

## Graduation Research

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# Towards A Evolution Heritage

## 20th Century Shopping Mall Skin Redesign

### Abstract

This paper explores the balance between heritage values and new identities in the redesign of 20th-century Dutch shopping mall skins. The skin of a building plays a crucial role in its external identity and communicates its history, style, and cultural context. Shopping malls, in particular, require constant redesign to keep up with changing trends and provide a fresh stimulus to consumers. However, there is a lack of strategies for balancing necessary updates while preserving heritage values. Using the case study of Hoog Catharijne shopping mall in Utrecht, the research highlights the transformation of various tangible attributes of the HC skin, such as materials, patterns, signage, and elements, as well as intangible aspects like context relation, exterior and interior character, and perception. The results indicate that the redesign significantly transformed the mall's appearance, leading to increased footfall and commercial success. However, there are mixed opinions about the new design, with concerns about sustainability and the loss of historical and cultural values. This research contributes to the field of heritage architecture by providing a framework and guiding principles for achieving a balanced and effective skin redesign in non-listed heritage buildings. By encouraging designers to explore the cultural and historical values embedded in building skins, the study aims to reduce casual demolition and promote sustainable and circular design practices.

**Keywords:** Skin, Heritage value, Attributes, Shopping Mall, Redesign

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# 1. Introduction

## 1.1 The definition of skin

The outermost layer of a building is referred to as the “skin”. It serves a critical function in separating the interior structure from the external environment. [1] Apart from the function, it not only shapes a building’s external identity but also communicates its history, purpose, style, and cultural context. [2]

In the realm of built heritage, Steward Brand (1995) categorized skin as one of the six shearing layers of a building. He notes the mutability of the skins ‘to keep up with the fashion or technology, or for wholesale repair.’ [3] In recent decades, the evolution of building envelope technology, coupled with public awareness of environmentally sustainable living, has made skin upgrade an integral part of most conservation projects. [4]

## 1.2 Shopping mall skin

Although modernists have disregarded the notion of choosing a specific style of decoration that distinguishes different building types, shopping malls still have the highest degree of design freedom over the others (Fig. 1). As Rem Koolhaas stated, ‘from Decon to Minimalism via Post-Modern, all of these architectures can be read as shopping minus the logos.’ However, since shopping is an activity that is closely linked with fashion trends, economic conditions and ways of living, the mall is also the most short-lived and vulnerable to decline building type. [5] Hence, shopping malls are more susceptible to becoming outdated in appearance and often require constant redesign to keep up with the latest trends and provide consumers with a fresh stimulus.

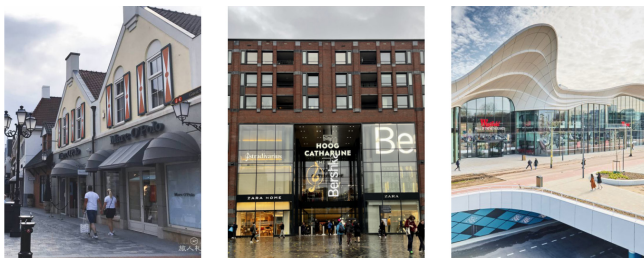


Fig. 1 Different styles of Shopping Mall Skin

## 1.3 Literature reviews

In recent years, many construction-oriented books have already studied the building exterior independently. For example, the book *Façades: principles of construction* explains different façade types like second-skin façade, box-window façade, corridor façade, shaft-box façade, etc. [6] While *Façade Construction Manual* offers extensive information about façade materials, thermal comfort, and ventilation. [7] *Design from heritage* emphasizes the importance of identifying and understanding the materials, window types, ornaments, and other elements used in a conservation project. [8] A more detailed study of how to upgrade the modern heritage glazed façade is conducted in *Reglazing Modernism*. [9]

## 1.4 Problem statement

The existing literature about façade design appears to be on opposing sides – the one emphasizing the application of state-of-the-art materials and technologies while the other prioritizing complete preservation of the original design. How to modify the old appearance of a building and connect the new design with the old is less described. This results in a lack of strategies to follow when we deal with non-listed heritage buildings such as the shopping malls. They present unique challenges in balancing necessary updates and changes while preserving heritage values.

Many malls constructed in the latter half of the last century in the Netherlands are now considered outdated, despite featuring the latest fashion trends at the time of their construction. Some of these malls have undergone multiple renovations to adapt to the changing needs of society, while others have remained unchanged and face the challenge of high vacancy rates. Taking the Westfield Mall and the Amsterdamse Poort as examples (Fig. 2, Fig. 3), they showcase that overly radical redesigns of a mall’s exterior can result in problems such as material waste, energy loss, and the loss of heritage values. On the other hand, inadequate intervention fails to address the issue of low attractiveness, which can lead to the risk of obsolescence and social insecurity.

Therefore, the aim of this research is to provide

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- [1] Kuipers, M., & de Jonge, W. (2017). *Designing from Heritage: Strategies for Conservation and Conversion*. Delft University of Technology. p40.
- [2] Schittich, C., Lang, W., & Krippner, R. (2006). *Building skins*. Birkhäuser. p9-10.
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redesign principles for buildings such as malls that are in-between complete change and preservation. The research will start by establishing a framework for studying building facades and learn from existing case studies, considering both their successes and failures. Ultimately, the goal is to assist numerous unrenovated buildings in adopting a more balanced and effective skin redesign strategy.



Fig. 2 Westfield Mall underwent a complete transformation



Fig. 3 Amsterdamse Poort simply used new facade panels to cover the old

## 1.5 Research Question

The main research question in this study is: ‘How can the preservation of heritage values and establishment of new identities be balanced in the skin redesign of 20th century Dutch shopping malls?’

## 1.6 Relevance

Today, renovation projects are becoming increasingly significant in the building industry, making up 70-80% of the European market. [10] Many of these projects require a change of appearance due to the change of interior functions, people’s aesthetics, or the urban settings. This research presents a comprehensive set of redesign methodologies and principles specifically tailored to such projects. Currently, many non-protected building’s façades are easy to be demolished and replace with a total new design. However, since it is the layer people see and interact with the most in the city, the skin carries people’s memory and history of the city development. [11] Therefore, it is worthwhile to approach the facades of these seemingly “unimportant” buildings with more care and consideration. This research encourages designers to explore the cultural and historical values embedded in building skins and aims to reduce the amount of casual demolition. Moreover, careful consideration of the skin components such as materials, façade patterns, glazing and shading during the design phase can help the old building move towards sustainability and circular economy. [12]

[10] Ayón A, Pottgiesser U & Richards N. (2019). *Reglazing Modernism*. Birkhäuser. p22.

[11] Rodger, R. (2022). The facade of power and the power of the facade: memory and meaning in Victorian cities. *Urban History*, p1-2.

[12] Pushkar, S. (2015). Application of Life Cycle Assessment to various building lifetime shearing layers: Site, Structure, Skin, Services, Space, and Stuff. *Journal of Green Building*, 10(2), p200.

## 2. Methodology and Methods

### 2.1 Methodology

The study is grounded in the theoretical framework of heritage architecture. Firstly, it adopts Brand's classification of six shearing layers [13] (Fig. 4). and further expands on the skin layer by categorizing it into diverse components based on Veldpau's classification of tangible and intangible attributes of heritage buildings(-Fig. 5). [14] Additionally, the research applies Pereira Roders' proposed value matrix (Fig. 6) to map the heritage values onto the skin layer. [15]

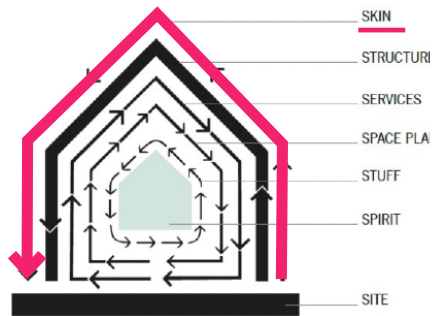


Fig. 4 Six shearing layers (Brand, 1995)

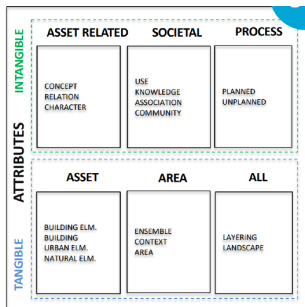


Fig. 5 Tangible and intangible attributes classification (Veldpau, 2015)



Fig. 6 Heritage value classification (Roders, 2007)

The research is situated within the Interpretivism paradigm and primarily employs inductive research approaches. A combination of qualitative and quantitative methods will be employed to evaluate the design balance of various skin components, with the former involving photo comparisons and the latter using social media to gauge public attitudes regarding the renovation and its impact on heritage values. A suitable case study will be selected to test these approaches.

### 2.2 Case Study

Hoog Catharijne (HC) is a shopping mall in Utrecht, The Netherlands, that was constructed in the 1960s as part of the Urban Plan Hoog Catharijne. It aimed to revitalize the city's economy by creating a modern shopping mall, apartments, offices, a new railway station and bus station, and reconstructing the area's infrastructure. Despite its ambitious goals, the project was perceived as rigid, outdated, and unattractive even before its official opening. The mall's image was further damaged by the presence of drug addicts and homeless people. In 1987, the city launched the Utrecht City Project (UCP) to upgrade the area, but the plan was never implemented due to conflicting interests of stakeholders. By 1997, many believed that HC would be demolished. However, a new master plan to renovate the area was approved in 2003. [16] Finally, in 2005, STIR Architecture was chosen to further develop the design, and the majority of the project was completed by 2020. [17]

The case study was selected due to its distinctive and intricate context, situated amidst a historical city center and a newly developed urban area, posing challenges in preserving the old and creating new designs. Moreover, the project underwent nearly 30 years of discussion and debate prior to implementation, leading to a meticulously planned approach that incorporated multiple proposals. The final design integrated various designs and strategies, making it a comprehensive case study with the potential for practical application in other mall redesign projects. The research primarily focuses on comparing the original building envelope constructed in the 1960s with the renovated version completed in 2020. (Fig. 7, Fig. 8, Fig. 9)

[13] Brand, S. (1995). *How buildings learn: What happens after they're built*. Penguin.p19.

[14] Veldpau,L.(2015).Historic urban landscapes framing the integration of urban and heritage planning in multilevel/governance.[Phd Thesis 1 (Research TU/e Graduation TU/e),Built Environment].Technische Universiteit Eindhoven. p85.

[15] Silva, A., & Roders, A. (2012). Cultural heritage management and heritage (impact) assessments. *Proceedings of the Joint CIB W, 70, W092*. p6.

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[17] Gemeente Utrecht, CU2030 station area. <https://cu2030.nl/project/hoog-catharijne>. (accessed May 17, 2023).

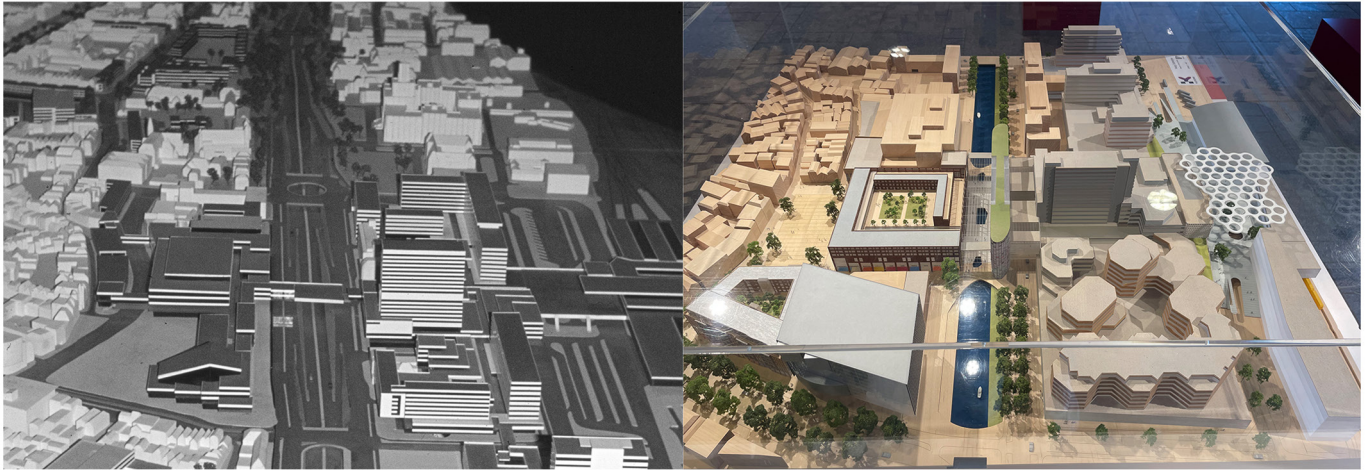


Fig. 7 The old and new HC design model



Fig. 8 Photo comparisons between the old and new facades

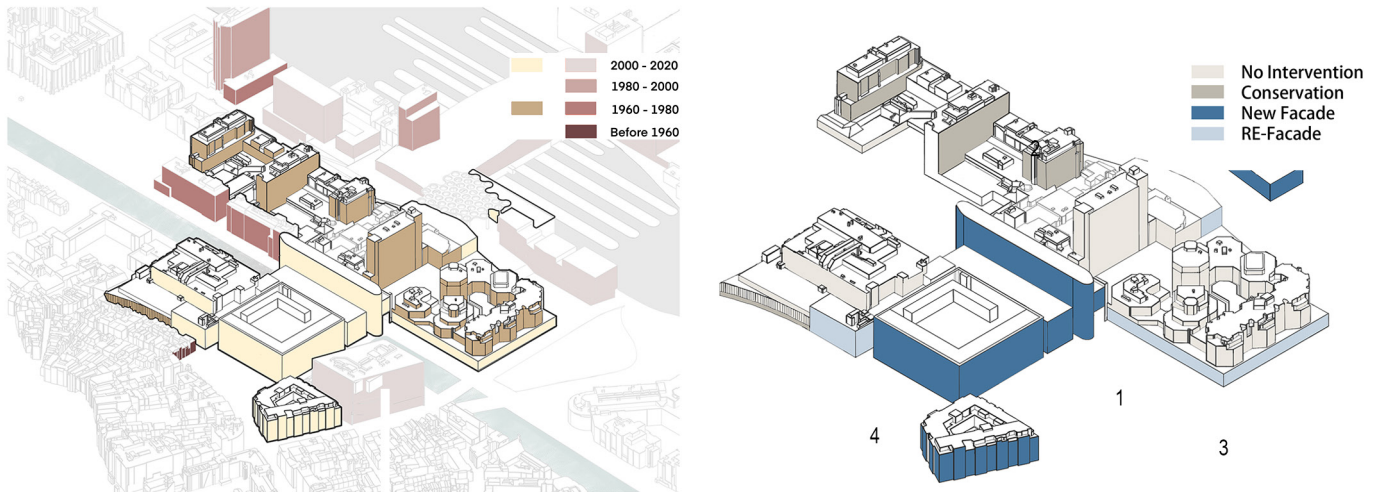


Fig. 9 Facade construction period and intervention category

### 2.3 Methods

As depicted in Fig. 10, the building’s skin has been divided into several tangible attributes, namely material, pattern, sign, element, and roof. These attributes are closely linked to intangible aspects such as the relationship with the context, exterior and interior character, and the perception of architecture. Various data collection methods have been employed to analyze the aforementioned attributes. They include archival research and field trips to compare old and new photographs, as well as reading old newspapers, academic papers, and publications to understand the renovation process and different stakeholders’ viewpoints. The design office, Stir Architecture, provided primary documents and drawings, which were crucial in gaining a deeper understanding of their design intentions. Furthermore, the study incorporates a survey consisting of 100 randomly selected comments from online platforms YouTube and SkyscraperCity. Additionally, 379 photographs are obtained from Instagram and Facebook to gather individuals’ perspectives on the project.

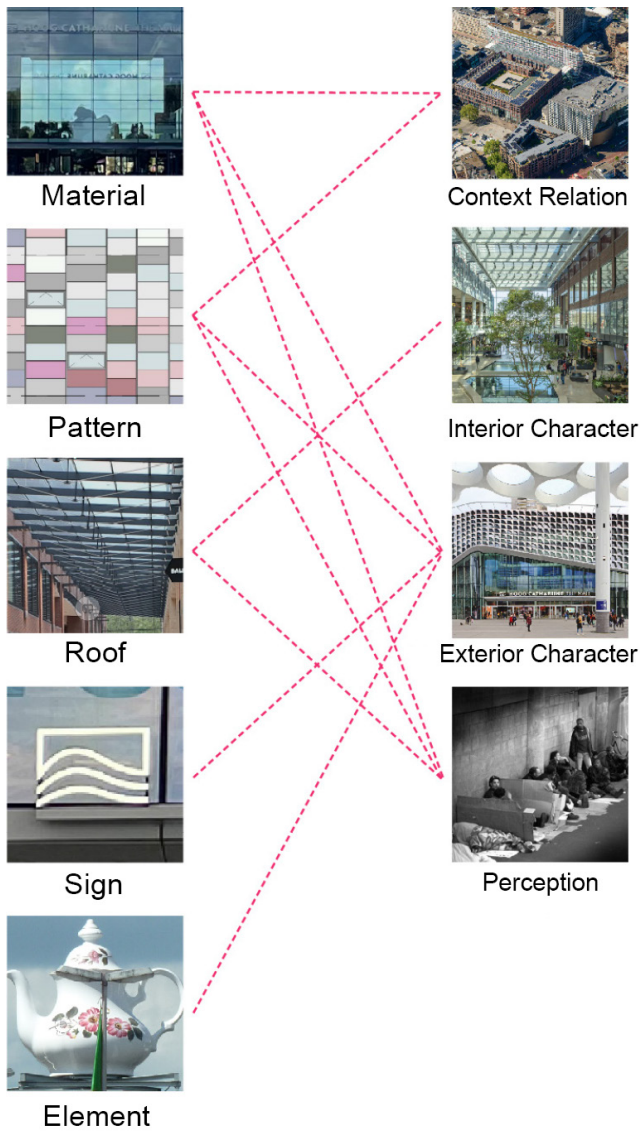


Fig. 10 The tangible and intangible attributes of skin layer

## 3. Results

### 3.1 Attributes analysis Result

#### Material & Pattern (Fig. 11)

The redesign of HC added a variety of materials, including stone, bricks, metal, and glass, which brought a range of colors to the previously dark and monotone building. The use of materials tended towards modernity, but references to historical buildings were also included through the use of red bricks and yellow stone. The redesign also incorporated curvilinear and free shapes, which contrasted with the rigid geometric patterns of the old design. New random and parametric patterns were also introduced, along with old stone and brick textures, to create a more visually diverse skin.

#### Sign & Element (Fig. 12)

Both the old and new signage of HC showed a certain similarity with the mall’s skin. The former had horizontal and vertical lines that were characteristic of modern architecture, while the latter featured a simplified version of the freeform façade. An interesting addition to the new design was the inclusion of two English words “THE MALL”, which, according to some online comments, was intended to attract more international customers. Additionally, there were two distinctive elements incorporated into HC’s skin. One was the ‘De Utrecht’ sculpture placed exactly where the building was demolished, while the other was a giant teapot initially created as a temporary artwork but was retained due to public affection. Although these elements may not be prominently visible on the skin, they hold significant value in preserving the history and memories of the city.

#### Roof & Interior Character (Fig. 13)

The redesign of HC involved replacing many of the closed roofs with transparent glass and increasing the height of interior spaces. This allowed for natural light to be introduced into most areas of the building and transformed the interior character from being dark and cramped into bright and spacious. One unique feature of the new design is the roof that covers the restored canal, which also functions as the floor of the interior space. By incorporating several glass fountains, this area not only creates an appealing gathering place indoors but also establishes vertical connections between the canal, interior, and sky, making it the most distinctive interior space of HC.

#### Context Relation (Fig. 14)

The previous design neglected its relationship with the surroundings. Large modern structures were placed haphazardly in the historic city center. The redesign aims to enhance connectivity between different urban areas. To harmonize with the new train station and bubble roof on the station side, the new façade features bright aluminum panels, curtain walls, and parametric

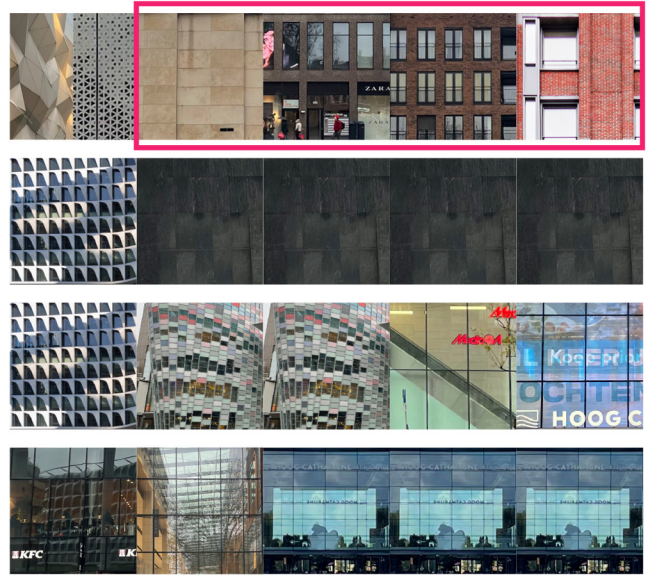


Fig. 11 Material and pattern Analysis



Fig. 12 Sign and element analysis



Fig. 13 Roof and interior character analysis

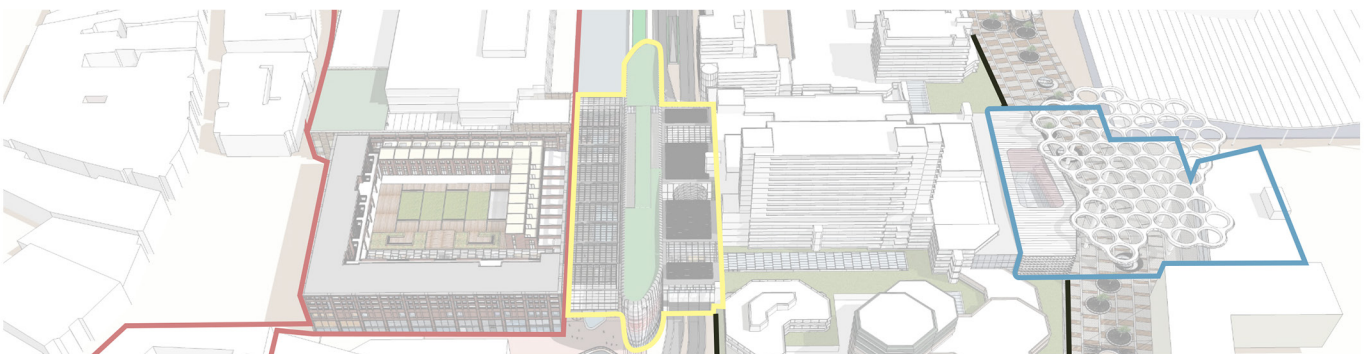
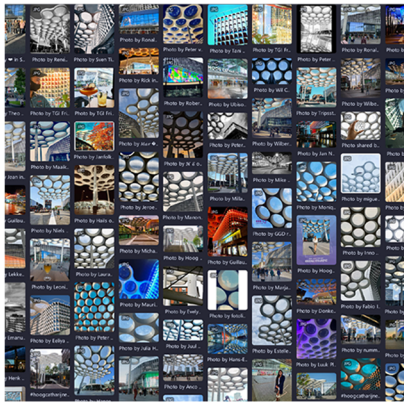


Fig. 14 Context relation analysis





61% Station area



30% Middle canal area



2% Old facades

Fig. 15 Exterior character analysis



1960s: Modern, New, American Style Mall



1980s: Unsafe, Outdated, Dark



2020s: Modern, Bright, Local Dutch Mall

Fig. 16 Change of perception

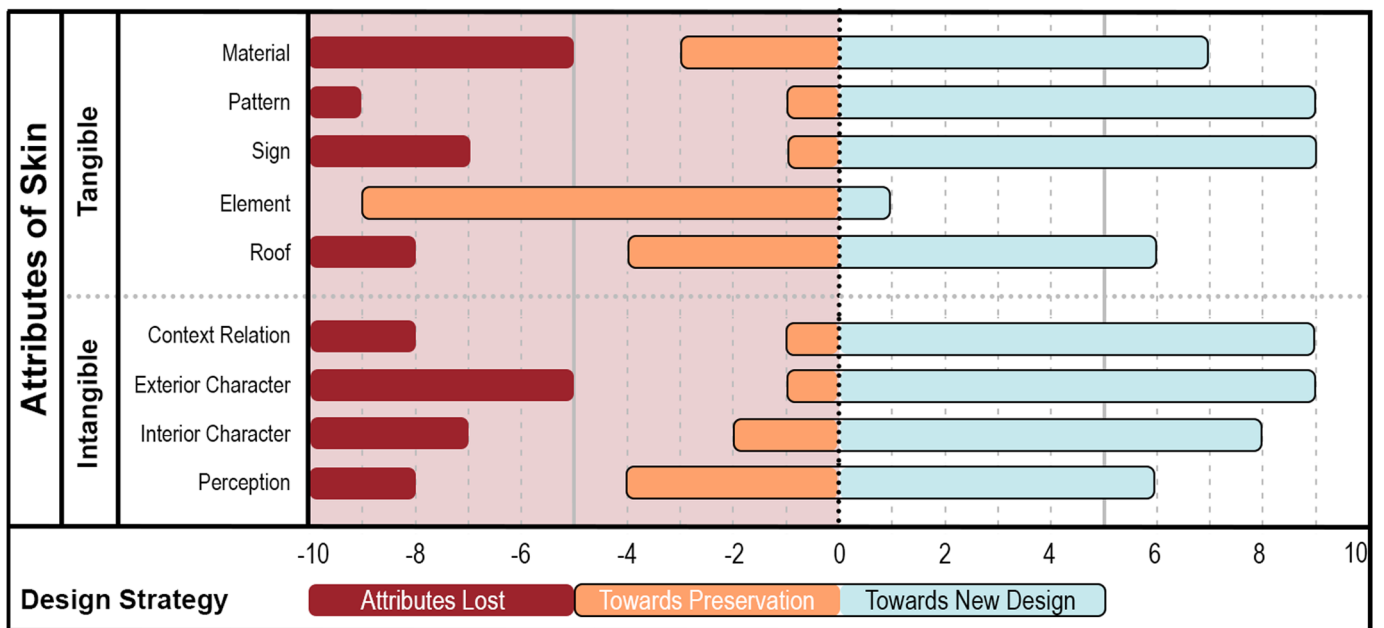


Fig. 17 Overview of the design strategy for different skin components

patterns. On the other hand, the façade facing Vandenburg square is constructed of dark bricks and stone to blend in with the medieval square. Additionally, a substantial amount of transparent glass connects the two sides of the building and merges the outdoor scenery with the interior space on top of the canal.

Exterior Character (Fig. 15)

The exterior character of a building can be linked with the number of social media photos that showcase its facade. Out of the 369 photos that were gathered, 91% were about the new facades, with 61% taken at the station square and 30% near the canal. In comparison, the old facades were barely represented, with less than 2% of the total number of photos. Based on the photos collected, the new identity of HC highlights its unique shape, colorful panels, and random patterns. However, the demolition of the old building led to the loss of many original features, such as the two elevated trespassers.

Perception (Fig. 16)

Although architecture goes beyond the superficial reading of images, the visual field indisputably exerts immense influence on our perception about a building. Because of this, appearance is one of the most critical aspects of shopping mall design as it directly links to its commercial attractiveness. The negative perception of being outdated, ugly, dark, and unsafe greatly diminishes the lifespan of old HC skin. To transform people’s perception and infuse a sense of newness and modernity, the redesign of the building’s skin involved the demolition or covering of most of the concrete material, the addition of plinths to revitalize the street, and the use of various fashionable designs.

3.2 Overall Result

The examination of the attributes indicates that a majority of them have been modified in the new design, resulting in a significant transformation of the building’s appearance. (Fig. 17) Undoubtedly, the updated look has played a crucial role in the commercial success of the shopping center. Since the renovation, the foot-fall has significantly increased. Currently, it is the most popular shopping destination in the Netherlands, attracting approximately 26 million visitors annually.

Fig. 18 display the results of gathering 100 online comments about the HC skin. Approximately half of the commenters expressed negative feelings towards the old design, while about one-third had a positive attitude. Compared to the old skin, more people did not show a clear attitude towards the new design, and both positive and negative comments decreased by 14% and 10%, respectively.

Upon analyzing the text, it becomes clear that many individuals dislike the concrete material, dark color, and rigid shape of the old design, while others who miss it regard these features as its charm. The same

paradox exists for the new skin - some appreciate the modern fashion design, whereas others find the LED lights and contemporary glass unsettling. Several individuals have expressed that neither design suits the city of Utrecht, and that the project has consumed an excessive amount of money. Among the greatest concerns are whether the design is sustainable in the long term as it may become outdated someday, and how to address such a scenario.

After thoroughly analyzing the comments, the change in the heritage values of HC is assessed using Pereira Roder’s value matrix. According to the findings presented in Fig. 19, while the redesign has been considered a successful commercial redevelopment, it does not appear to have led to a significant improvement in the building’s heritage value. The city center of Utrecht has been turned into a construction site for decades due to extensive demolition and constant construction. This has resulted in a significant waste of resources, discontinuity in urban development, and a detachment of people’s memories from the place. The sacrifice of historical and cultural values has only resulted in temporary aesthetic value.

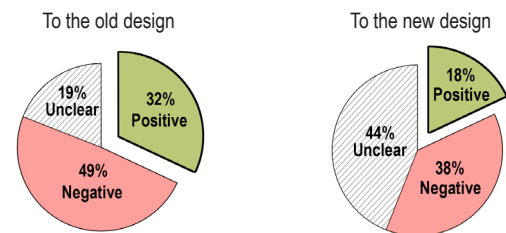


Fig. 18 People’s attitude towards the old and new design



Map the new skin heritage values based on comments

Fig. 19 Value matrix showing change of heritage values

## 4. Discussion

The results indicate that individuals consider not only the visual quality of a façade but also their personal experiences, activities, and the cultural values associated with the building. The interaction between individuals and the place cannot be replaced by trendy modern designs. Hence, the most significant challenge in the redesign process is determining what should be preserved and identifying the most suitable new features for old buildings. While each building possesses its own unique circumstances, this paper presents several key aspects to consider during the decision-making process for achieving a balanced skin redesign.

### 4.1 Balance between the tangible and intangible

The shearing layers theory of Brand (1995) has two primary limitations. Firstly, it treats the skin as an integral component of the building, overlooking its distinct role and potential for independent changes. Secondly, the theory's assumption of a 20-year lifespan for the skin layer primarily attributes its longevity to material durability [18], neglecting other factors that may influence its lifespan. The example of Façadomy, (Fig. 20) where only the façade of an old building is preserved while new buildings are constructed behind it, well demonstrates the two limitations. In this particular scenario, the old façade doesn't belong to the new building functionally, yet it retains significance as part of the public space in the city, resulting in an extended lifespan that transcends its original functional purpose. Contrarily, the study of HC demonstrates that its old skin did not fail as a functional envelope. Instead, its shortened lifespan can be primarily attributed to its inadequate integration into the urban fabric. According to Veldpaus (2015), the tangible and intangible attributes often coexist within the same heritage asset. A modification of one aspect will inevitably trigger a change in another. [19] Taking the HC as an example, the architect's idea to enhance the contextual relationship between the building and its surroundings resulted in the deliberate selection of distinct materials and patterns at different locations. Subsequently, the utilization of these new materials contributed to shaping the building's new exterior character. This suggests that achieving a well-balanced skin redesign requires



Fig. 20 Example of Façadomy, Caledonian Road, London

careful consideration of both sides. A design can either start with a vision of intangible attributes to guide the tangible attributes or begin by identifying the tangible aspects and subsequently shaping the intangible ones.

### 4.2 Balance Between the attributes and values

Unlike listed heritage buildings, which many experts, organizations, and governments often try to define their values, non-designated heritage remains largely absent in literature. [20] Hence, methods like using international documents to do the value assessment [21] (Fig. 21) are not applicable for shopping malls. However, this research still adopts a value-based approach by applying the same principles of text analysis and utilizing Pereira Roders' value matrix (2007), but with a unique focus on using social media as a data source. The results demonstrate that social media platforms provide individuals with opportunities to express their opinions and emotions, offering valuable insights into everyday interactions with the building that may not be captured by experts. [22] For example, despite the prevailing view of the government and developers that the old HC skin required replacement, still a lot of residents expressed nostalgia for Utrecht's past through online comments. They shared their stories and memories in the city center and the old HC, showing strong emotional connections to the disappeared building. Even the infamous 'Junkentunnel' was interpreted as a special feature and missed by some people. As The Burra Chart (2013) stated, heritage values

[18] Brand, S. (1995). *How buildings learn: What happens after they're built*, Penguin.p19.

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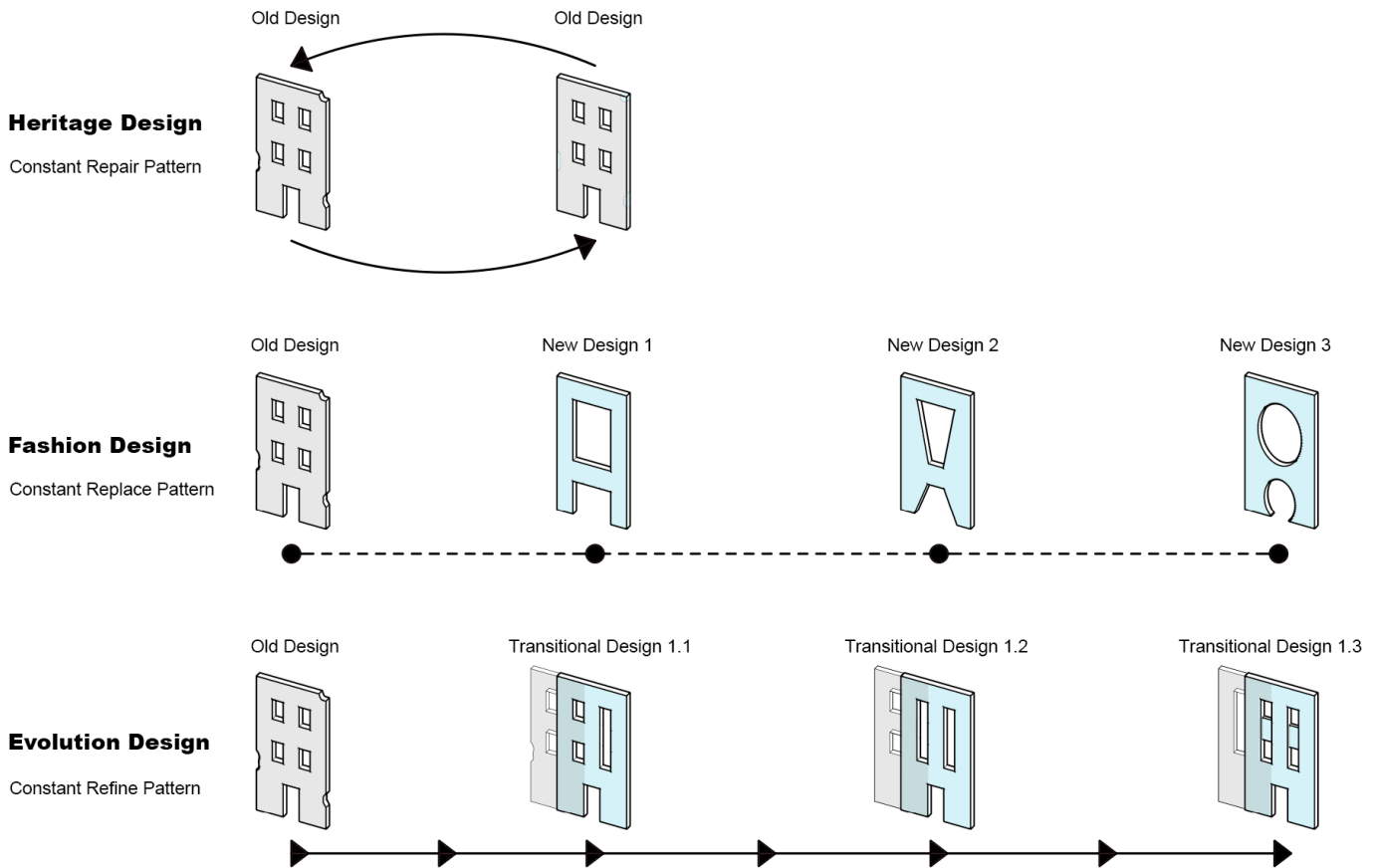


Fig. 23 Different facade design pattern demonstration

## 5. Conclusion

This research specifically examines the challenges associated with redesigning non-listed heritage buildings, particularly shopping malls, with a focus on achieving a balance between incorporating new features and preserving the existing ones. It expands upon the existing six shearing layers framework by delve into a more detailed analysis of the skin layer, recognizing its significance and multifaceted roles. Building upon Veldpaus's (2015) theory, this research further develops a comprehensive taxonomy that considers both tangible and intangible aspects, with a specific emphasis on the building's skin. By presenting a case study of HC and utilizing a value-based assessment approach, this research provides an example of how to evaluate the exterior of shopping malls. The findings of this study have contributed to the formulation of multiple considerations that can guide the redesign of numerous outdated buildings in a balanced manner.

As illustrated in Fig. 23, the current two predominant approaches for dealing with old building facades, namely 'heritage design' which prioritizes the preservation and restoration, and 'fashion design' which requires constant demolition and replacement for complete renewal, are neither suitable for addressing the preservation of young heritage. Hence, this paper

seeks to present an intermediary solution, referred to as "evolution design" - an approach that advocates for the coexistence of both old and new elements in building facades. Acknowledging the dynamic nature of urban development, this approach aims to avoid a complete overhaul of the building facade by minimizing demolition and utilize existing features to generate new identities. This approach enables heritage values to evolve and flourish, rather than stagnate or vanish. Consequently, the young heritage will become integrated into the city's development and serve as a witness to its progress, extending its significance beyond the façade of a single building.

Lastly, it is crucial to recognize the limitations and possibilities for further development in this research. Despite the HC serving as a comprehensive case study that reflects many aspects of skin redesign, it cannot possibly account for all potential scenarios. Hence, it is advisable to have a more extensive selection and make comparisons between different cases. The methods utilized to collect user feedback in this study mainly relied on the Internet. Although it facilitated the acquisition of a large number of samples, it has limitations in scope and lack of direct communication with people. It is recommended to enhance the data collection process by integrating additional interactive research methods, such as surveys and interviews, involving local residents, visitors, and developers. This will allow for the acquisition of more in-depth feedback, thereby

improving the validity and reliability of the study results. While in this paper the skin is analyzed separately from the other building layers, it is not feasible to consider skin redesign in isolation in practical settings. Therefore, conducting further research on how skin redesign can integrate with other building layers, such as structure and services would serve as a valuable complement to this study.

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