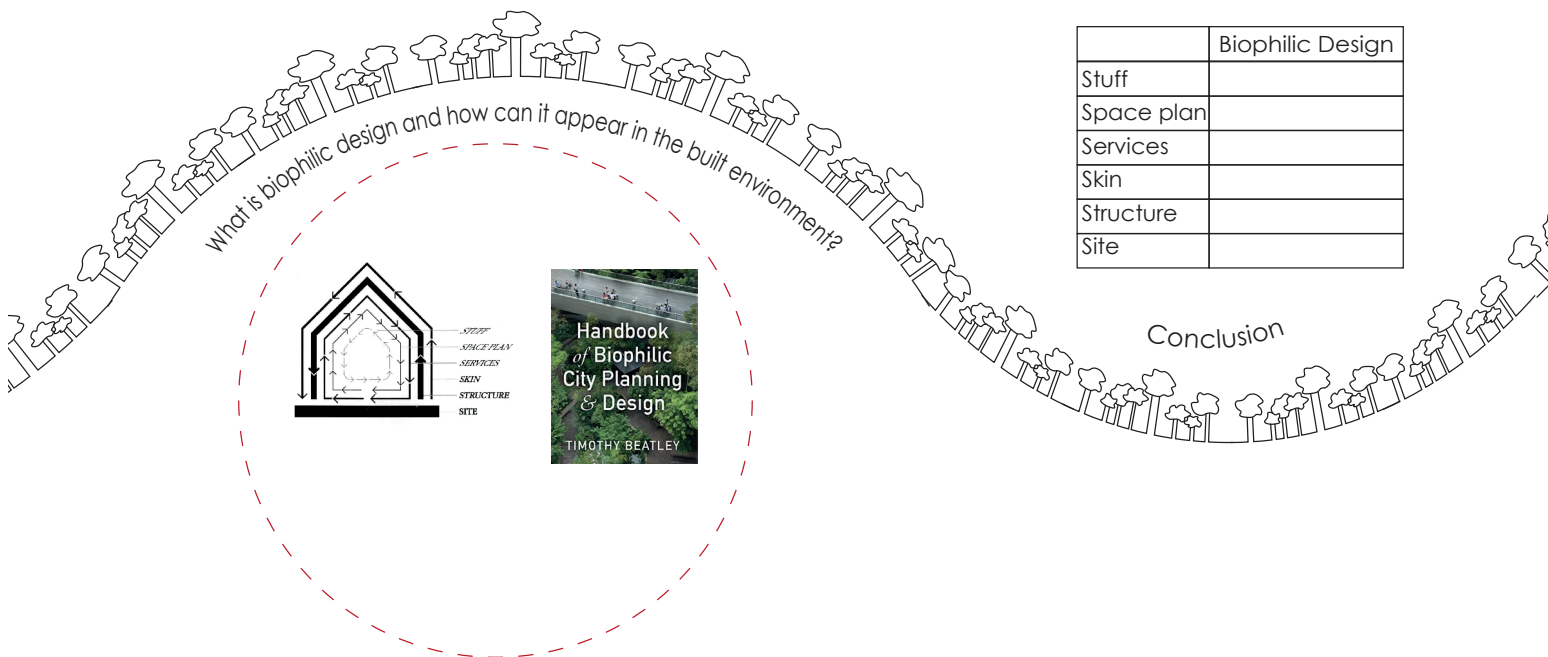
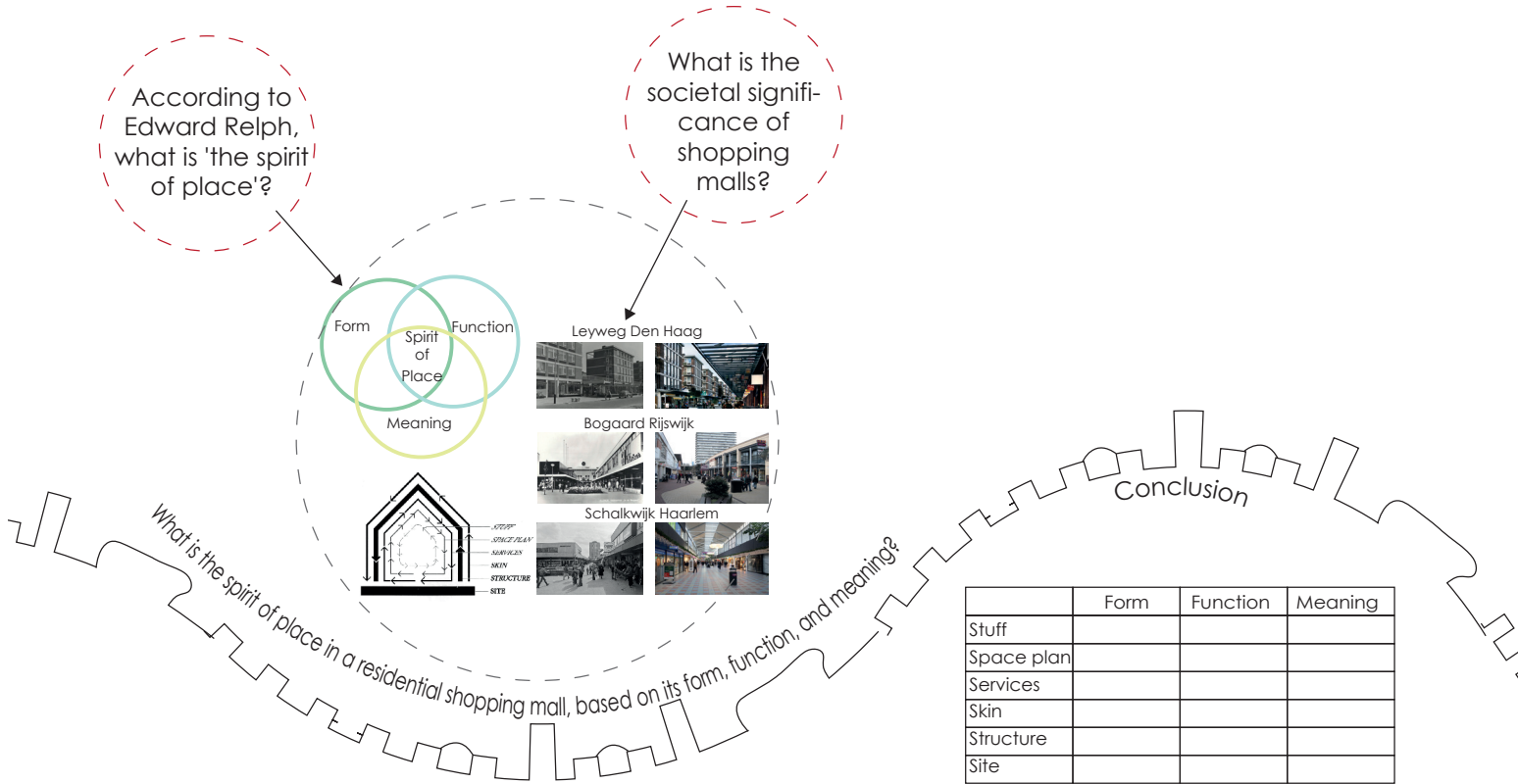
Zakrisson, A. (2022, May 23). Is Biophilic Design Always Green?. Gb&dPRO. <https://gbdmagazine.com/is-biophilic-design-always-green/>

Zandbergen, G., (2018, September 27) "Hoe nu verder met de middelgrote stad?". Locatus.nl. <https://locatus.com/blog/hoe-nu-verder-met-de-middelgrote-stad/>

Appendix I

P1 & P2

Research: How can residential shopping malls be transformed into a biophilic design while preserving their original form and function?



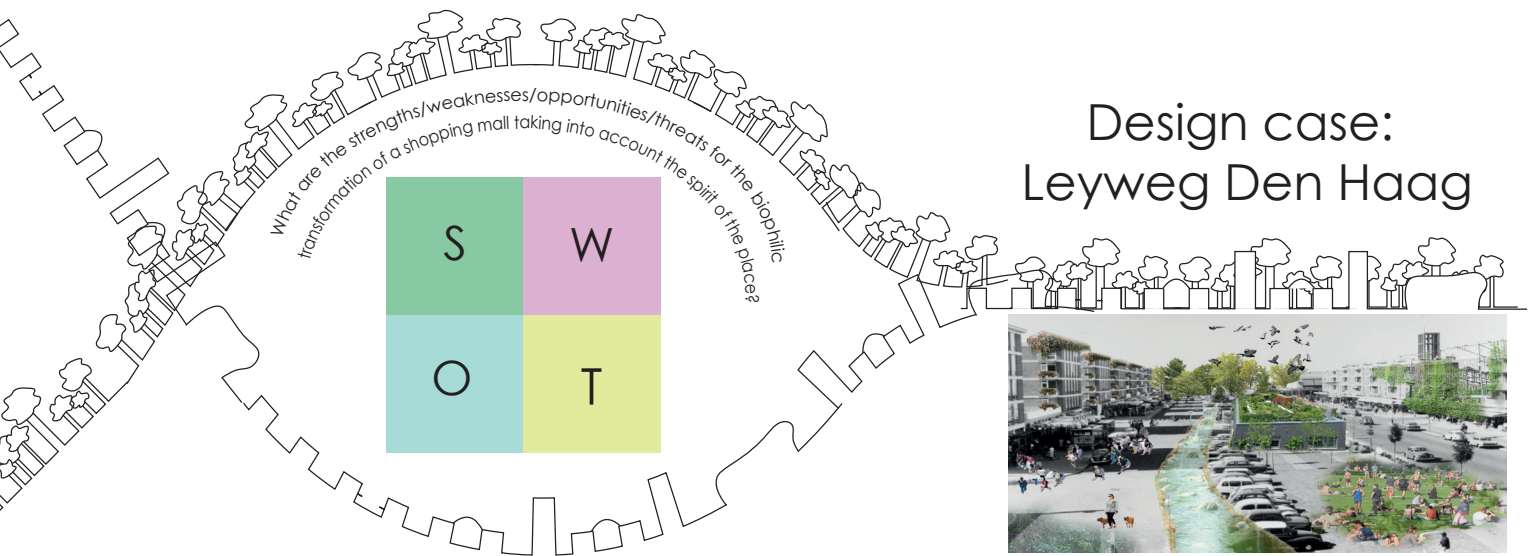
P3

P4

P5

...ing their spirit of place?

Design: How can Leyweg Den Haag be transformed into a biophilic shopping mall while preserving the spirit of place?



Design case:
Leyweg Den Haag

