**RESEARCH PLAN**

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04|NOV|2022

ADAPTING 20TH-CENTURY HERITAGE

# THE ARCHITECTURAL ELEMENTS OF A MALL AND HOW THEY INFLUENCE BEHAVIOUR

**Introduction**
Malls in the Netherlands have been successful for years. The Lijnbaan in Rotterdam, completed in 1953, is the most well-known example of a mall to separate pedestrian from vehicular traffic. The concept proved successful, thus it was implemented in the design of many new malls in the second half of the twentieth century. Some malls stood the test of time better than other, but overall, many of these malls thrived financially. However, the financial crisis of 2008 gave an abrupt end to this success (Ossokina et al., 2016, p. 4). The rising trend of online shopping complicated the financial recovery of shop owners and with the recent COVID-crisis amplifying this trend (Eerenbeemt, 2021), the vacancy in malls is still a problem to this day.
Malls are often designed with the commercial aspect as a priority, with architectural aspects like sight lines, resting areas, width and hight, routing and location as important parameters (Kroot, 1993, p.16). However, the way to commercial success on which the execution of these elements is based, was present at the time, but with the changing consumer behaviour (Organisatie Groep Zuid, 2017, p. 8) and the diversification of functions in and around malls like De Boogaard in Rijswijk (Eerembeemt, 2021) the execution of these aspects should be re-evaluated.

**Problem statement and research questions**
This research will focus on the design of public space in 'modern' malls. Malls can be indoor and outdoor and the pedestrian areas are often not officially public. However, the focus of this research will in fact be on the space outside the stores themselves. As the results of this research are intended to be used on the transformation of an existing mall, the elements that are discussed, can eventually be used as interventions. An architectural design will only be successful if it is coherent, therefore the placement of random elements that – in any other place – have proven successful, will not guarantee another successful design. However, in order to structuralise this research, defining a set of elements will be the first step, so these elements can be evaluated.
Nonetheless, in order to decide what interventions are needed, a set of elements must be defined, so the characteristics and consequences of these elements can be found. As mentioned earlier, many of these elements are probably already present in most malls.
The problem is that the spatial design of malls is outdated, it was designed around the customer behaviour at the time of the design or the latest redesign. However, instead of choosing a random placement of elements or using existing literature (which is often also outdated), this research will investigate current user behaviour and how it is affected by architectural elements. Therefore, the main research question is How do architectural elements in a (semi-)public space influence behaviour? Sub-questions will be: What are architectural elements?; How do physical elements influence behaviour?; How do materials influence behaviour?; and how does daily-life technology influence behaviour?

**Theoretical framework**

As this research is twofold – it explores architectural elements on the one hand and environmental behaviour on the other – a combination of various publications is used.

*Architectural elements*

For the enumeration and valuation of architectural elements, one could read Jan Gehl's Cities for People (2010), a plea for city planning on a human scale. The book explores methods and tools used by Gehl to reconfigure unworkable cityscapes into the landscapes he believes they should be. The ultimate result of this is a toolbox presented at the end of the book, presenting key principles, methods and keywords, which could well form an example for this research's goal. Another book which will be used is Elements of Architecture by Rem Koolhaas (2014). Koolhaas reveals essential design techniques, by discussing the fundamentals of buildings and how they change over time. It discusses concrete examples like windows, corridors and stairs, this concretisation is helpful for the goal of this research.

The problem with these two books, is that they discuss urban planning (in the case of Gehl) and architecture (Koolhaas), whereas the design of a mall is arguably somewhere in between or at least a combination of both. In a mall, it is difficult to define what is outside and inside, what is public and private and where the building becomes the city. Therefore, the first part of this research is targeted at defining the key architectural elements of a mall.

At a later stage, A Pattern Language by Christopher Alexander (1977) can be used to make recommendations for combining these elements into a coherent structure. This book is an extensive guide for designers and all other people on how combinations of elements form patterns and how these patterns can come together to form a language. The book discusses patterns on every scale, so it might be the bridge to combine the recommendations by Gehl and Koolhaas.

Studying these elements will probably result in an extremely extensive, yet complicated assortment of architectural elements. To give structure to this bundle, the classification by Stewart Brand forms a fitting base. Other classification methods would have been possible, but Brand's method does not only structure the elements, it also forces you to consider each element's lifespan. This will provide a first step in determining the heritage value when using the definitive toolkit to make interventions in an existing mall.

Nonetheless, just like Koolhaas' work, Brand's classification is about the different layers of a building and does not take the surrounding built environment into account. The aim is to modify Brand's classification for a complicated structure like a mall, so that this can be used to structuralise the architectural elements of a mall.

*Environmental behaviour*

The second side of the research concerns human behaviour and how it is affected by the architecture. A pioneer in this field of research is Amos Rapoport, who wrote multiple works on environmental behaviour, like Human Aspects of Urban Form (1977) and The Mutual Interaction of People and their Built Environment (1976). Rapoport's works have been the golden standard for environmental studies in architecture for years, but might be seen as outdated – or at least incomplete – as they do not take modern developments like digitalisation into account. Human behaviour has changed over the years, so their response to the environment must have as well. To name some examples, if people are on their phone, they are distracted from the normal way to walk down the street and if someone is wearing headphones, their experience of the soundscape is immensely different. These modern developments should be taken into consideration when studying environmental behaviour, as an addition to Rapoport's work.

## Methodology and process

*Literature study*
As this research aims to take existing literature and expand on it, the first step will be to do literature research. The books by Gehl and Koolhaas will be studied to gather a first understanding of the so-called elements. Only elements that could be found in a mall, outside the stores, will be included, meaning that some interior details or elements on an urban scale might be excluded. The aim of this exclusion is to limit the amount of elements to somewhat of a minimum.

The next step is to take the classification of layers by Stewart Brand and use it to categorise the assembled elements. However, a mall is a structure too complex for Brand's layers, as these are made to typify a building. In order to be able to use this classification and to fit all the elements of mall into a class, changes will have to be made to the definition of the layers and perhaps new layers have to be added. The placement of the elements in the layers is the first step towards a final product. From there on, information gathered in further stages of the research can be added to each element.

*Observational study*
The following stage is the most critical and also requires intricate planning: the observational study. This is where new knowledge will be found about the environmental behaviour. Knowledge that was missing from the existing literature whether it is because of the scale of the mall or digitalisation.
At this stage, I will have a collection of architectural elements, so I know which places I have to visit for observation. I will not limit the research to elements that are in malls, to give myself more options. For example, observing behaviour on the steps of the TU Delft library can still be helpful for my research, despite it not being in a mall. Based on the characteristics taken from the literature, elements that I would like to visit can be chosen.
In Participant Observation as a Data Collection Method, Barbara Kawulich (2005) gives an extensive guide on how to conduct

observation, how to handle the data and the advantages and disadvantages. As I am fairly unexperienced with observation, using such a complete guide is helpful.
She proposes three types of processes, described by Werner and Schoepfle (1987, as cited in Angrosino and de Perez, 2000), of which I plan to use two:
1. Descriptive observation: observing anything and everything, assuming that you know nothing. This will be the first type of observation I will conduct, as I in fact know nothing. My aim will be to look for patterns of behaviour, but also the minutiae of everyday life that eventually might or might not be useful.
2. Focused observation: observation supported by interviews, therefore it is not a method I will use. My goal is to find environmental behaviour, which is mostly subliminal, meaning that if a subject was to be made aware of the environment that should be influencing him, his behaviour will no longer be unbiased.
3. Selective observation: focusing on specific types of observations. This method is only possible after the descriptive observation, in which I hope to recognise some first patterns of behaviour. In this phase, I can reaffirm (or debunk) these first suspicions. An example could be to find out if people wearing AirPods (noise cancelling headphones) or just using their phone behave differently than other people.
Kawulich also cites DeWalt and DeWalt (2002, p. 17), who note that "fitting in, active seeing, (...), recording detailed field notes and (...) patience" are important activities during observation. I plan to visit locations where I can do observations without drawing attention. This also means that if I want to shoot video – as evidence or simply to look back and make sure I did not miss any behaviour – I have to do this in a non-obtrusive way. Perhaps setting up a tripod with a camera that is constantly filming next to the bench I am sitting on, is better than using a handheld camera and pointing it in people's faces when I observe certain behaviour. From an ethical standpoint, filming is always something you have to be careful with. Even though in public space, it is allowed, people might still object to it.

Therefore, when someone does ask what I am doing, it is important to be honest and when they object to it, offer to make them unrecognisable in the video or remove the footage.

A disadvantage of conducting observations of random people, is that I cannot know the demographics. I can of course assume gender, age and interpersonal relationships (whether a group of people are friends, family, colleagues, etc.), which could be useful to explain certain behaviour. For example, a group of male friends around the age of 15, will behave differently from when they are alone with family. However, other demographic information like occupation, race and religion will not be known to me, as I cannot ask people. Luckily, I do not think this will be important for my research.

*Processing of data*
As I document the observations, by taking notes and shooting video, it is easy to get overwhelmed by the amount of information to be taken from the observation. Therefore, the observations should be structured. This is where the tables with all the architectural elements come back into play. Most elements will have certain characteristics that will be taken from the existing literature. For example, in Cities for People, Jan Gehl notices that when given the choice between a ramp and stairs, people almost always choose a ramp (2010, p. 131), this is something that can be easily focused on, thus limiting the amount of observational work to be done. Having the characteristics and the observed behaviour next to each other will provide a clear image of the work that has been done in the research. The table can of course be extended with photos and videos for each location. The goal is to eventually make a single table per element, no longer focusing on specific locations, with typical characteristics and observed behaviour for that element. This way, the end product will be clear, concise and structured. In appendix 1 is an example of what such a table could look like. These tables can then be used to substantiate intervention choices during the graduation process.

**Relevance**
As mentioned before, the existing literature on architectural elements and urban planning is already quite well explored, but there is a slight gap in the literature concerning complex architectural projects like malls, where public and private, outside and inside, and urban planning and architecture are hard to distinguish. A documentation on how architectural elements function in these complex spaces would therefore be an extension of the existing body of knowledge.

Moreover, the existing and widely established literature on environmental behaviour is still relevant, but outdated, thus incomplete. Since the literature was published, digitalisation has arguably been the most important development. Finding out what the influence of daily-used technology is on environmental behaviour, will therefore be an addition to the existing literature.

Furthermore, taking the expertise of environmental behaviour and applying it to concrete examples of architectural elements, will make the concept of environmental behaviour much more tangible to designers, architecture students and other people.

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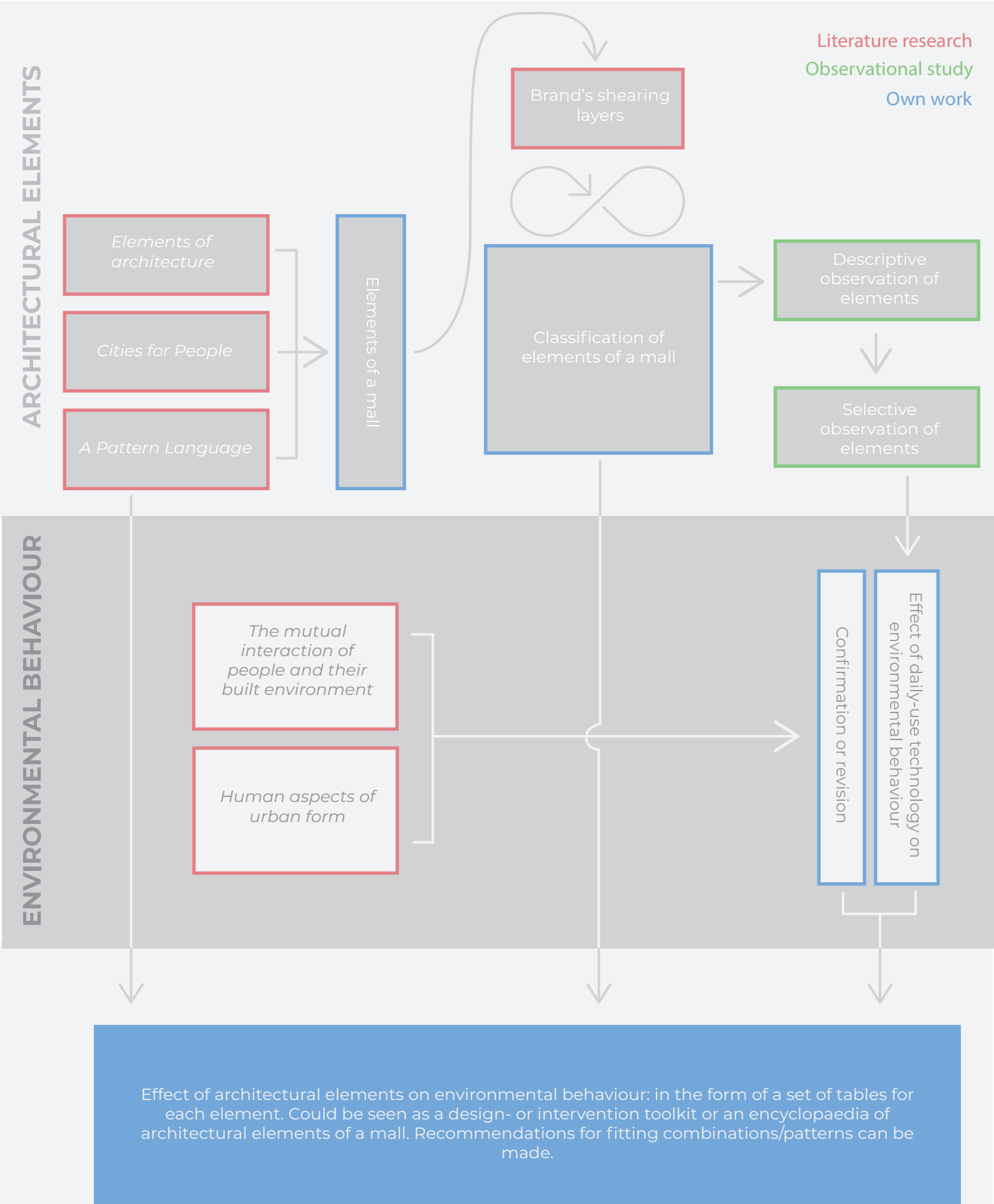Rapoport, A. (1976). The Mutual Interaction of People and Their Built Environment. De Gruyter.

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| Element | Element characteristics | Location | Location characteristics | Observed behaviour |
|---|---|---|---|---|
| Steps | | Guggenheim, Bilbao | Long stringer distance (+/- 1m), total length around 75m, total rise +/- 8m, width from 6m to 15m, constant (no segments), limestone, no alternatives like ramps or elevators. | (Example): concentrated walking because of long stringer distance, to flat to sit. Street artists halfway the stairs are able to attract a crowd, also because the stairs are flat enough to stop on. |
| | | Koopgoot, Rotterdam | Long stringer distance (+/- 50cm), total length around 25m, total rise +/- 6m, width from 5m to 9m, three segments, concrete tiles, ramp alongside as alternative | Long stringer distance, people actively avoiding the stairs and using the ramp next to it. Relatively 'flat' slope does allow an easy look into the Koopgoot, which allows the street to continue, even though it is a level lower. |
| | | Spanish steps, Rome | Etc. | Etc. |
| | | TU Library, Delft | Etc. | Etc. |
| | | Etc. | Etc. | Etc. |

**ARCHITECTURAL ELEMENTS**

**ENVIRONMENTAL BEHAVIOUR**

Literature research
Observational study
Own work

Brand's shearing layers

*Elements of architecture*

*Cities for People*

*A Pattern Language*

Elements of a mall

Classification of elements of a mall

Descriptive observation of elements

Selective observation of elements

*The mutual interaction of people and their built environment*

*Human aspects of urban form*

Confirmation or revision

Effect of daily-use technology on environmental behaviour

Effect of architectural elements on environmental behaviour: in the form of a set of tables for each element. Could be seen as a design- or intervention toolkit or an encyclopaedia of architectural elements of a mall. Recommendations for fitting combinations/patterns can be made.

**EFFECT OF ARCHITECTURAL ELEMENTS ON ENVIRONMENTAL BEHAVIOUR**