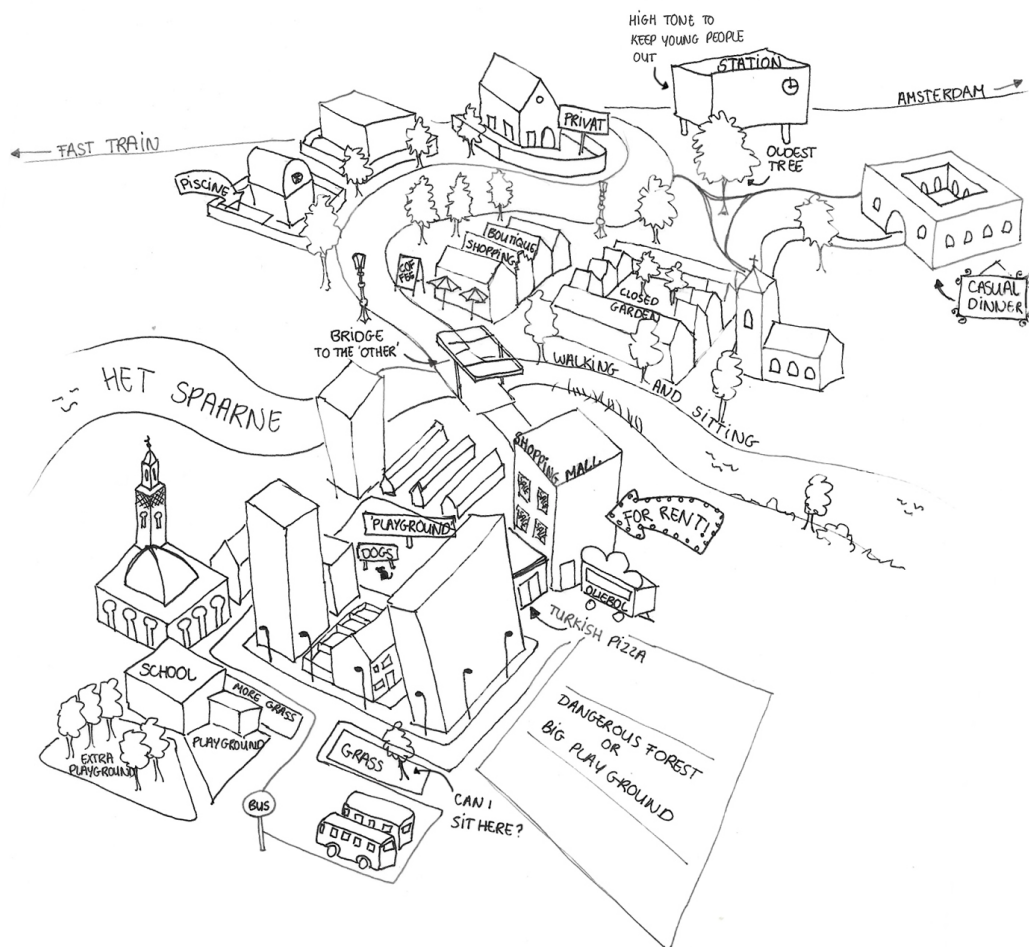*Author: Roos de Jong*
Student number: 4161130
Professors: E. van Dooren & R. van de Pas

No Man's Land: Exploring Spaces for Everyone

Spatial Experience Reimagined: An Inclusive and Adaptable Multidimensional Approach to Architecture

'No Man's Land'

1. *The ambigious region between two categories, states or conditions, usually containing some features of both*
2. *An unoccupied area between the front lines of the opposing armies*
3. *Land that is unowned and unhabited (and usually undesirable*

Abstract

This research explores how architecture can cultivate open spatial conditions that promote equal opportunities and foster new connections. Through a multidimensional approach, the study investigates the complex relationship between social and physical space, highlighting the influence of globalisation, neoliberalism, and urban development on spatial experiences. Drawing from theorists such as Lefebvre, Sennet and Harvey, and architects such as Pallasmaa, van Eyck and Hertzberger, the research introduces a human-centered framework—the Human Triad—comprising sensory design, architectural affordances, and space-time variations. This triad emphasizes the role of multi-sensory experiences, dynamic spatial interactions, and the adaptability of architecture over time. By designing spaces that encourage diverse interactions and perceptions, architects can contribute to more inclusive, flexible, and socially engaging environments. The study ultimately advocates for a shift away from rigid, standardized architecture toward a design philosophy that embraces openness, multiplicity, and human diversity in the built environment.

Keywords: *inclusive architecture, open spatial conditions, human-centered design, sensory design, affordance, space-time, adaptive architcture, neoliberalism and architecture, globalistation and the built environment, Henri Lefebvre, David Harvey, Juhani Pallasmaa, Aldo van Eyck, Herman Hertzberger*

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Introduction

I grew up in a postwar neighbourhood in Haarlem, called Schalkwijk. I always felt it was different from other neighbourhoods; the buildings were taller, the streets wider and the houses smaller. The buildings were made of concrete, instead of bricks. There were car parks instead of a porch or garage. However, I always felt safe. There were people down the street, houses along the roads and lights when it was dark.

My perception changed when I went to a school in Heemstede, a prosperous village next to Haarlem. I realised that what for me was normal and safe was scary for some of my friends. Some of them were not allowed to go to my home or didn't dare to ride there when it was dark.

Although I felt less at ease for a long time in Heemstede, the streets were dark and the houses concealed behind large gardens, I began to doubt the neighbourhood where I lived. Should I be scared? Was this neighbourhood less good or valuable? And what did that make me?

This personal experience exposes a relationship between the social space and the physical space of architecture and the built environment. Although, the rise of technology and (social) media ensures that we can connect to people all over the world within one second. We can simultaneously feel like a stranger, unfamiliar, out of place, or even scared in our own neighbourhood or the one around the corner.

The almost paradoxical relationship between social and physical space can be extrapolated to a broader context. On the one hand, globalisation had dramatically changed our perception of the (social) world, often associated with a promise of endless possibilities and freedom. Driven by capitalist forces, products, money and knowledge travel across the world almost freely, forming a global economic network. It has never been so easy to find like-minded or inspiring people through (social) media, enabling the growth and strength of subcultures and groups (Meyer, 1999, p.58). Postmodernism offers a promise of self-expression that is not undermined by old conventions.

On the other hand, while products, money and knowledge almost travel for free, there have never been so many (closed) borders as since the end of the Cold War, resulting in kilometers of fences between, for example, Macedonia and Greece (Weiwei, 2017). While trends and fashion are spread universal, ideologies of Facism and Nationalism are gaining ground in many Western countries (Benhabid, 2017). We can traverse the city by bike, the country by car or train, and the world by plane, while wearing headphones that detach us from the changing surroundings we pass.

The ambiguous social and physical spaces suggest that one can live anywhere, relying on what a globalised world, characterised by its space-time compression, has to offer. The increased mobility of liberated and autonomous individuals has resulted in fractured urban spaces, while capitalist forces has fostered the rise of the metropolis. In their book '*The Urban Condition: Space, Community, and the Self in the Contemporary Metropolis*', Meyer and Versluys (1999, p.67) explain how these growing metropolises consist of multiple centers, often creating highly homogeneous neighbourhoods. Although, these urban spaces may resist all attempts at mapping, the social polarisation within those spaces can be easily observed. The physical space, the built environment, might present itself as a harmless ally of opportunities or, at least, as a neutral canvas, waiting for one to make their mark. However, the aforementioned examples all occur in a specific context, exposing a social issues within a spatial situation or materialisation.

My personal experience and the revealed social-spatial problems, amongst others, disclose three main issues that architects need to confront, perhaps now even more than ever before. Firstly, it raises the question of to what extent the physical space can be neutral 'ground'. On the contrary, Lefebvre (1974) argues in his book '*The Production of Space*', space and architecture always have been, in addition to being products of thought and action, a means of control and therefore of domination and power. The architect, the one behind the thought and action of spatial design, seems to be imbued with a certain (social) power. The second issue brings me back to the personal experience in the neighbourhood where I grew up. Lived experience can occur in the same physical space, but depends on many more factors, such as memories we have, values we hold, the feeling of belonging somewhere, the fear of the unknown, the stories we hear, and the associations we make. Designing a comfortable space for one person can be discomforting for another. A space that offers opportunities for one person can close the door for another. This brings me to the third and final issue, which crystallises the possible role of the architect. What happens when the lived experience is also guided, shaped, and controlled by neoliberal conditions through the production of space, or in other words, by shaping architecture and the built environment?

These neoliberal forces leave us balancing with a challenging notion of the architect's role. On the one hand, there is the architect's plea to design a better place. However, one must be critical of *who* or *what* this better place is designed for. The architect is nurtured and educated in a certain environment and is also influenced or even subordinated by forces of neoliberalism and capital. *To what extend are architects accountable for spatial design that creates gaps and exacerbates inequality within society? Have we, as architects, learn how to build strong walls but forgotten how to create a doorway? And is there a way as an*
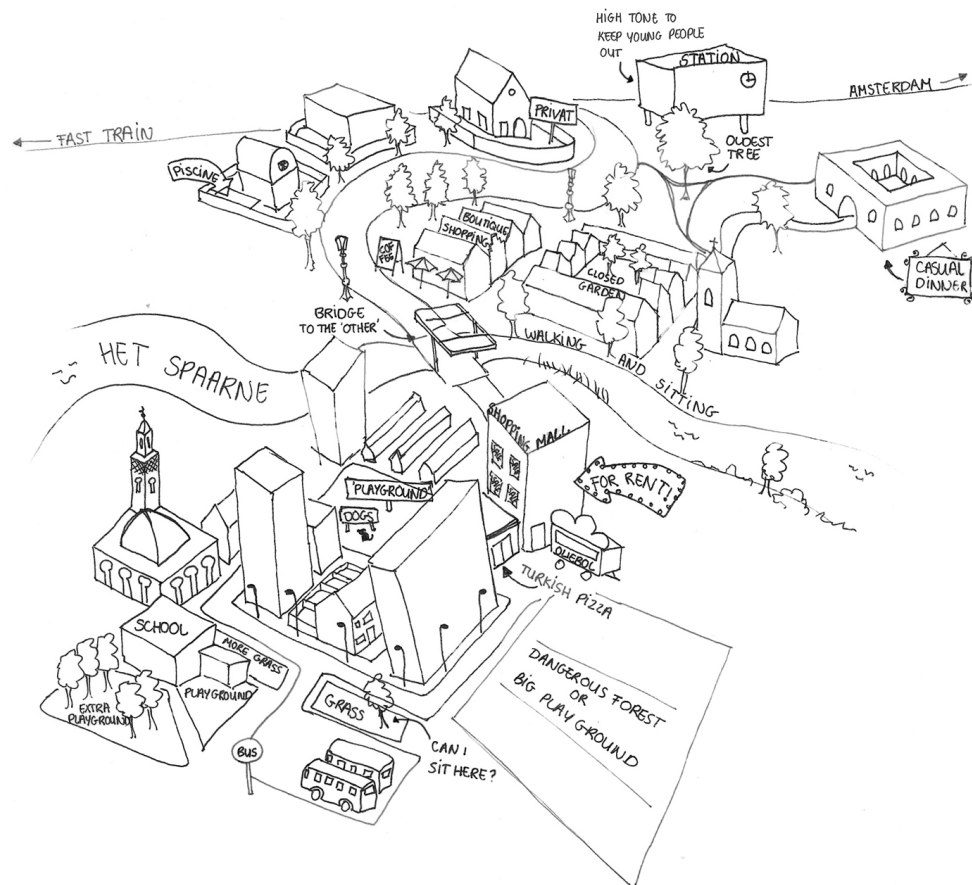
'Perception or reality: Different experiences in two neighbourhoods, divided by a river'

architect to transcend the boundaries imposed by neoliberal forces?

In this research paper, I aim to explore architectural approaches that can empower architects in the social-spatial debate, focussing on the following research question: *What architectural approaches can cultivate open (spatial) conditions to promote equal opportunities and enable new connections?*

Open conditions can contribute to move away from binary thinking about space and embrace multiple dialectics of space. This way of thinking can help us gain a deeper understanding of social-spatial relations and space-time configurations, ultimately leading us to discover (spatial) conditions that are receptive to diverse meanings and use.

Richard Sennet (2018) explains this phenomena openness in the introduction of his book '*Building and Dwelling*', employing the French words '*ville*' and '*cité*'. The *ville* can be seen as the city in general, the built environment, while the *cité* described the experience of a neighbourhood, how people inhabit a city, and their collective perception of it. His book uncovers a paradox between these different notions of the the city. On the one hand the cité is always ambiguous and never explicit. It is in constant flux with the changing populace and the passing of time. The ville on the other hand, is an explicit materialisation. Consequently, the *cité* and *ville* will never perfectly align. Thus, the ville should accommodate openness, ambiguity, differences, and dissonances to increase its complexity and diversity (Sennet, 2006, p.7). However, he argues, the opposite is happening— the city is manipulated into a closed system for private gain, which aligns with the principles of neoliberalism: It produces a city with boundaries, closed enclaves, standardisation, and monotonous functions (Sennet, 2006, p.5).

This research seeks to establish guidelines for promoting open spatial conditions. Yet, to create open conditions, we must first explore the notion of space. For this reason, I will start by investigation the concepts of space and place, using theories by marxist scholars, notably those formulated by Lefebvre, Harvey, and later Sennet. All were critically involved in theorising social issues related to space and politics amongst other topics. Although, some of their text have been written a while ago (especially those of Lefebvre and Harvey) and our perception of space and time has changed drastically since then, their understanding of space is still very relevant. Firstly, their theories will contribute to a multi-dialectical understanding of space. Additionally, this will help to identify socio-spatial problems under neoliberalism and the forces of capital. The concepts of 'lived space' by Lefebvre (1974), '*thirdspace*' by Soja (1996), and '*otherness*' and '*heterotopias*' by Foucault (1984) will help to define the necessity of open (spatial) conditions, that eventually can generate more equal opportunities and enable new connections. At the same time, it will also help define in what way (physical) space and exclusion are inedible related.

The second part of the research will be an exploration of architectural approaches that can contribute to open spatial conditions. Despite much is written about social issues and how these issues are often related to space, it is harder to grasp to what extend the architect literally can *make* a difference. The introduced methods for openness from the first part will be used to find architectural approaches that establish connections between human bodies and architectural spaces and design. A multiplicity and variety of connections can eventually lead to social interaction and new opportunities. In this part theories and experiences of sociologist, architects, and urban planners, such as Richard Sennet, Juhani Pallasmaa, and Aldo van Eyck, will help to

distinguish and underpin the identified approaches.

       This research seeks to establish guidelines for promoting open spatial conditions. However, to create open conditions, we must first explore the notion of space. Therefore, I will start by investigating the concepts of space and place, followed by an examination of the social and physical dimensions of space. Finally, I will explore different architectural approaches that can foster open spatial conditions. By understanding the complexity of space and developing strategies to cultivate openness, architects can actively contribute to shaping a built environment that promotes equality, diversity, and meaningful connections.

Part One: Methods for openness

The introduction presents a glimpse of the complexity of space, not only the possible interpretations of space but also its role in society. Driven by childhood memories, I started wondering over the meaning of space for its owners, the users, the ones that pass by and those who are unable or permitted to utilise it.

In order to design a space that is open for different interpretations, usage and significance, this initial part of the paper delves into the concept of space and its connection to society and time. A better comprehension of this concept will help to establish guidelines for creating open (spatial) conditions within the architectural framework.

Chapter one: Theories on space and time

The perception and interpretation of space(s) can only be experienced through living bodies. However, the existence of and connection between living bodies simultaneously occurs in (multiple) space(s). The intertwining of space and society is analysed by Lefebvre in his book '*The production of space*' (1974). By deviating from the confines of binary thinking Lefebvre explores the openness of multiple dialectics. This openness is conceptualised in '*lived space*', "*a meta-space of radical openness where everything can be found, where the possibilities for new discoveries and political strategies are endless. [At the same time it is a space] where one must always be restlessly and self-critically moving on to new sites in insights, never confined by past journeys, and accomplishments, always searching for differences, an Otherness, a strategic and heretical space 'beyond' what is presently known and taken for granted*" (Soja, 1996, p.34). Although Lefebvre introduces his conceptualisation of lived space to understand political purposes of space, his theory contributes significantly to the understanding of (social) space in general. Lefebvre is one of the first to theorise *difference* and *otherness* in spatial terms.[1]

1. *The concept of the other and othering was early on formulated by Friedrich Hegel (1807) and later Simone de Beauvoir (1949). Their theories are situated in social sciences indicating the social structure between the self and the other, and the process and outcome of making a distinguish between both. Lefebvre elaborates on these concepts in spatial terms resulting in his concept of 'lived space', "an-other world. [The lived space is] a meta-space of radical openness where everything can be found, where the possibilities for new discoveries and political strategies are endless. [At the same time it is a space] where one must always be restlessly and self-critically moving on to new sites in insights, never confined by past journeys, and accomplishments, always searching for differences, an Otherness, a strategic and heretical space 'beyond' what is presently known and taken for granted". (Soja, 1996, p.34)*
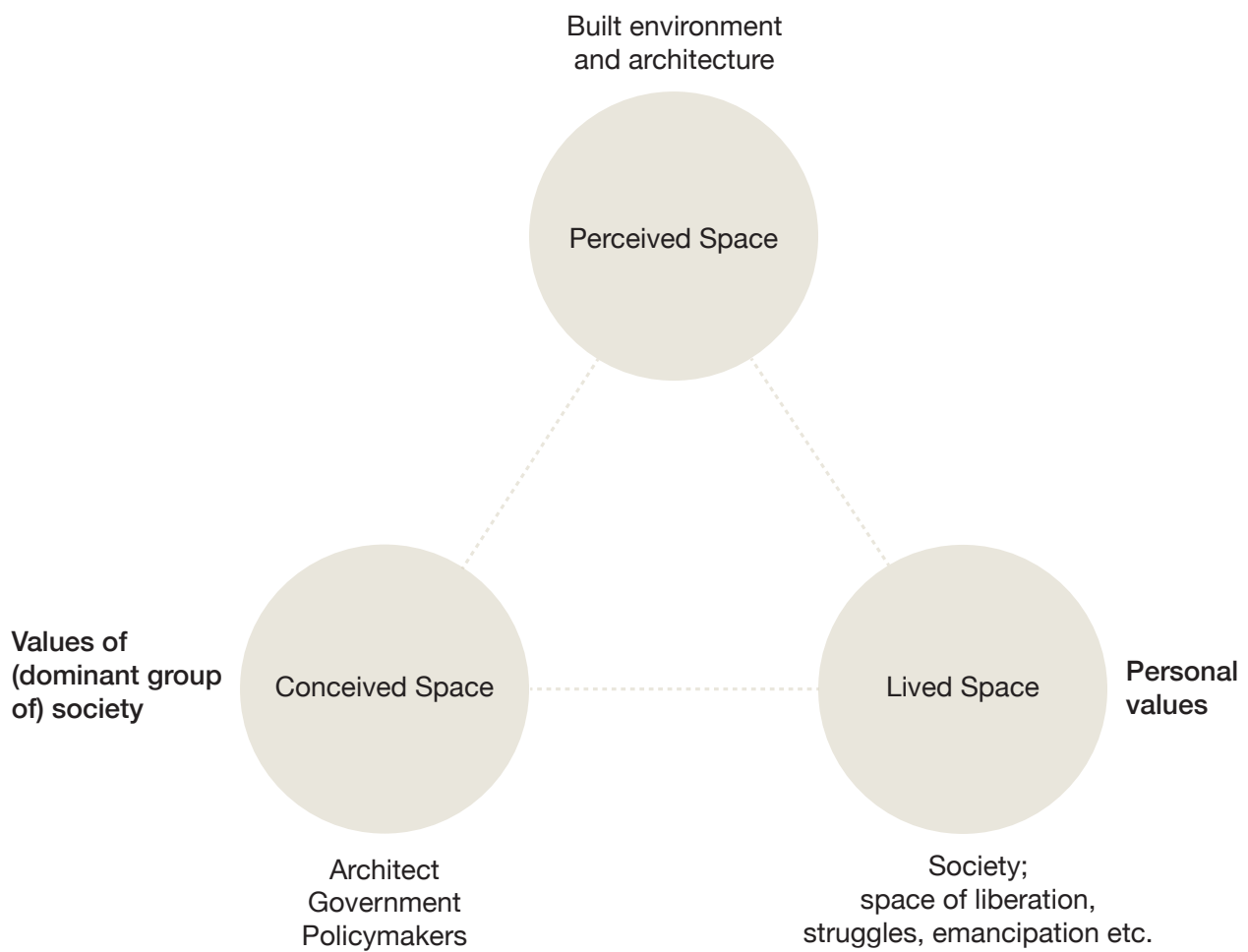
Built environment
and architecture

Perceived Space

Values of
(dominant group
of) society

Conceived Space

Lived Space

Personal
values

Architect
Government
Policymakers

Society;
space of liberation,
struggles, emancipation etc.

Figure 1: 'Spatial triad by Lefebvre' (Lefebvre, 1974)

Building upon the dialectical method of knowing formulated by Hegel[2], followed by the interpretations of Marx, Lefebvre advocates for a recognition of space. Until then, dialectical understanding was primarily employed to achieve a synthesis between two principles (Soja 1996, p. 44). Time (often formulated as history) was usually related to social studies to analyse cultures and society. Simultaneously, social practice was linked to space, concerning the spatial organisation of society. However, these dialectics do not help to reveal the processes in space, the influence of space and the understanding of space.

This can be illustrated by the conflicting feelings I experienced between two neighbourhoods while growing up. The interplay between the historical and the spatial does not justify the value we assign to the *different* neighbourhoods at each side of the river 'het Spaarne', and how we see the *other*. The socio-spatial interplay does not expose the processes of demolishing and rebuilding in Schalkwijk compared to the renovation of the Haarlemmerhoutkwartier. Ultimately, the Socio-temporal interplay does not acknowledge how the place has contributed to the lives of those residing in both neighbourhoods.

Subsequently, Lefebvre establishes a similar approach to foster openness within the concept of space by introducing a third dimension, which allows us to move away from binary dialectics. While time seems to be a key element in Lefebvre's book, it is particularly challenging to grasp as he intertwines it within his concept of space itself. Probably based on Cassirer's model of human spatial experience[3], the addition of a third dimension resulted in a *spatial triad*, in which he identifies *perceived, conceived* and *lived* spaces (see figure 1).

The perceived space, also referred to as material space, is the space that can be experienced or perceived and is, therefore, open to physical touch and sensations. This space serves as both a medium and a result of human activity, behaviour, and experience. Consequently, the *social practices* of a society can be revealed by decoding the perceived space (Lefebvre, 1974, p. 38). Social practices encompasses the process of producing the material form of social spatiality, and thus, it only acquires form and meaning when related to space and time. The conceived space, or space of representation, is described as the "*space of scientists, planners, urbanists, technocratic subdividers and social engineers*" (Lefebvre, 1974, p. 38). Here, space ideologies are theorised

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2. *Epistemological theory of knowing formulated by Hegel as thesis-antithesis-synthesis*
3. *Cassirer's model distinguishes organic, perceptual and symbolic spaces. The organic space addresses all spaces that is biological and can be experienced by the senses. The perceptual space refers to the way the organic space is processed and registered in the world of thought. As last, the symbolic space gets its meaning by readings and interpretations (Harvey, 2004, pp. 100-101)*

and signified. Lefebvre depicts this place as *mode of production*, influencing the production of space, hence the spatial practice. Thirdly, the lived space, also defined as the representational space, embodies complex symbolism and is characterised, unlike conceived space, by its radical openness. This space can overlay physical space, imparting symbolic use and meaning to its objects, resulting in a mental space where issues are constantly presented in tension with the real and the imagined. By juxtaposing the empirical and the ideological or imagined, an openness emerges in which multiple, contradictory discourses can coexist simultaneously (Martin, 2010, p.41).

Chapter two: The complexity of social aims in architectural design

The introduction of Lefebvre's spatial triad provides a glimpse of the complexity and multifaceted significance of the concept of space. The dialectical tension between each dimension reveals the intertwining of space and society, as well as the role of the architect, whose ideas (in conceived space) are materialised in architectural objects (in perceived space). Subsequently, the materialised objects are open for an endless variety of interpretation and meaning residing in the lived space. The openness within the concept of space discloses an import contradiction, especially for the architect, that I would like to highlight. While Levebvre's theory, amongst others, reveals the active role that (materialised) space has in shaping society, it simultaneously displays the complexity of such a role.

Throughout their professions, designers, researchers and architects have aimed to use design as a tool to create a better world. Not only to create a more safe and comfortable physical space but also to improve society and, sometimes unintentionally, navigate human behaviour. An example can be found in the *Bau-entwurfslehre (English publication: Architects' data)* by Ernst Neufert (et all, 2012), in which the needed space for each human activity is rationalised and standardised. On the one hand, the standardisation contributed to optimised living space. However, his book is based on the measurements of a male body, while, for example, standardised measurements of the kitchen and spaces for housekeeping are based on the body of a woman, both of western origin. Although his book attempts to improve living standards, norms and standardisation often leads to exclusion. Norms on bodies and (social) practice led in this example to architectural guidelines developed in conceived space. The architectural practice following these guidelines will be experienced in the perceived space. Eventually, the materialised conformation of a kitchen based on the dimensions of a woman, for example, can influence the lived space.

Initially the application of the guidelines of the *Bau-entwurfslehre* had a positive effect on the living standards for many people. However,

problems arise when the minimum dimensions are use as standard measurements for the design of housing by developers and corporations. These dimensions offer enough space for the required activities, however they leave little room for other use, activities, and adjustments.

The Dutch architect Willem Wissing pursued a similar attempt through the design of standardised terraced housing. Local governments or housing corporations could choose a design from a catalogue, concerning cheaper and faster construction of multiple residential areas. The sudden rise of this type of architecture can be understood considering the major housing shortage after the second World War and the social and political tendencies that arose after the war. The standardised housing reflects the political welfare state, in which the state takes responsibility for the welfare of its people, and the social tendency that aimed for more equality. The construction of architecture and urban planning was often regulated and controlled by the state (NAI, 2020).

Both architects intended to improve the quality of life. Standardisation, therefore, seemed to be an efficient way to make improvements for many people. However, standardisation can also result in a decline of variation. People with different needs or wishes are excluded from the benefits of standardisation, simultaneously they will have fewer options to choose from.

The tendency during this postwar period led to 'embedded liberalism', a political-economical organisation in which the market processes where to some extend regulated by social and political constraints. The involvement of the state in urban development amongst other social issues contributed to social and economical welfare of many people. It was characterised by ideologies to create a better world, improving the quality of human life and their living conditions. Besides the aim to improve the quality of life of the individual, to some extend it also entailed an attempt to create a better society. The application of these ideologies in architecture and the built environment can be found on large scale in the Bijlmer designed and built in the 1960s in Amsterdam. The exploitation of the area was initiated and controlled by the state and the local government of Amsterdam, resulting in a progressive design in which work space and living space was separated. Each building included collective spaces, such as childcare, hotel bedrooms, and spaces for playing and schoolwork. However, the neighbourhood, which intended to offer spacious living spaces, communal functions, and leisure, never functioned according to the plan. A lack of diversity of dwelling types, and the competitive market, amongst other reasons, hold back the foreseen target group from moving into the neighbourhood. This was accompanied by an inadequate program and use of communal and commercial functions. Ten years after the construction the neighbourhood was known for the many vacant housing, desolated public spaces, criminality, and unemployment.
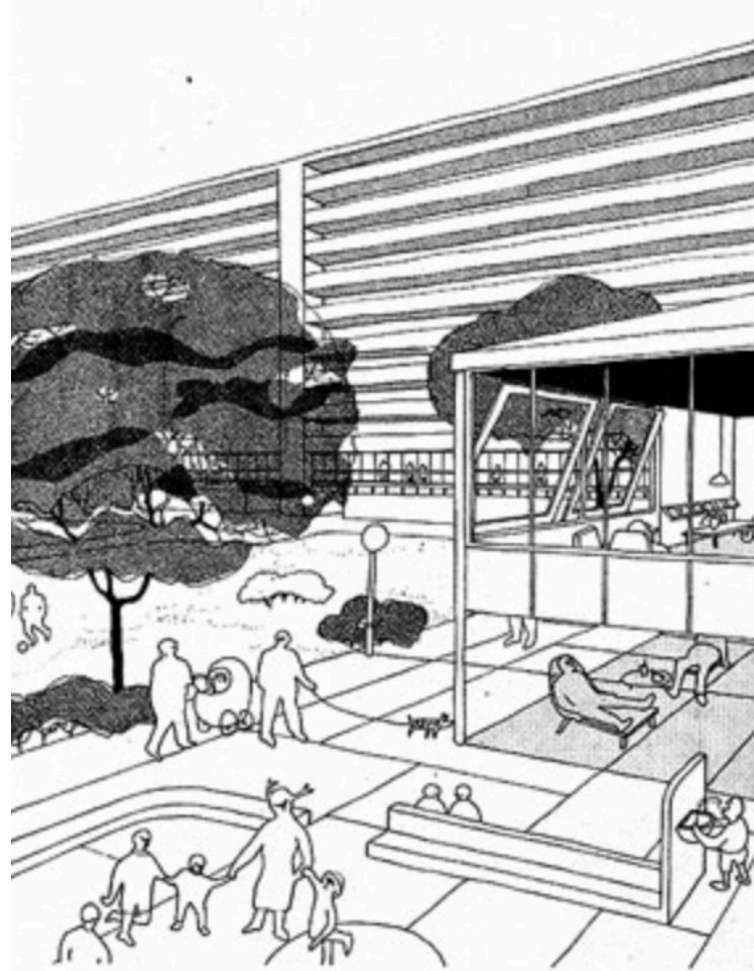
MAN: DIMENSIONS AND SPACE REQUIREMENTS

Body measurements

In accordance with normal measurements and energy consumption
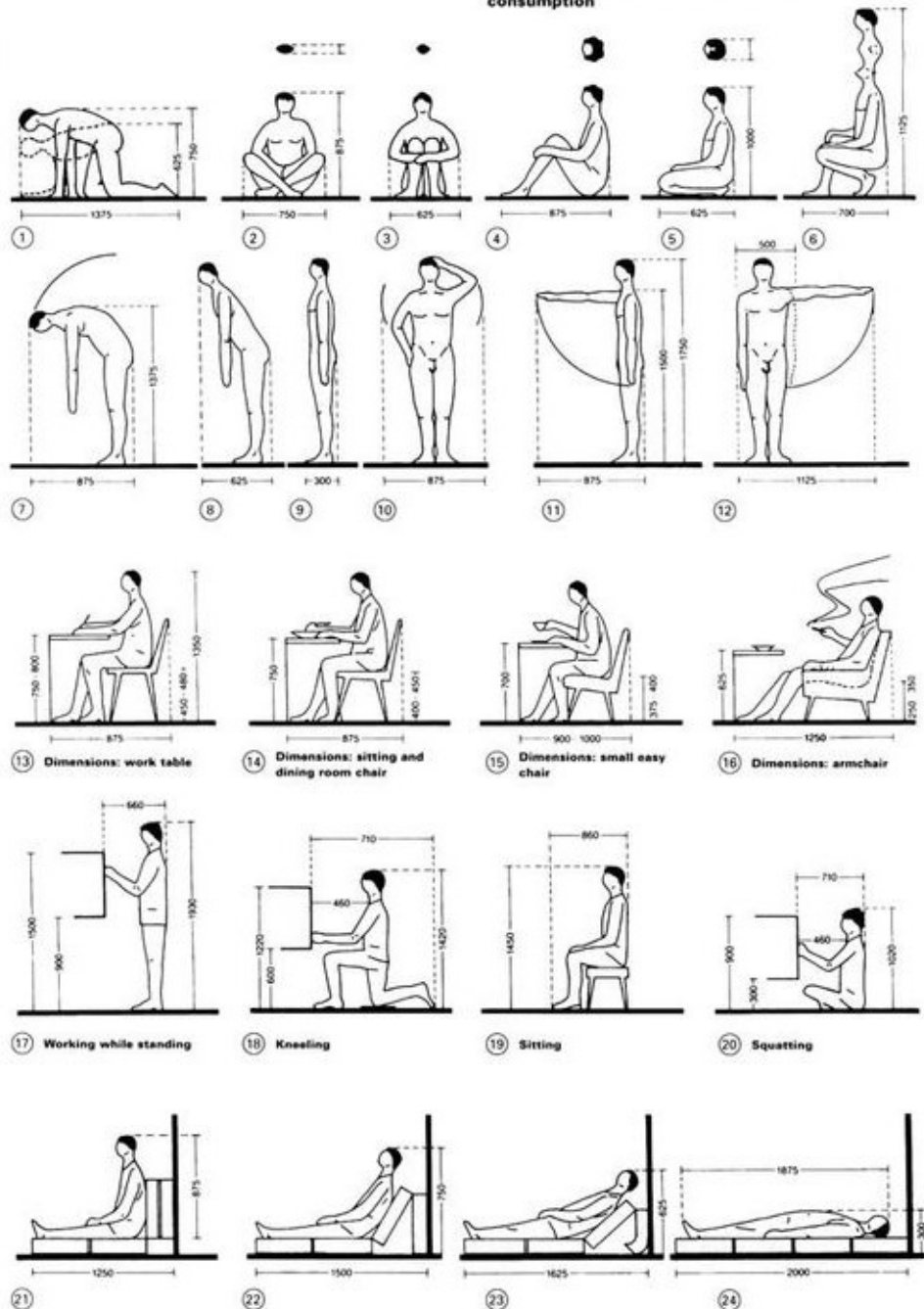
'Man: Dimension and space requirements' (Neufert, 2012)

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Dissatisfaction within society led to resistance and demand for change. Harvey (2007) describes in his book '*A brief history of Neoliberalism*' the incorporation of neoliberalism in our society, entailing the political ideal of political freedom and human dignity as fundamental values of civilisation. The political-economical shift is important to understand, as it influences architectural practice and interpretation.

The roots of neoliberalism can be found in the period after 1929, following the Great Recession and the Second World War. The social scientists Robert Dahl and Charles Lindblom (1953) argue that the
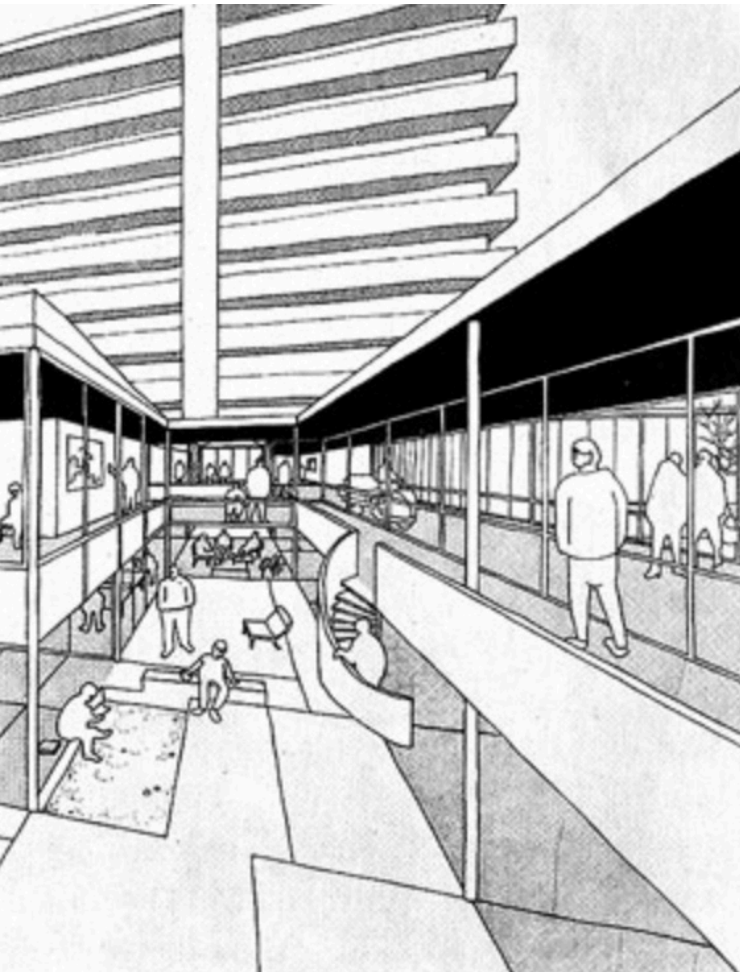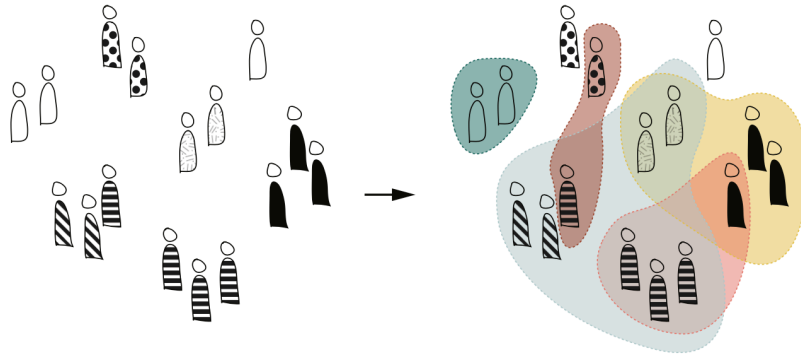
'The Bijlmer' design sketch and pictures (Bijlmermuseum)

fundamental concepts of capitalism and communism had failed, and after that, there was an aim to ensure domestic peace and tranquility. In their influential text, '*Politics, Economy and Welfare*', they argue for a mix of state, market, and institution to guarantee peace, inclusion, well-being, and stability. Initially, this led to embedded liberalism, but a new economic breakdown at the end of the 1960s marked the end of it and announced the rise of neoliberalism (Harvey, 2007, pp.15-16). And this is where it becomes more interesting. Until the late sixties, embedded neoliberalism had contributed to economic growth and welfare while
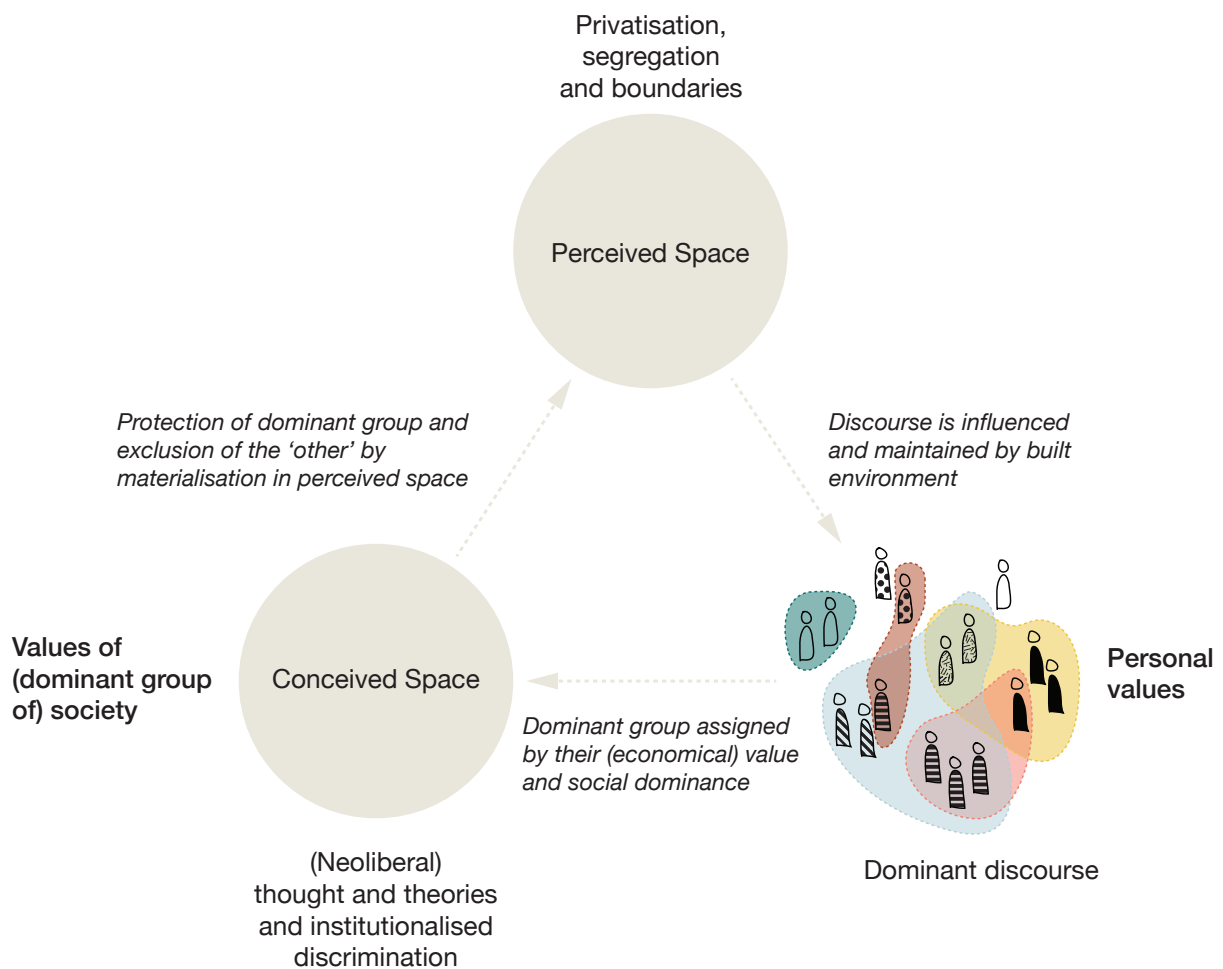
maintaining a group of economic elites and ruling class. Simultaneously, there were movements and events threatening this group of elites, such as the economic regressions (during the late sixties) and social movements striving for individual freedom and social justice, fighting against powerful corporations, mindless consumerism, and social issues like diversity (Harvey, 2007, p. 42). Consequently, at one end there was this group of elites, benefitting from embedded liberalism that was threatened by, at the other end, socialist and communist parties who tried to answer the deficits of the same system (p. 15-16). The 'intrusive' state was the designated, shared enemy, resulting in neoliberalism with forced privatisation. Capitalists could protect their position, while consumer choice of products, but also life style and cultural practices, created the illusion of free choice and equal opportunities.

What follows according to Harvey, is a society in which market exchange is valued above many other aspects and can act as a guide to all human actions (Harvey, 2007, p.3). Not only did the freedom linked with the neoliberal though reestablish power to particular capitalist class, it also produced concentrations of (economic) power that led to increased social inequality (p.38). Again, the shift of events can be described through the lens of Lefebvre's spatial triad. Dissent and unsettlement trigger movements in the lived and conceived space and led to a change of debate. Eventually, this was analysed and written down by Robert Dahl and Charles Lindblom. Simultaneously, a change of politics and policies becomes visible, all residing in conceived space. These events encouraged a shift to privatisation, leading to a change in architectural practice. Although the neoliberal thought holds a promise of choice, and hence might be an advocate for diversity, the materialised space indicates differently. The freedom of choice is often associated with the right economic or social value. Ultimately, neoliberal processes in perceived space include segregation, closed enclaves, the rise of boundaries and degradation of public space (Sennet 2006, p.5), and influence the experience of the lived space (see figure 2).

The examples above illustrate the complexity of engaging architecture and the built environment as a tool to solve or change social matters. The rigid characteristics of architecture are sometimes difficult to reconcile with the unpredictability and fluidity of society. Human behaviour, social interaction, but also the interpretation and use of space cannot be designed. Simultaneously, urban development stemming from neoliberal and capitalist processes sometimes drives inhabitants further apart than it brings people together. All together, architecture and the built environment can (in)advertently cause the exclusion of individuals or social groups. Designing with a social aim or goal can therefore be as challenging as designing without one. Therefore, in the following chapter, I will explore different perspectives that can contribute to open spatial conditions within architectural design.

Power and dominance (neoliberal and capitalist discourse)

Privatisation,
segregation
and boundaries

Perceived Space

*Protection of dominant group and
exclusion of the 'other' by
materialisation in perceived space*

*Discourse is influenced
and maintained by built
environment*

Values of
(dominant group
of) society

Conceived Space

Personal
values

*Dominant group assigned
by their (economical) value
and social dominance*

(Neoliberal)
thought and theories
and institutionalised
discrimination

Dominant discourse

Conflicts between the social space and (the perception of) architecture

Figure 2: 'A spactial triad in a neoliberal and capitalist discourse'

Part Two: From theory to open architectural design

While cycling to school, I noticed the differences between the neighbourhoods I passed by. It made me wonder if it would make a difference if the inhabitant from my neighbourhood swapped with those from the the other side. To what extend does our perception of architecture and the built environment influence our experiences, ideas, and feelings within that space? And can different architecture actually make a difference?

Building upon the models by Lefebvre and Harvey, which have contributed to an open way of thinking, the second part of this thesis will explore different architectural approaches that foster open spatial conditions.
The first part of the thesis has demonstrated the complexity of architectural design as a tool for social progress. Over the years, numerous attempts in architecture have proven the unpredictability of success of achieving such aims within social design. Therefore, I would like to argue the limits and possibilities of the role of the architect. The ability to design a desired social relation or human behaviour is limited, if not nonexistent, for the architect. The rigid nature of architecture prevents predicting the interpretation and use of a fluid society from the moment of completion until demolition. in addition to accommodating people's need and desires, the value of a building depends on many other factors beyond the building itself, such as location, market supply, cultural or social movements, amongst others. They can all influence the perception, use, and eventually the value of a building. Architects can design specific architectural solutions for a given situation; nonetheless, they are limited to the architectural realm. As a result, architects cannot design or change the (social or economical) situation itself.

This important distinction regarding the potential role of the architect underpins the architectural approaches that can foster open spatial conditions. In order to achieve this, the proposed model must meet a set of criteria. Firstly, the model is derived from the previously introduced models, by Lefebvre and Harvey, in which three concepts are in dialectal tension with each other, stimulating an open way of thinking. Ultimately, this can lead to an open approach for architectural design. Secondly, I suggest that the architects should focus on the relationship between architecture and the experience of the human (body). The architect's ability for social design can be found in the creation of architectural conditions where social interaction can take place. The focus on creating such conditions differs from trying to design the interaction itself. The relationship and interaction between multiple individuals
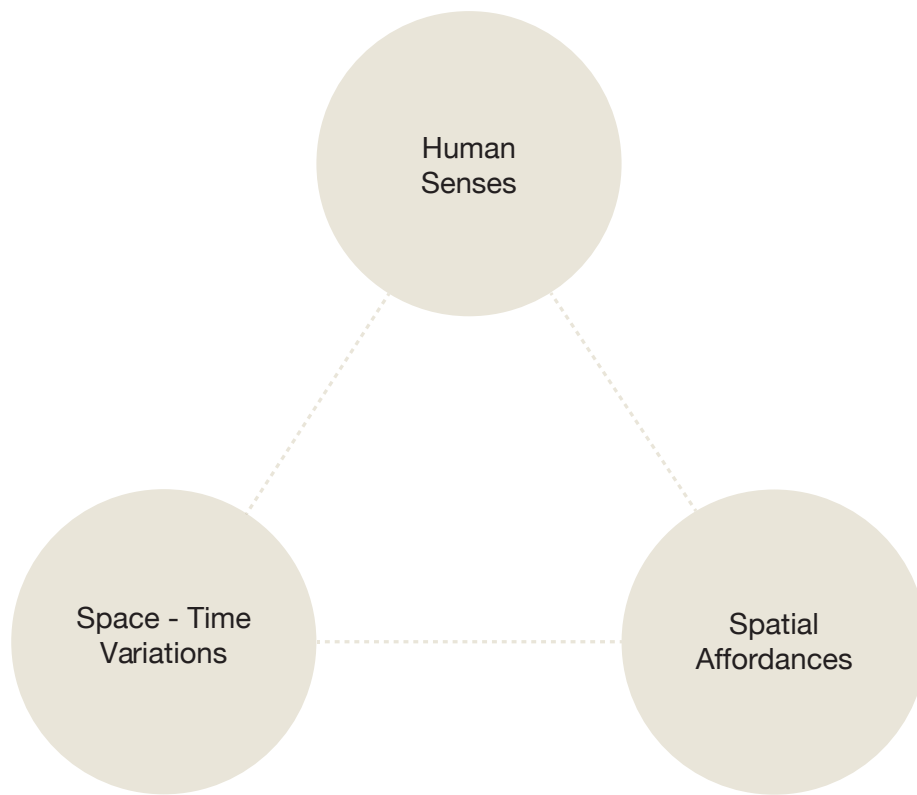
Figure 3: 'Triad of Architectural Experience of the Human Body'

takes place in space, however, the perception of (architectural) space is exclusively experienced through the body and mind of the individual. Therefore, the power of design for multiple human bodies can be found in creating architectural spaces that can accommodate a variety of potential shared relationships with that space.

Considering both criteria, I would like to propose a threefold framework for the architectural experience of the human body, namely: *Human senses, spatial affordances*, and *space-time variations* (see figure 3). Each concept within the framework describes a different relation the human body can have with an architectural space.The consecutive chapters elaborate on each concept, presenting ideas and illustrating them with the work of some architects who have shown particular interest in these subject throughout their careers, such as Pallasmaa, Van Eyck and Hertzberger.

Chapter one: The human senses

Space, architecture and the built environment, are always experienced through our senses. However, Heidegger, Foucault, and Derrida all argue that the thought and culture of modernity not only perpetuated the historical hegemony of sight but also reinforced its negative tendencies by the increasing numbers of technological innovations and continuous production and multiplication of images (Pallasmaa, 2005, p.23). Heidegger (1997) thus describes "*the fundamental event of the modern age as the conquest of the world as picture*". On the one hand, this is accompanied by a proliferation of images, resulting, for example, in the rise of global trends. Simultaneously, it also enables the possibility to create resembling architecture and spaces on the other side of the world. This might seem to allow one to feel at home anywhere. However, on the other hand, it promotes the placement of buildings, products, and materialisations out of context. This can eventually contribute to monotone sensory stimulations and experiences.

The domination of the image can be explained by neoliberal tendencies and the incorporation of capitalism in all layers of society, characterised by the supremacy of money and capital as decisive value. The spiral motion of capital requires a constant growth. These conditions enhance that everything can be turned into a possible commodity[4], including architecture. From the capitalist perspective, the most important aspect is to generate more capital by producing and subsequently selling architecture as a commodity. Consequently, according to Pallasmaa, "*architecture has adopted the psychological strategy of advertising and instant persuasion; buildings have turned into image products detached from existential depth and sincerity*" (2005, p. 33). The senses of hearing and seeing are the most accessible for creating the illusion of an experience without the necessity of physically being in the situation. Marketing, often consisting the use of images of the architecture that will be sold, magnifies the visual dominance. Buildings will be sold more quickly and obtain higher value when they appear visually aesthetic.

However, this search for '*instantaneous impact*', as Harvey calls it, is accompanied by a loss of experiential depth. This immediate impact

4. *According to Marx, a commodity is any type of product or service produced by human labour, that is offered as a product for sale on the market. Money can become capital once it is used in a particular way. Through the acquisition of the commodities of labour power and means of production, one can create a new commodity. Subsequently, the new commodity will be put back on the market and hopefully sold for more money than invested, resulting in a material commodity, value and a surplus of value. On the one hand, the produced value is dependent on the effective demand of the commodity. On the other hand, there has to be a need or desire for the commodity and the ability of the consumer to pay for it (Harvey, 2016)*

is most easily accomplished by the appearance of a building. Although the eyes can take in a space or situation very quickly, it is also a sense that naturally observes more than it experiences. Unlike the ears and the nose, which receive what can be detected, the eyes reach out. Therefore, it is a sense rather distances us from the perceived environment than it incorporates us into it.

Another problem arises with the dominance of sight above any other sense. Although, neuroscientifically, this dominance makes sense. Researcher show that one third to half of the cortex is involved in processing visual information (Felleman and Van Essen, 1991; Eberhard, 2007, p.49; Palmer 1991, p.24), while about 12% of the cortex is engaged to touch, 3% to hearing, and less than 1% incorporates smell and taste (Spence, 2020) . Pallasmaa (2005) extensively describes in his book '*The Eyes of the Skin*' how the variety of human senses can perceive space and its implications. He advocates for architectural design that incorporates all senses. To him, vision rather "*separates us from the world whereas the other senses unite us with it*" (2005, p. 28). Pallasmaa explains how the hegemony role of vision overcomes architectural practice gradually with the emergence of the idea of the bodiless observer. The bodiless observer symbolises the detachment of the observer by suppressing the other senses, provoked by means of technical development and the rapid increase of images. This is where the hegemony of sight starts to become problematic. Whereas, the domination of the visual senses can be explained scientifically, the problems arise when they are isolated from their natural interactions with the other senses.

For a long time, the majority of research has focussed on the impact of changing stimulations presented to one sensory system at the time. However, this singular-sense approach disregards the multi-sensory nature of the mind and the multiple interactions that take place between different senses (Spence, 2020, p.4). Nevertheless, in the last decades, research in cognitive neuroscience shows interesting developments,

5. *Proprioception can be understood as the sense of the relative position of different body parts, and the needed strength of effort for a certain movement. This sense perceives both the outside world and the inside body, perceiving hunger, pain and the movements of internal organs. Simultaneously, kinaesthesia can be understood as the awareness of the position and movements of the parts of the body, using sensors in the joints and muscles. Whereas the first one, proprioception, tells us where our bodies are in space, the second one, kinaesthesia, provides us with information how we should move in space. The last one is a crucial component in muscle memory and hand-eye coordination (Reed, C.L, & Ziat, M., 2018).*

leading to a growing realisation that human perception and experience is a lot more multi-sensory than previously acknowledged (Spence, 2020, p.14). For example, how we experience the temperature of a room is influenced by what we see, and vice versa. These findings highlight the importance of multi-sensory design within architecture and the built environment, as the experience of these spaces are inherently multi-sensory.

The research indicates that multi-sensory design enhances the experience of a space. Pallasmaa takes it one step further by describes that senses are "*the mode that integrates our experiences of the world of ourselves*". Therefore, he argues, "'*life-enhancing' architecture has to address all the senses simultaneously and fuse our image of self with our experience of the world*" (Pallasmaa, 2005, p. 13). For him architecture closely relates to and expresses our being in the world. Accordingly, the suppression or lack of stimulation of a variety of senses can be problematic for grounding ourselves in our environment. Consequently, the ultimate task of architecture is to facilitate our sense of being rooted in the world, in a certain place and time.

Strikingly, in '*The eyes of the Skin*' Pallasmaa illustrates the multi sensory experience of architectural spaces throughout his entire work. Instead of describing each sense separately, he usually includes two or more senses to explain the experience of certain architectural phenomena, such as spaces of intimate warmth or of shadow and darkness. For example, the weight of the door that squeaks when it is opened, the stairs that creaks when you place put your weight on it, the sun rays that enter the room combined with the smell of spring, and the walk from the cold, dark hallway into the warm living room.

Accordingly, multi-sensory design can be an important value for architectural design for two main reasons. First of all, social interaction always takes place between (multiple) individual bodies in a (physical) space. In order to have this interaction, one needs to be present in a certain space. The stimulation of all senses can help the individual body to root itself and become more present in its space, possibly enhance social interaction. Additionally, multi-sensory design enlarges the possibility for a person to associate, relate, and perceive the space with one or multiple senses. Therefore, the chance of someone making associations and memories of that space will be more likely. This could at the same time, magnify the chance for spatial experiences to connect and possibly create a relation between different people.

Human senses and architectural design

The human senses are usually divided into five main senses, notably sight, hearing, touch, smell, and taste. However, Pallasmaa (1994) argues for another two senses in his article '*An Architecture of Seven Senses*'.
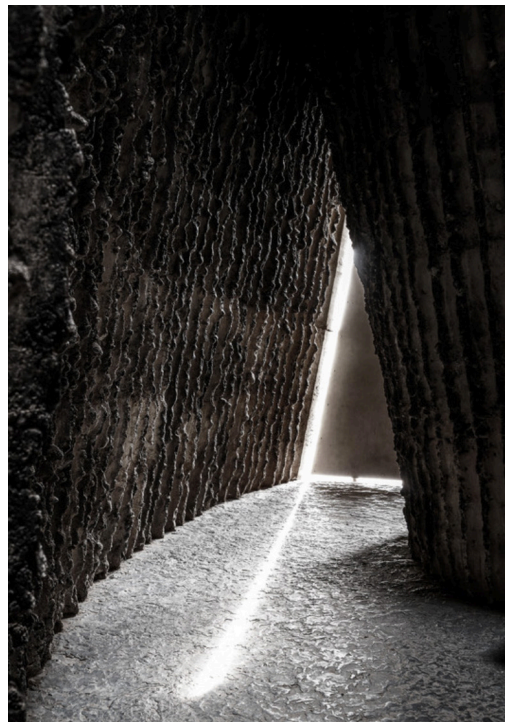
'Bruder Klaus Field Chapel' by Peter Zumthor, photographed by Samuel Ludwig

Although these senses do not become entirely clear in his text, his paragraphs of '*Images of Muscle and Bone*' and '*Bodily identification*' seem to refer to the senses that appear in our body known as *proprioception* and *kinaesthetic*.[5] These senses allow us to keep track of the position and movement of the parts of our bodies in space by means of sensory organs in the muscles and joints. Although these senses generally operate unconsciously, they are very relevant when considering the role of the senses in architectural design. Architectural design and space fundamentally hold a suggestion of action, an encounter, use, or purpose. Therefore, as Pallasmaa puts it, an architectural experience will always be more than just the architectural image itself; "*a building is encountered - it is approached, confronted, encountered, related to one's body, moved about, utilised as a condition for other things, etc.*". (Un) Consciously, someone puts pressure on the handle of a door, moves its bodyweight to open the door, and measures its steps to climb the stairs.

An example of architecture that strongly stimulates the senses can be found in the work of Peter Zumthor. Throughout his career, Zumthor shows a great interest in materials and their use in architecture. In his book '*Thinking Architecture*' (1998), his position in the field of architecture becomes more visible: "*Architecture has its own realm. It has a special physical relationship with life. I do not think of it primarily as either a message or a symbol, but as an envelope and background for life, which goes on in and around it – a sensitive container for the rhythm of footsteps on the floor, for the concentration of work, for the silence of sleep*". This well-known quote shows how architecture, to him, is more about the (sensory) experience and the role in human life. The Bruder Klaus Field Chapel, located in the German landscape close to Mechernich, is an example of his architecture with attention to the sensory experience. The rather simple concrete outside shape conceals the organic shape on the inside. The shape of the building is established by a simple drawing by Zumthor. A wooden frame was built and filled with concrete. Afterwards the wooden beams were set on fire, leaving a burned pattern on the concrete. The contrast between the inside and outside of the building regarding light, shape, colour, structure and texture, gives the observer a strong sensory experience.

Chapter two: Spatial affordances

The spaces in old vernacular architecture are shaped by activities of the human bodies, such as cooking, eating, sleeping, and washing, while simultaneously giving place to object and tools necessary for these activities. The spaces are shaped by the needed movement of the human body for each activity, resulting in an architecture that shapes like a second skin around the human body, protecting it from external conditions.

        The (in)capabilities, needs and dimensions of the human body have always been the foundation for architecture. For this reason, this second chapter will consider the relationship between architecture and the abilities of the human body through the concept of affordance. The concept of affordance was first introduced by the perceptual psychologist James J. Gibson (1966). In his book '*The Ecological Approach to Visual Perception*', he formulates his concept of affordance as follows:

    "*The affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill. The verb to afford is found in the dictionary, but the noun affordance is not. I have made it up. I mean by it something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment*".

Gibson, 1979

Although his concept of affordance refers to animals in their natural habitat, Gibson later extended and frequently applied the concept to understand human behaviour and their use of the (built) environment, including architecture. Underpinned and extended by other psychologists and researchers the purpose and application of affordance in the realm of architecture and design became more evident. Psychologist Donald A. Norman used Gibson's theory of affordance to understand what an object should afford and what not. In his books '*The Psychology of Everyday Things*' (1988), which - as the title already exposes - primarily focuses on objects used in daily life rather than artefacts or architecture. Norman incorporates the concept of affordance as a fundamental aspect for designing any object or artefact. Additionally, researcher in social sciences and the built environment, such as Koutamanis, combine Gibson's and Norman's theory of affordance for the specific design of elements in architectural design, such as door handles and banisters. He also introduces the method of '*affordance mapping*', which can give architects guidance when thinking of affordances within their architectural space designs.

Maier and Fadel, both researchers in engineering design, wrote multiple articles about the implementation of affordance in engineering design, including architecture.[6] In their text '*An affordance based approach to architectural theory, design and practise*' (2009), they describe the application of affordance as "*a conceptual framework to understand the relationship between built environments and humans over time, especially with respect to the form, function, meaning of architectural elements*". According to them, affordances are more fundamental to architecture than frequently studied concepts, such as form or function. Affordance distinguishes itself by focussing on the possible relation between the human users and their environment over time. This indicates that besides what an architectural element is, it is also crucial what the user perceives in it. While the next chapter will elaborate more specific on the connection between space and time, the affordance of a place can not be separated from the notion of time. Affordance in space relies on the perception and imagination of people and is significantly influenced by social and cultural practices, shaping behaviour and the possibilities that people see in certain spaces. Pallasmaa (1986 in Fadel & Maier, 2009, p. 403) claims, "*forms themselves are meaningless, but can transmit meaning via images enriched by associations*". These meanings are often cultural embedded and may differ for different individuals. For example, columns, which affords carrying a roof load, can simultaneously symbolise power and prestige to some, referring back to the old Grecian and Roman empire. For others, they may symbolise American colonial racial repression. It is arguable whether assigned meanings in architecture are an affordance in themselves, but it is precisely these meanings that make a building more than just its function.

Furthermore, architectural affordance cannot be separated from

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6. *In the article, 'An affordance-based approach to architectural theory', Maier and Fadel (2009) distinguish two types of affordances. The first one they describe is the user-artefact affordance. According to them this type of affordance "links the structure of the environment with the capabilities of human users to determine what behaviours are possible and even likely" (2009, p. 401). An affordance only indicates the potential for behaviour, the actual behaviour or use of the artefact itself is not an affordance. An other type of affordance is defined by Maier and Fadel as an artefact-artefact affordance, which describes the relation between multiple artefacts in order to manifest a certain role. From their theoretical view, for instance, a wall affords support to a roof, and hence is an affordance. This seems quite an obvious affordance, and perhaps more a fundamental principle of a building practice, however by doing so, the writers indicate how artefact-artefact affordances can indirectly be useful to users. Thinking about artifactual affordances, this can also lead to ideas about the performance of the building during a storm, heavy snowfall or an earthquake, affording a safe space for the human body.*

'Imagine Montessori School' by Gradolí & Sanz, photographed by Mariela Apollonio

time, as the manifestation of offered affordances always takes place over time. To perceive and imagine a possible affordance is a fluid process, dependent on the place, time, and individual(s), which determine the existing promises and the resulting behaviour that manifests (Fadel & Maier, 2009, p. 402). For example, a skateboarder will see different affordances in an outdoor bench or stairs than a pedestrian. Moreover, a city square will likely be used differently during the day than at night. These examples reveal another important connection between affordance and time: the human body. The human body is skilful, yet limited, serving as a place of lived experience and, at the same time, a physical body with a certain age, size, and gender. All together, the human body is characterised by certain abilities (such as physical abilities, but also more abstract capabilities like using language and imagination). These abilities come in endless variety and diversity, within the lifespan of an individual and between each individual, resulting in different perceptions and imaginations of space and its spatial affordances.

The concept of affordance can, therefore, be seen as an alternative to the prevailing ideal, enhanced by the dominance of sight, of the absolutes of space and time. The goal to produce '*aesthetically pleasing forms*' considers an insufficient idea of what perception is or can be. The first chapter acknowledges how different senses of the human body can perceive architecture and the (built) environment, and how including all senses in architectural design can enrich the lived experience of a space. Affordances in architectural design can have a similar role in the lived experience of a space. However, instead of increasing the possible perception of space, affordances increase the possible use and meaning of space. Therefore, affordances are "*inherently situated, dynamic, relational, complementary and embodied*" (Robinson, 2020, p. 19).

Additionally, the implication of the concept of affordance in the realm of architecture can also be valuable for other reasons. A high variety and diversity of architectural affordances can increase the chance that people perceive and use one or multiple affordances. Indirectly, greater possibilities of use can also improve the chance of different individual bodies using the same space, and perhaps interacting or meeting. At the same time, architectural affordances can expand the possibilities and limits set by socially and culturally embedded practices. It can create new opportunities for people, but also extend their imagination and use of their own body. For example, a street runner perceives and uses object in public space, such as stairs and edges, in a very creative way, stretching the limits of its imagination and physical body. Simultaneously, someone perceiving the street runner will also expand the imagination what space has to offer and the body can do. Lastly, the higher diversity of affordances that can be found in space, the more likely it is that different bodies can perceive an affordance and make use of the space.

In this multiple dimensional understanding of space, architecture can offer the potential for new becomings, sensory perceptions, and movements. A study by Studio RAAAF '*The End of Sitting*' aimed to find new modes of working in an office related to space, shapes, and function. By removing common office furniture, such as desks and chairs, Ronald and Erik Rietveld tried to make people aware of new ways of using the space for work. Their studies resulted in an abstract landscape of shapes where work can be performed in a wide variety of body positions. Although '*The End of Sitting*' might seem extreme and almost uncomfortable, it challenges the conventions assumed to be the best way to work efficiently, while simultaneously pushing the boundaries of what the human body can do and is made for.

A less experimental but similar approach in architecture can be found in the designs and extended research of both Dutch architects Aldo van Eijck and Herman Hertzberger. Their research encompasses a range of possible design interventions that can enhance the use of space and promote possible social interaction. Hertzberger (2005) describes in his book '*Lessons for students in Architecture*' the role of architecture in public and private space, as well as the space in-between. These topics might not seem directly to relate to the concept of affordance at first, but his work explored how to indicate to what extend space is public or private, or both, through the medium of design. For instance, a brick edge attached to the building can function as a bench in front of the house while simultaneously creating an in-between zone between the house and the street. Leaving extra space in-between functional areas creates opportunities for people to decide on their own program. The use of different materials can establish multiple zones within the same space, which can encourage a variety of activities.

Another example can be found in the Imagine Montessori School by Gradoli and Sanz. The spaces and materialisation formulate an in-between space between inside and outside. Furthermore, the architectural structures have multiple meanings. The decending stairs create a space between inside and outside, serve as a border between the building and the yard, and offers a space to sit and even teach.

Chapter three: Space-time variations

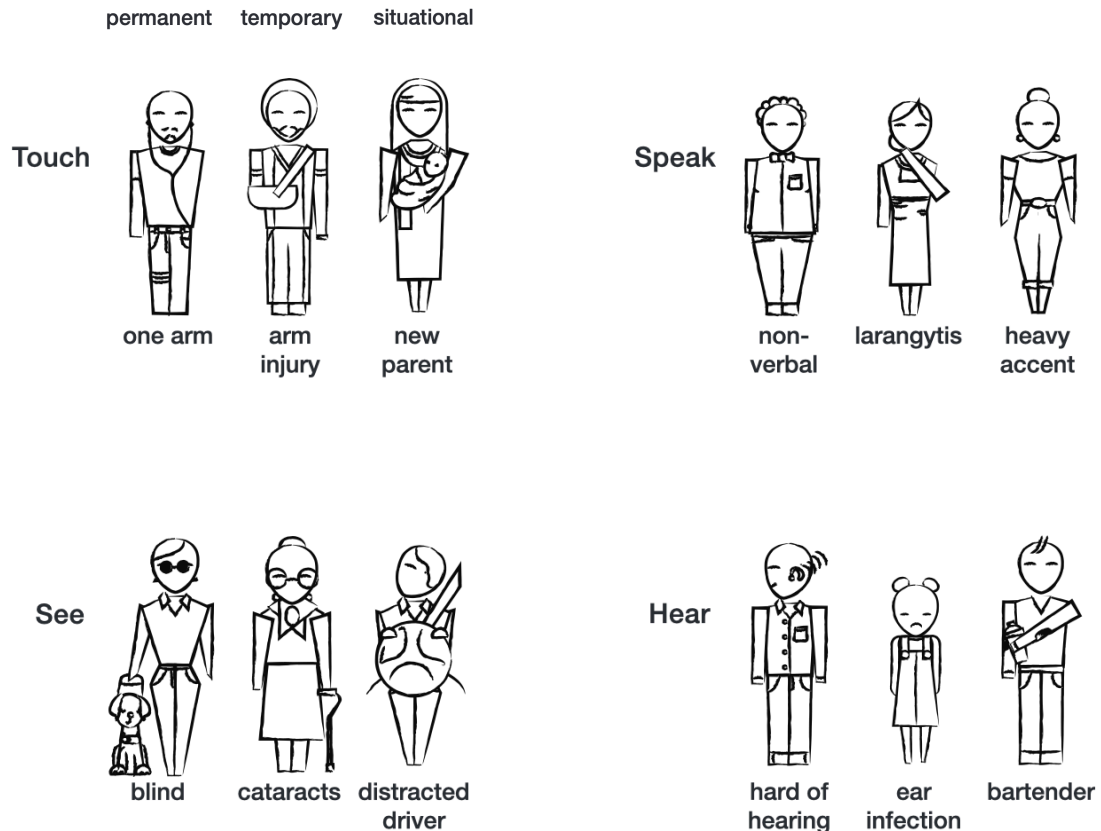> *"Consequently, basic architectural experiences have a verb form rather than being nouns. Authentic architectural experiences consist then, for instance, of approaching or confronting a building, rather than the formal apprehension of a facade; of the act of entering, and not simply the visual design of the door; of looking in or out through a window rather than the window itself as a material object; or of occupying the sphere of warmth, rather than the fireplace as an object of visual design. Architectural space is lived space rather than physical space, and lived space always transcends geometry and measurability."*

Juhani Pallasmaa *(The Eyes of the Skin, p. 6)*

The above quote, taken from Pallasmaa's book '*The Eyes of the Skin*', expresses the experience of architecture and the built environment which always takes place over time. To understand architecture rather as a verb than a noun can change the perspective on the meaning and value of architecture. Therefore, the last concept of the human triad describes *space-time variations* in the realm of architecture.

The concept of time in relation to the human experience of architecture is already introduced in the first two concepts of the human triad: *Sensory design* and *spatial affordances*. On the one hand, the perception of architecture (a physical place) and the perceived or used affordance happen over time, but they are also depended on time. Therefore, time is an absolute factor as it is a necessity for a human body to experience or act in space. However, it also indicates a relative view on space and time, formed by the relationship between objects. It is dependent on what is perceived, when, and by whom. For example, the perception of space can change from winter to summer, from day to night, and from sitting to walking. On the other hand, the perception and perceived or used affordances are dependent on past experiences, abilities, memories, and imagination of the human body. In this case, time does not only have a role in an absolute or relative sense, but also in a relational way. It is not only about the act (located in time) itself but also about how events or influences from the past, present, and future define the nature of a certain point in time.

The relationship between space and time and its relevance has been discussed by multiple social and geographical researchers, architects, and urban planners. The first part of this thesis introduced the spatial triad by Lefebvre in order to obtain an open understanding of the concept of space. However, critique on Lefebvre's '*Production of space*' often consists of prevailing space above time. Although

permanent   temporary   situational

Touch — one arm / arm injury / new parent

Speak — non-verbal / larangytis / heavy accent

See — blind / cataracts / distracted driver

Hear — hard of hearing / ear infection / bartender

'Persona spectrum' by Holmes, K. (2018)

'*production*' implies to hold a dimension of time, it equally emphasises space as a '*thing*' (Unwin, 2000, p. 22). Harvey (2004) further develops Lefebvre's argument by introducing the concept of space-time. In his essay, '*Space as a Keyword*' (2004), Harvey creates a speculative model in which he places Lefebvre's spatial triad against his own identified threefold of space, resulting in a matrix (2004, p. 105). While Lefebvre's model primarily focuses on socio-spatial relations, Harvey, based on

his geographical background, prioritises the relation between space and time. According to Harvey, space can be understood in three ways: *Absolute space, relative space* and *relational space*.[7]

Although Harvey and Lefebvre's speculative models are mainly used to understand the relation between political and social processes and spatial development, they can also help us to explore the meaning of time in architectural design. The implication of the concept of (space)time can bring more layers and meaning to a design.

Time is an interesting but complicated dimension in the architectural design. Most often, solid architecture has to accommodate ever-changing human bodies, needs, and desires. Strikingly, vernacular architecture is slowly developed, possibly over many generations, by trial and error. Eventually, resulting in a design that fits the local climate, terrain and human needs perfectly. In present times, it is almost hard to imagine such a connection with a building. When the building is no longer sufficient, whether it became too small or too big, does not fit our changing needs, or appears outdated, we tend to move to another building or demolish and rebuild it. The predicted lifespan of architecture along the canals in the city centre of Amsterdam or the old farmhouses in the North, compared to most post-war neighbourhoods around Dutch cities, raises many questions about sustainability and usability over time. At the moment, the construction industry in the UK is accounted for 60% of all materials used while creating one third of all waste. On top of that, during the process it produces 45% of all CO_2 emissions (Wainwright, 2020). The construction industry in the Netherlands shows a similar trend. The reuse and increase of the lifespan of the building (material) is probably one of the most relevant architectural assignments today.

The examples above show that the consideration of the concept of time is undeniable valuable at all ends of the architectural spectrum. The

7. *Absolute space can be seen as a fixed frame in which events take place, it is a 'thing', as it can be measured and is open to calculation. Relative space exists through the relation between objects, which can be achieved in two ways: 'There are multiple geometries which to choose and the spatial frame depends crucially upon what it is that is being relativized and by whom' (Harvey, 2004, p.95). On the one hand, this implies the relevance of the frame of reference of the observer. On the other hand, this view is always related with time, hence it can only take place in space-time. An example can be found in the relative location of a place; two places can have the same absolute distance, but can be experienced differently in relative space-time based on time, costs and transport. The third space, relational space, can only be considered as a relation between space and time. This space is characterised by multiple events or influences taking place in the past, present and future, coming together at one point defining the nature of that point. This space takes its significance for issues that can not be answered in absolute or relative space-time, for instance the influence of memories and imagination on the experience of a place. (Harvey, 2004, p.97)*

'De Oerkap' before and after a winter of modifications

'Modular wood system for schools' by OMA and Circlewood,
photograped by Arthur Wong

Examples of a design with space-time variations

lifespan of a building can be increased by thinking about the right (reused) materials, (demountable) construction, (changing) performance needs, and (flexible) dimension and proportions, all the way to considering the constantly changing human abilities, perception, and experience. While the first two parts of the human triad focus on addressing and accommodating those different human abilities and perceptions, for the last part of the human triad, I would like to argue to consider architecture as a living shell around the human body. A building could, just like offering protection to changing outdoor conditions, equally take into account changing conditions of the human body.

The book '*Mismatch*' (2018) by Kat Holmes searches for methods to make design more inclusive for all bodies. In order to succeed she pleas for an exploration of possibilities and limitations of all kind of human bodies, reducing the changes for a mismatch between the human and the design. The well-considered design, she argues, not only prevents certain mismatches but often improves the usability for most people. As an example, she describes the design of the seat and safety belt of a car. For decades, the design choices were based on the average male testing standards. A study revealed that women drivers faced a 47% higher risk of death or serious injury in a car accident than male drivers. Once the car industry started to test their cars for a wide variety of body sizes and weights, the cars became safer not only for women but for anyone whose body did not match the average man. It is imaginable that an equal approach in architectural design can have a similar result. Clear articulation by design, whether you have to pull or push a door, for example, will not only be beneficial for someone who's illiterate, visually impaired, or blind. Replacing the doorknob on one side with a (push) plate will eliminate confusion for many.

It is questionable whether it is possible to take in account every (in)capability of the human body. Therefore, the first two chapters, *sensory design* and *architectural affordances*, aim for a high diversity and variety of the application of all senses and of offered affordances within the architectural design, increasing the likelihood that a person can establish a relation with a space. However, Holmes shows an interesting viewpoint on relating design to the human body and time. In her book, she introduces the persona spectrum, showing the '*permanent, temporary, and situational mismatches people can experience based on their abilities and disabilities*' (Holmes, 2018, p. 106). On the one hand, the persona spectrum shows the changeability of the human body on a very practical level regarding design solutions. Accordingly, it can contribute to thinking about how design could or should be able to evolve and grow along with the human body. Sennet (2018) describes a form of evolving architecture in his book '*Building and Dwelling*' as *incompleteness* or the *incomplete form*, referring to the ongoing changes humans make to their house to improve it or fit their (changing) needs. On the other hand, the persona

spectra also can bring a collective goal in design: many people can experience the same mismatch to a design, either situational, temporarily, or permanent.

A small scale architectural project that incorporated time to empower the concept can, for example, be found in Haarlem, called '*Oerkap*'. The location, situated along the river '*Het Spaarne*' and enclosed between the railway and arterial road, is known as an 'urban beach' accommodating a restaurant, small theatre shows, and studios. The initial project was based on a temporal building permission consisting of a self-built restaurant made of scaffolding wood attached onto an old factory used as storage and rehearsal spaces. Since 2009, the restaurant has been open during the summer months. The winters are used to improve and make additions or changes to the building. Thirteen years later, due to the popularity of the place, the local government was convinced to sell the factory to the owners of the Oerkap. Therefore, in exchange, the building has to be renovated according to the monumental guidelines. Simultaneously, the self-built attachment can be renewed and build more sustainable and energy efficiently, allowing the restaurant to be opened year-round. On the one hand, the organic growth and adaption of the place ensure that the concept, design, and size are a good match with the demand of the space and people. On the other hand, the success of the project eventually ensures the renovation and re-use of the old factory, preventing vacancy or demolition and expands the life-span of the building.

Another concept that plays with the idea of time, lifespan and flexibility in buildings is recently published by OMA and Circlewood. Their design for multiple schools in Amsterdam encompasses a structure made of wooden which functions as separate modules that can have different panels according to the needs and functions. The structure is prefabricated and can be assembled and disassembled at the building site. The panels are the bio-based. The structure offers the building to be durable and adaptable for the future. At the same time, the modular panels offer the flexibility to design an optimal learning environment. Therefore, this concept features design solutions that take into account the future of humans and the environment simultaneously.

Conclusion

This research has aimed to uncover architectural approaches that can foster open (spatial) conditions, thereby strengthening the architect's role in the ongoing social-spatial dialogue.

The exploration of the human experience within architecture has revealed a complex relationship where spaces are shaped and perceived over time. Architecture is not solely influenced by humans; controversely, humans and society are, to some extent, shaped by the architecture and built environment. This multi-dimensional interaction results in a nuanced and open understanding of space. However, it also presents a challenge. The inherent attributes of architecture are sometimes struggle to align with the unpredictability and fluidity of society. Human behaviour, social interaction, but also the interpretation and use of space cannot be designed.

Hence, the research has demonstrated that a more sustainable and socially conscious approach can be found by considering the relationship between the human body and architecture. This led to the formulation of a human triad: *sensory design, architectural affordances*, and *space-time variations*. Each component of the human triad enhances the potential for human bodies to engage with architectural elements.

Sensory design underscores the importance of engaging all human senses in architectural experiences. Architecture should transcend the visual and aspire to create holistic sensory encounters. Considering sounds, textures, scents and considering movement within a building enriches the lived experience. Through the senses humans can foster a deeper connection with their surroundings, while simultaneously increasing the chance other people can establish a relation with the same space. Indirectly, this could lead to an interaction or relation between different human bodies. Sensory design encourages a more inclusive approach to architecture, accommodating the diverse range of human abilities and perceptual capabilities.

Architectural affordances acknowledge that architecture is not static but rather a dynamic interaction between the human body and its environment. Originally introduced by James J. Gibson, the concept extends beyond the realm of animals in their natural habitat and finds application in understanding possible human behaviour within the built environment. By designing elements that facilitate various uses and meanings, architects empower individuals to creatively and meaningfully engage with spaces. A variety of architectural affordances can also contribute to the use of space by different individuals, potentially promoting interaction and connection.

Space-time variations emphasise the role of time in architectural design. The human experience of architecture is not static; it evolves

over time, influenced by seasonal changes, daily routines, memories, and imagination. Considering time in architectural design leads to a more sustainable and adaptable approach, accommodating the changing needs and abilities of human bodies and reducing mismatches between design and users. Architecture as a living shell around the human body embraces flexibility and longevity, providing spaces that can grow and evolve along with the human body.

The implication of all three concepts of the human triad by architects can contribute to an open spatial condition within the design. The concepts add to a wide variety of sensory experiences, a broad range of use and meaning of architectural elements, and the adaptability of the design over time and for different people. On the one hand, these different concepts will lead to architecture that can accommodate and be experienced by a high diversity of humans and their bodies. As stated before, humans and society are also shaped by architecture and the built environment. Building architectural spaces that are accessible and be able to be used by a high variety of people contributes to more equal opportunities. On the other hand, the more different people can establish a relation with a certain space, the more likely it is that new connections are enabled between different people. Finally, the human triad fosters inclusivity, sustainability, and adaptability, enriching the human experience in the built environment.

This research aimed to find architectural approaches that foster open spatial conditions. The perspectives presented by architects, urbanists, and sociologists have culminated in a theoretical framework to guide architects and designers in creating spaces where the human body, in all its forms and abilities, is represented. As the culmination of this research, I propose this framework, the human triad, as the most effective way to capture the human experience of architecture. Nonetheless, future research may unveil new insights into the human (spatial) experience and introduce potential additions concepts. Furthermore, ongoing exploration could deepen each concept, for instance, by examining existing architectural projects and developing a comprehensive catalog of architectural principles grounded in the human triad.

Ultimately, these efforts could result in architectural spaces where children from different neighbourhoods, similar to my classmates and my younger self, can find common ground. Such spaces could feel comfortable and secure for all, accommodating diverse interpretations and meanings, while offering objects that can be used in multiple ways by all children, regardless the season, time of day, or stage of their school journey.

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