# Heritage is everywhere

## And how adaptive reuse performance is defined by the user

Research Methods 1


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**ABSTRACT** – The paradigm of heritage conservation has shifted from restoration to adaptive reuse. This means that a larger emphasis lies on continuation of use and sustainability in order to make heritage more future proof. Despite the fact that continuation of use and social sustainability are partly defined by the user, little is known of their preferences and values. Therefore, this thesis answers the following question: *"What is the impact of user values on the social sustainability performance of adaptive reuse projects of heritage?"*

**Methods** – By means of exploratory interviews and document analysis quantitative data is produced on the topic of user values. This is subsequently expanded with qualitative data from semi-structured interviews with experts to create guidelines for future adaptive reuse.

**Practical or social implications** – This thesis provides an expansion of the adaptive reuse discourse by doing user oriented research. This will help safeguarding functional continuity of heritage buildings and improve their social sustainability as their value to the user will be more explicit to practitioners and owners.



**KEYWORDS** – adaptive reuse, heritage, architecture, construction, user value, cultural value


*"Old ideas can sometimes use new buildings. New ideas must use old buildings"*

\- Jane Jacobs

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# 1. Introduction

In a country like the Netherlands which have seen dense urbanisation since the Middle Ages, heritage sites and their consequential buildings are omnipresent. Eventually, these societies will all find themselves in a position where a choice has to be made whether to conserve, adapt or replace these buildings. Therefore, much research has been put in the determination of the potential of heritage buildings, which stresses their importance as tangible manifestations of a society's culture and local identity (Buonincontri et al., 2017; Remøy in Wilkinsion et al., 2014). Thus, according to literature, the preservation of built heritage should always be pursued.

Yet, the paradigm in heritage preservation has shifted. Where meticulous conservation used to be the standard, nowadays, researchers and practitioners are striving increasingly towards a more integrated reuse process that combines the heritage values with a focus on functional continuity and sustainable urban development (Bullen and Love, 2011; Li et al, 2021). Even the definition of heritage has widened significantly according to Spoormans and Pereira Roders (2020). The adaptive reuse of heritage buildings is employed as a fundamental tool to achieve this functional continuity. Indeed many researchers have shown the positive effect the successful redevelopment of derelict heritage sites can have on the surrounding area (Aigwi et al. 2019).

Ruigrok (2006) even found a positive correlation between historical façade elements, authenticity and house prices. Authenticity is one of the foremost aspects of heritage preservation according to Burnham (1998). However, she also describes the paradox of the need for functional continuity and sustainability. Alteration of the buildings are inevitable to ensure their future use for society (Strolenberg in Meurs et al., 2020). This necessary user value may lead to clashes with the cultural value that authentic building elements represent.

A building with high cultural value can have little use value. The Prinsenhof in Delft is perfect example of this difference since it could be seen as one of the primary heritage buildings of the Netherlands. The former monastery is a testament to the protestant reformation and the subsequent 80 years' war of independence in the Netherlands. It shows how ecclesiastical buildings in the Netherlands were adapted to different uses during the reformation as it served as the home of William of Orange. From there he not only led the Dutch Revolt but was assassinated as well. Therefore the historical and cultural value of the Prinsenhof are huge, but the value in its current function, a museum, is impeded by aspect of cultural value like the erratic floor plans, the height differences, lighting and the uncontrollable indoor climate. All crucial elements of museums.

At a heritage project in Rotterdam I personally witnessed an interesting result of preservation requirements. During the renovation works of a large modernist retail building at the Lijnbaan in the city centre a curtain wall at the 4$^{th}$ floor was deemed a monumental element of the building. This curtain wall, however, was not suitable for use in a retail building. In addition to its state of decay it did not comply with the Dutch building code as it was a hazardous singular glass pane. Consequentially, the contractor had to cover the curtain wall with a gypsum false wall as the only financially feasible options which rendered the monumental element invisible, thus negating any cultural value. This describes the problem where elements of cultural value are either very expensive or inoperable.

As the 160 million buildings in the EU are responsible for 40% of its annual energy consumption, sustainable measures can have a huge impact on the global energy need (Balocco & Marmonti, 2013). Currently, sustainable development is therefore universally perceived as a staple of contemporary urbanism and architecture. The fact that adaptive reuse of heritage is a part of that process is also widely acknowledged as adaptive reuse, inherently, is a sustainable activity that eliminates pollution from demolition and new construction. Therefore, already many research has been done on its success factors, the effect of cultural values has been assessed and the development costs have been examined. However, the majority of this research is done from the developer's perspective, not the user or occupant (Spoormans & Pereira Roders, 2020). Little investigation has been performed on user values either, even though it is an integral part of a social sustainable building. Still a discrepancy remains between user value and cultural value that is ultimately defined by financial concerns.

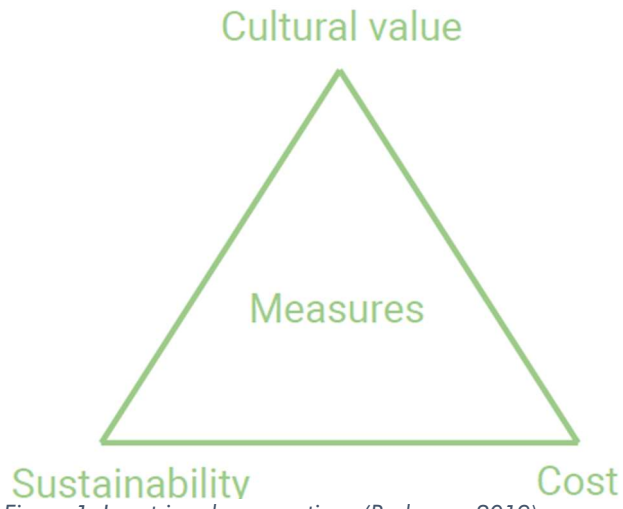

*Figure 1, Iron triangle renovations (Bodewes, 2019)*

In her thesis, Rosaly Bodewes (2019) already identified the tension between cultural value, costs and sustainability. This resulted in a decision support model that sought to optimise the renovation process by balancing the three aspects mentioned before and shown in figure 1: sustainability, cultural value and cost. However, in her research, she limited sustainability to energy efficiency although it is a broad topic that also revolves around economic and social sustainability. As mentioned before, heritage buildings play a huge part in social sustainability (Buonincontri et al. 2017). Additionally, the conceptual framework that she created, focusses on the developer, not the user. Therefore, this research will continue on the research of Boderwes (2019) and incorporate social sustainability from a user perspective.

### Problem summary

In the field of heritage valuation traditional history-based assessment methods are still predominant and greatly influence urban development (Spoormans & Pereira Roders, 2020). Nevertheless, scientific consensus is moving towards a more future proof approach. **Awareness is gradually raised that adaptive reuse and physical alteration of heritage are necessary tools to sustainably safeguard the functional continuity of the buildings to the users (Bullen and Love, 2011; Li et al, 2021; Strolenberg in Meurs et al., 2020). However, it is apparent that a better understanding of user values is needed in order to achieve this. Or in the words of Behbehani & Prokopy (2017): "While the environmental benefits of reuse and renovation are acknowledged, the link between built heritage and human and social dimensions of sustainability, [...], has not been explored."** This means that a research gap

exists regarding the social sustainability performance of heritage. This is especially pressing considering the lingering discrepancy between architect and laymen on the topic of heritage values (Imam, 2013). This implies that an improved understanding of the user might strengthen the endurance and social sustainability performance of adaptive reuse, which in turn will benefit heritage conservation.

### Scientific Relevance

This thesis will contribute to the field of adaptive reuse and heritage studies, which are both topics that have been studied extensively. Many research has been done surrounding the relationship of economic value and cultural value. Several studies on success factors of adaptive reuse have been performed as well, but mostly from a developers perspective. This leads to a gap in knowledge regarding user values. The user, however, is of utmost importance to the preservation of heritage buildings as obsolescence might lead to deterioration or even demolition. Yet the values of experts and users are not always aligned (Imam, 2013).

According to Dyson et al. (2016), future research calls for attention to the development of "guidelines" that are suitable to owners and practitioners for ensuring sustainable heritage preservation. This research means to expand and clarify these guidelines. A clear framework is needed which standardises community engagement practices as it is lacking, despite being a crucial element to city planning (Garcia, 2017).

### Societal Relevance

Adaptive reuse is a widely accepted method of functionally transforming vacant building to ensure a continuation of use. In this respect adaptive reuse is of use in preserving heritage. Heritage buildings that have outlasted their initial function, be it through technical innovation or redundancy, still reflect important cultural values that benefits society. The preservation of which is guaranteed by adaptive reuse and its subsequent continuation of use. Therefore, it is relevant to further develop user values to enrich the knowledge regarding adaptive reuse and prevent heritage buildings from being lost to society. Providing functional continuity with adaptive reuse is also beneficial to the reduction of greenhouse emissions and construction waste as it prevents demolition.

In the field of social sustainability a large role is played by the community. This community consists of users of the built environment who ultimately decide its value by using and enjoying it. Consequently, to achieve an equitable and satisfactory built environment the user values need to be considered in design. This research will help making these values explicit.

## 2. Research questions

Main question: *What is the impact of user values on the social sustainability performance of adaptive reuse projects of heritage?*

Sub questions

1. What is user value and who are the users?
   The first question will be answered by reviewing literature after which framework of user values in heritage buildings will be conceived. This will be verified and expanded through explorative interviews of heritage building users and experts It is important to make a clear distinction between general values and values that are specific to heritage buildings.

2. How is user value used in development and design
   In order to explain this relationship a literature study will be performed in extension of the first research question. Then case studies will be executed which are based on interviews, conversation and document analysis with an expert point of view

3. What is social sustainability and what is its role in adaptive reuse?
   Social sustainability is defined by means of a literature review. The role of social sustainability is subsequently investigated in case studies of past adaptive reuse projects of built heritage.

4. How is the conceptual framework by Bodewes (2019) conceived and to what extent can it be expanded with social sustainability
   The final sub question is answered by analysing the thesis of Bodewes. Her method will be examined and her results evaluated along the by now generated data.

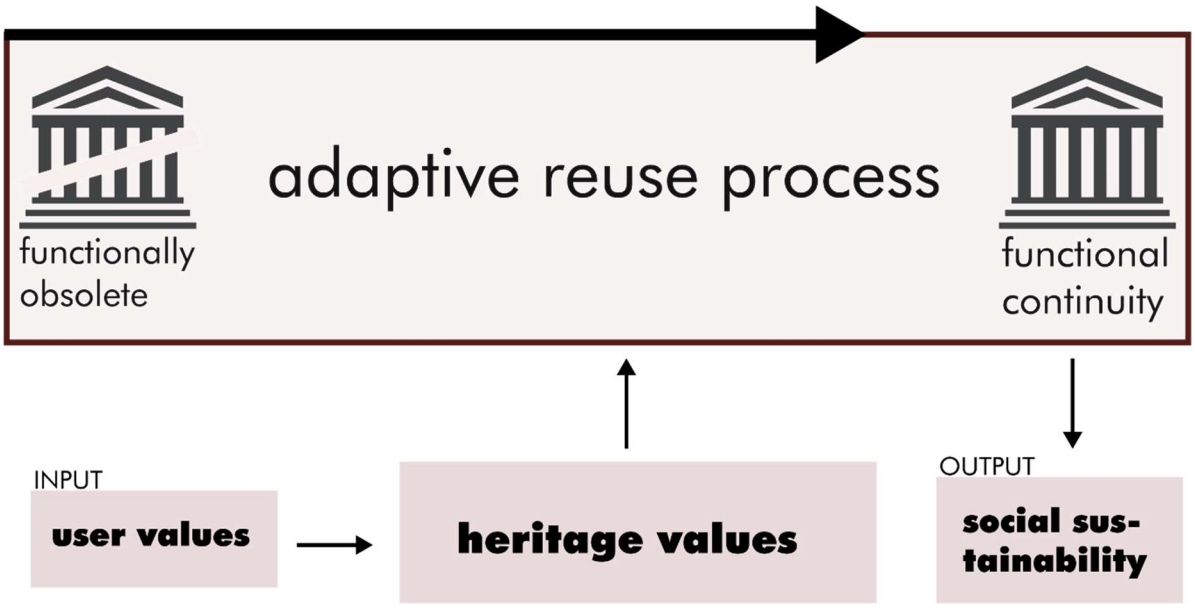


*Figure 2, research framework*

## 3. Research Method

### Type of study

This research is largely based on grounded theory and will have a mixed-methods approach. It will produce qualitative data of which the main data will consist of values that are examined through document analysis, interviews and observation. The data is analysed using inductive reasoning. This means that data is not verified but hypotheses are conceived based on general observation of recurring qualities. It will also have quantitative results as generalised values are sought that will are counted to measure their prominence.

### Scope

In the paper Prioritising Project Scope Definition Elements in Public Building Projects, Fageha & Aibinu (2014) studied the importance of the project scope definition and concluded that an explicit scope can prevent failure. A clear scope provides research with purpose and direction, facilitating the adequate identification of required action. Additionally, this research will extend over a period of 5 months, restricting the possible scope.

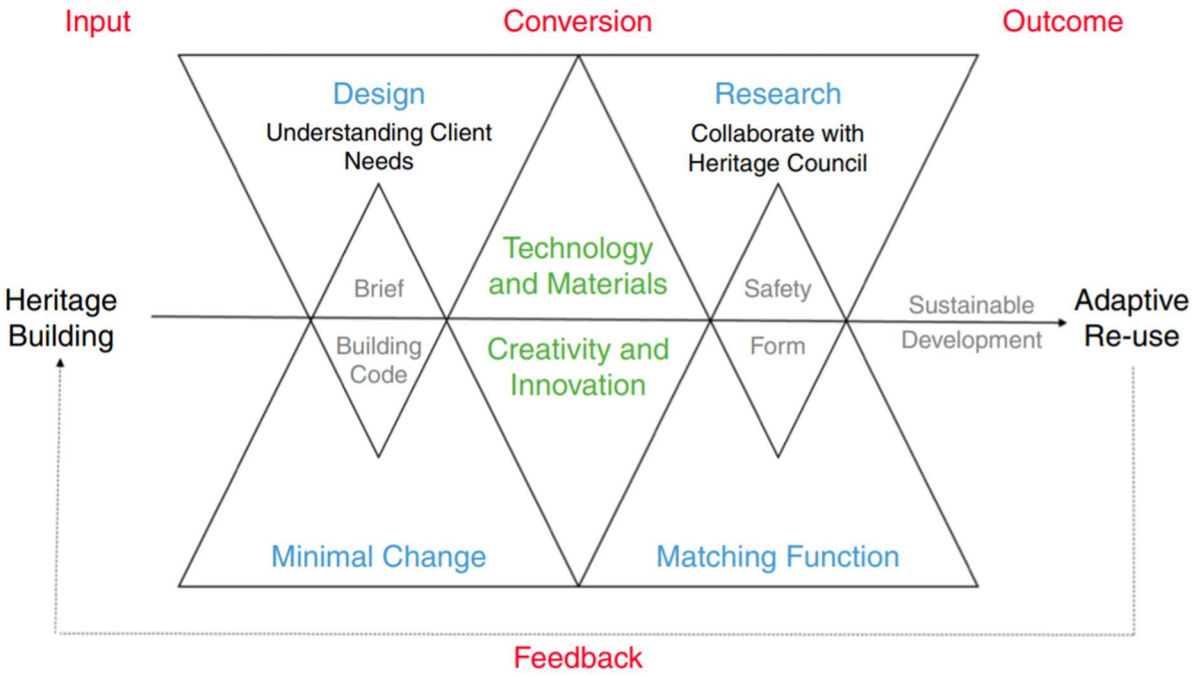


*Figure 3, Systemic framework of critical success factors in adaptive reuse, Dyson (2016).*

Figure 3 above shows the adaptive reuse process and the critical success factor framework by Dyson (2016). This research will concentrate on the top left triangle, design, brief, building code and, in this case, understanding user needs.

### Methods and techniques

The study makes use of a mixed methods approach. The research questions are not answered by a single method but rather a combination of several methods. Surveys and case studies will be informed by interviews and document analyses, while literature is reviewed to answer all questions. Mohtat (2018) used document analysis and interviews with residents to compare the social sustainability of bottom-up and top-down approaches in housing reconstruction.

User values are not universal. This means that a large population sample is needed to give sufficient and useful results. Within a thesis this is not feasible. Therefore document analysis of projects that incorporated community engagement or user value exploration will be executed in combination with small scale exploratory interviews. As is portrayed by the successful adaptive re-use of the dilapidated "White Lady" in Eindhoven, the opinions of the general public can be quite negative but still result in a positive outcome. Therefore, the focus of this research lies on semi-structured interviews with experts and document analysis. With this method Kuitert et al. (2017) investigated public values interests and Dyson et al. (2016) used it to examine critical success factors of adaptive reuse projects.

### Data collection

The literature review will be executed systematically searching academic databases through search engines like Google Scholar and Scopus. Subsequently, found literature will be organised in excel with distinction of title, author(s), year, keywords and abstract. In this way the abstract can be read and relevant articles can be identified. These, in turn will be read and analysed. If data is found, it will be copied to the excel and the reference is saved to Mendeley, resulting in explicit and clear documentation. The search terms are:

Adaptive reuse or refurbishment or renovation or transformation or conversion or adaptation

Built heritage or heritage buildings or architectural heritage or historic buildings or monumental architecture

User value or bequest value or experience value or tourist value

As a representative population in a sample is not feasible within a thesis, this research will assume that values found through the interviews will be universal. Therefore, the sample will be a purposive non-probability sample: the sample is not a perfect representation of the population. Purposive non-probability sampling benefits qualitative research as it ensure the researchers with relevant data and opinions without having to generate a unfeasibly large population (Bryman, 2012). In qualitative data analysis begins during the data collection.

Explorative interviews followed by in-depth interviews. No focus groups as the personal opinions of the interviewee is needed. In-depth interview with practitioners to investigate the degree of application of user values in design processes.

Inductive reasoning, the theory follows the results since the field is not yet defined. Therefore a deductive approach with a predetermined framework is not possible. Additionally, the deductive approach has a tendency to cause biased results (Burnard et al. 2009).

Data analyses by hand.

### Case study selection criteria

To analyse the range of heritage in the built environment it is interesting to look at less picturesque city centres with more modern buildings. Some Dutch cities have been severely damaged in the second world war. This lead to several distinct redevelopments which diverge in their radicality and thus present different results of modernist urbanism. Dutch cities are chosen as they have similar pre-war urbanism and are more practical due to their proximity.

One of the cases in this research is the city centre of Rotterdam and the buildings and shopping area around the Lijnbaan. The Lijnbaan comprises of new construction and monumental modernist buildings that have been renovated refurbished or adapted. These

aspects make the Lijnbaan a perfect area to be studied, in addition to previous personal experience with the case. Arnhem shares Rotterdam's history of war destruction. In the city's reconstruction, the municipality often chose to replace damaged buildings as well, instead of renovation. However, Arnhem did retain more of its original urban tissue and historic architecture. This is an interesting distinction that might lead to surprising results.

### Study goals

This thesis' primary aim is to answer all research questions. This will result in guidelines that help decision making in adaptive reuse processes.

Learning to do research in general and developing a mixed-method social study is a personal study goal. At the end a general understanding of academic research and study method design is to be achieved.

### Ethics

Committees that grant funds and judge the research ethics of applications appear to mostly focus on participant wellbeing and ethical data management (National Centre for Research Methods [NCRMUK], 2017). However, this disregards deontological or consequential ethics. Respectively, these terms means either the ethics of actions regardless of their consequences or the ethics of predicted consequences of research. Nevertheless, consequences are hard to foresee. Therefore, it is important to assess the ethics of the intentions of this research, which is improving the social sustainability performance of heritage buildings. Although the consequence of a focus on user values and sustainability might be the destruction of some cultural values, the aim of this research is to diminish neglect of heritage buildings by creating more knowledge on heritage values. This will ultimately prevent loss of their important features and guarantee their preservation.

As the research revolves around the human experience in heritage buildings, it is essential to include users and occupants in the research. Just theory or documentation will not suffice, however, previously results of research on user values will be used as well. Garcia (2017) describes community engagement as "the very foundation of city planning ethics."

## 4. Literature study and conceptual framework

### Sustainability

Even though sustainability has had a chiefly environmental connotation, nowadays sustainable architecture is divided into four dimensions: environmental sustainability; economic sustainability; cultural sustainability; and social sustainability (Durukan et al, 2021). Sustainable development provides for the current generation without undermining resources and opportunities for the next. This statement is easily connected to environmental sustainability of which many attributes are readily measurable like carbon emissions and residual natural resources. Social and cultural sustainability however represent the more qualitative side as they are usually not that concrete. Kohler (1999) therefore combines the two in his table (figure 2). Nevertheless can some aspects be identified to make these sides more explicit.

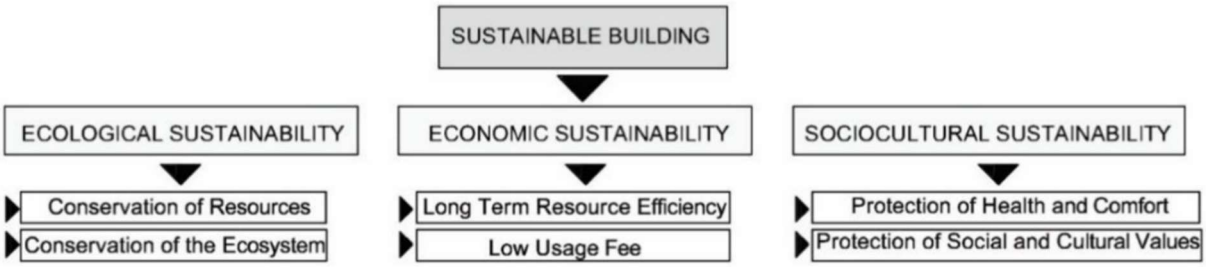


*Figure 4, Dimensions of sustainable building (Kohler, 1999)*

Social preconditions like values, habits or norms have a huge impact on sustainable development as these are hard to change but denying them will lower public support (Chiu, 2003). Social sustainability also entails equitable housing distribution and consumption. Housing affordability and accessibility are important aspects but local and national policies that provide tenants with protection or owners with benefits are as well. Furthermore are liveability and social relations factors of social sustainability. The built environment has to be of a certain quality, provide sufficient shelter and protection but creates a sense of belonging and identity too. Moreover is this influenced by social constructs like community, integration and cohesion. Consequently, it can be concluded that development of heritage buildings has the highest chance of being social sustainable when all values are balanced as portrayed by figure 3.

### Adaptive Reuse

Four different approaches exist regarding obsolete buildings: consolidation, renovation, demolition and conversion (Remøy in Wilkinson et al., 2014). The first is the most common and ranges from doing absolutely nothing to finding new tenants or a possible buyer. Renovation consists of the refurbishment of the building. This can involve technical or aesthetical measures that upgrade the building to a point where initial processes are viable again. The third approach speaks for itself, the demolition in order to start new construction. Lastly, conversion pertains the act of physically and economically transforming a functionally obsolete building in such a way that it will adequately accommodate a different function.

In contrast to renovation, adaptive reuse is the practice in which the use of existing structures is converted in order to ensure necessary functional continuity for the owners (Bullen and Love, 2011). Adaptive reuse is described as a major modification to both the building and its function (Remøy in Wilkinson et al., 2014). Yet, Bullen and Love (2011), also emphasise that

adaptive reuse, when it is applied to heritage buildings, aims to conserve cultural values like its special quality and architectural characteristics. Conclusively, Vafaie et al. (2021) summarise the phenomenon beautifully as to *"create a beneficial connection between the old and new use of built heritage"*.

In essence, adaptive reuse is used to overcome structural vacancy or functional obsolescence (Remøy in Wilkinson et al., 2014). It stems from, but is not limited to, either a social, economic or environmental incentive and protects the preservation of the urban image. Moreover, adaptive reuse of the existing building stock is an intrinsically sustainable activity (Remøy in Wilkinson et al., 2014). Both demolition and construction are heavy polluters of which the first is not present and the latter only in a reduced fashion during the refurbishment of existing buildings. More importantly, however, heritage buildings represent a variety of sociocultural sustainable features like local identity, social cohesion, recognisability and cultural tradition (Buonincontri et al., 2017).

### Values

In order to effectively research the concept of public values it is necessary to make the distinction between value and values (Kuitert et al., 2017). Value and values mostly diverge in scale. A value is the evaluation of an issue at hand against a resource and the result of 'the assessment of an object' by a person (Kuitert er al., 2017). The concept of values, on the other hand, is defined as an abstraction of universal human perception in a wider context.

### Heritage Values

The preservation of architectural heritage has a conflicting nature (Orbaşlı & Woodward, 2009). On one side heavy tourism can be harmful to a heritage building due to wear and tear, but modern appliances and accessibility measures can be destructive too. However, visitors generate the much needed income to execute the usually expensive and specialistic maintenance. Furthermore, a gap exists between the experience value of tourists and local visitors. For the first it is merely entertainment, where the latter is affected by the social and cultural aspect of the heritage as well.

Societal functionality is essential in preserving heritage. Golinelli (2014) explains heritage values as "the expression of a living society", which implies that it is not a static phenomenon. It rather is a shifting and evolving construct that reflects the present. When preserving heritage it is, therefore, at constant tension with historical significance and authenticity as they represent the values of a past society. In Rotterdam for instance, the inner city was rebuilt after the World War 2 bombings in the spirit of monofunctional modernism wherein the inner city became a place to work and shop, not to live. Contemporary urbanism, however, is more centered around the mix of functions.

Some heritage is listed or designated in order to safeguard its values. In the Netherlands this happens at the hands of the Rijksdienst voor Cultureel Ergoed, or national service for cultural heritage. This service designates heritage as "rijksmonument" when it represents one or several important predefined features. A building can be aesthetically, scientifically or culturally deemed an indispensable asset as a defining product of its time or cultural era on its own but also as part of an ensemble (Ministerie van Onderwijs, Cultuur en Wetenschap, n.d.). However, listing does not always benefit the building or its users. Spoormans and Pereira Roders (2020) question the effectiveness of listing residential buildings since it is the domain of the individual and hinders contemporary living. They advocate a 'greater tolerance for change' and new methods to assess values.

Lidwine Spoormans and Ana Pereira Roders (2020) executed a research on methods in assessing architectural values. In this research, a framework from previous work of Pereira Roders (2007) is shown in which nine different values are identified and subdivided. Use is categorised solely as a part of economic value, but users are not. Users are however distinguished as one of four perspective from which research can be undertaken, alongside owners, governments and experts. They conclude that most research is done from an expert's point of view. Besides, they claim that aesthetical, ecological and age values are underrepresented, although the three are important aspects of social sustainability.


*Figure 4, The values framework (Pereira Roders, 2007)*

The perception of heritage has also shifted from the tradition of listed buildings wherein the preservation approach is informed by experts towards the current expansion of what heritage could entail (Spoormans & Pereira Roders, 2020). Heritage attained wider criteria in extension of architectural or historical importance. Younger, more ordinary buildings are increasingly valued when they represent a significant place in a city or when they have potential for redevelopment. Even dilapidated or generally considered ugly buildings can be successfully transformed. The refurbishment of "the White Lady" in Eindhoven is one such example where the implicit values were hard to recognise, but have been made explicit to an extent that it resulted to becoming more of a landmark than it has ever been (Remøy in Wilkinson et al., 2014).

### User values

In order to define user values in heritage, first user values are defined in general. This topic is already quite well established in the urban development discourse. The paper by Franzen et al. (2011) describes user value as one of three aspects of spatial quality, alongside experience value and future value. Experience value is defined as the level of pleasure the built environment generates. Subsequently user value is described as such: "a high user value is achieved when different uses in close proximity to each other do not hinder but support each other." This is a much more economic approach, whereas this thesis also regards experience value as a user value. Finally, it is essential that future value is safeguarded by enabling eventual adaptation.

Franzen et al. (2011) recognise the importance of anticipating user values and market knowledge of the various real estate sectors, in order to be successful in architecture and urbanism. However, architects and laymen do often disagree on matters like aesthetics and urbanism (Imam, 2013)

In her framework, Pereira Roders (fig. 4) names multiple values that are related to user value or user experience… etc… As previously mentioned, in her study the user is regarded as a perspective rather than a value, while use value is exclusively an economic matter. User value naturally has overlap with several of the identified values.

### Economic value and cost

The economic value of a heritage is defined by several aspects. The first value is related to use. This means the functionality and utility of the buildings with which it is able to host activities that have an economic nature, be it housing, retail or another service. Secondly, heritage represents non-use economic values. This pertains to values of the past functionality that in persist in existence of materials, the options to use it and the bequest value for future generations (Spoormans & Pereira Roders, 2020).

In her thesis, Bodewes (2019) used costs as the economic aspect of her iron triangle. She identified two components of costs, operating costs and investment costs in accordance with NEN 2699 (Koninklijk Nederlands Normalisatie, 2017). Operating costs refer to the costs of building use like maintenance, energy and cleaning but also to benefits like rent. Investment costs pertain to the costs of all activities that lead up to the final operation phase like land purchase, construction and design (Bodewes, 2019).

Although the user influences both components, only the effect on investment cost is chosen to be investigated. As this research searches for the impact of user values on development and design the relationship between the user and maintenance can be neglected. The relationship between the building and the user during the operating phase in the end, however, actually regards to the investment costs as it is part of the building design.

*Only the construction costs are part of this research as the*

Ruigrok (2006) was the first to apply a hedonic pricing study on heritage. This is a tool to statistically calculate the percentage of values that can be credited to the specified attributes of a given entity, which is in this case the property value of historical features. In this study, Ruigrok (2006) found that historical façade elements and especially authenticity had a statistically significant impact on housing prices. Additionally, the presence of a clear architectural "style" and being in harmony with the surroundings both showed statistically showed an almost significant impact. With authenticity as the most decisive element this research does show that a user friendly approach is not necessarily the best option.

Hedonic pricing was also the method used by Ryan and Weber (2007) to ascertain the value of new development in distressed urban neighbourhood. They found that people are willing to pay more for a house that is connected to the existing urban tissue. Unstructured additions in free plots or "infill" in neighbourhoods proved to be preferential over homogeneous development in a larger scale, regardless of heritage status. This means that great care should be taken to prevent demolition of extant structures.

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