

FUNCTIONALISM

RENDERING

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ABSTRACT

“Functionalism rendering” explores the evolving relationship between social change and the principles of functionalist architecture within the domestic environment. It poses a question whether the spatial ideals established in the early 20th century—rooted in standardisation, mass production, and efficiency—are still relevant to the multifaceted needs of 21st-century users and if this change in society should also be reflected in architecture.

The exemplary developments created in interwar period embodied the ideals of modernist architects seeking to shape a new society through architecture. One of those developments, used as a research case study, was WUWA (Wohnungs- und Werkraumausstellungin) built in 1929 in Breslau (currently Wrocław, Poland). Today, nearly a century later, these homes remain in use, providing a unique opportunity to examine how the functionality of domestic spaces and user behaviours have evolved over time.

Combining architectural analysis with sociological theories—including Maslow’s Hierarchy of needs and Barker’s “Behaviour setting theory”—the research investigates the impact of societal transformation, technological integration, and shifting family structures on domestic spatial use. Site observations, floor plan comparisons, interviews with current residents, and historical research, allow for both spatial and behavioural insights into the evolution of “functional” housing and neighbourhood.

Research suggests that functionalist design ideals, once based on assumptions of a “standard user,” no longer adequately reflect today’s diverse and changing domestic realities. Contemporary homes increasingly demand flexible, multipurpose spaces that accommodate a wider range of uses within the same or sometimes even smaller space. This shift underscores the importance of designing spaces that are adaptable, inclusive, and able to respond to ongoing change.

The redefinition of functionality is essential and often subjective. The contemporary version should embrace temporality and social complexity rather than resisting them and imposing certain standards. These insights inform the next stage of the project—a design proposal for a contemporary reinterpretation of the WUWA development, focusing on today’s evolving and diverse lifestyles. By reimagining domestic spaces as an adaptable tool for social living, the research positions architecture as an active agent in shaping resilient, connected, and human-centered environments for the future.

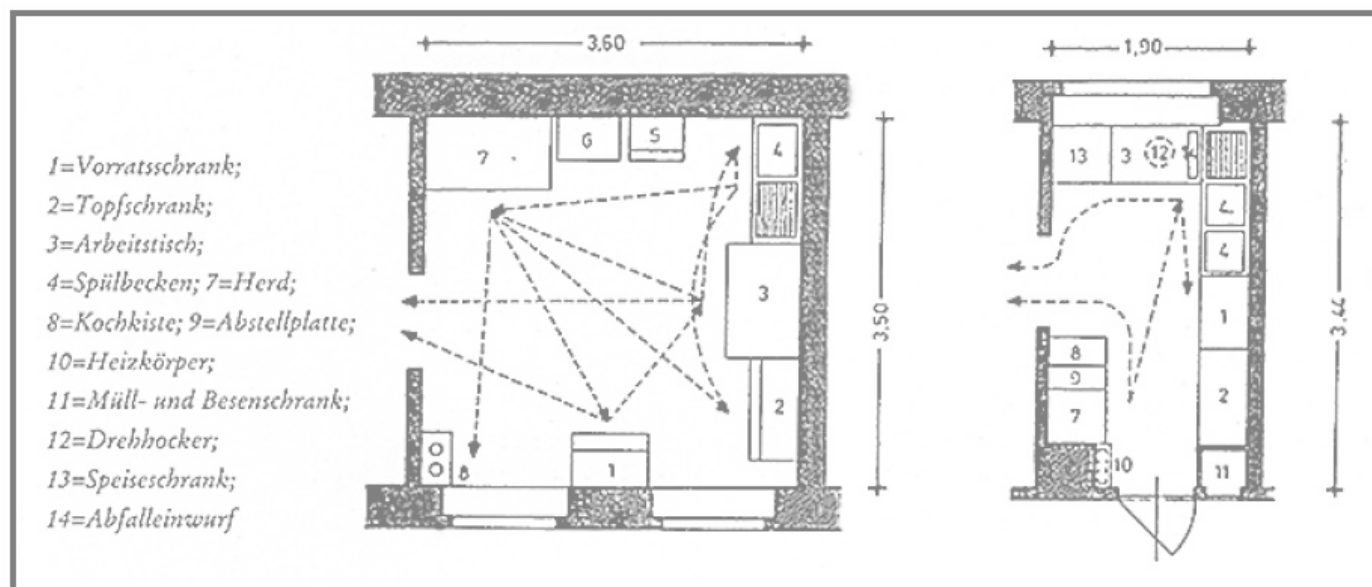
INTRODUCTION

The society in Europe in the early 20th century faced many problems at the time. General shock after World War I, increased the movement of people between countries as well as rural and urban areas, and the availability of materials influenced the number and quality of housing units. Governments started approaching organisations created at the time, like CIAM or schools of design like Bauhaus, to address this issue (Urbanik, 2019). At the same time, the process of standardisation and mass production allowed for experiments with new construction methods. Architects fascinated by an industrial progression started to compare new ways of living in a changing society to machines. The more efficient and functional spaces for 'standard users', the better (Cupers, 2013).

Architects wanted to showcase their vision of new ways of living for modern society. Supported by scientific methods, they started a formulation of theories and movements like Existenzminimum and Functionalism. Governments, especially in the Weimar Republic, allowed the experiments to happen in real life (Urbanik, 2014). A few model estates were designed, trying to envision ways of living and built using new methods of construction. One of them was Wohnungs- und Werkraumausstellung (or WUWA) in Wroclaw, Poland.

As times passed, standardisation and mass production, initially used mostly in a few industries, started taking over our everyday lives. Commodities became increasingly available for different classes of society (Cupers, 2013). Today, we are still experiencing the effects of it, together with the fast urbanisation process. Affordability and availability of housing units are under pressure from the constant flow of people. Designs, which are very often still based on 'standard users' and models established in the past centuries, seem not to match contemporary users.

There is a need for reconsideration of the understanding of the 'standard user' and the term 'functionality' – if those are still possible within the XXIst century context.



Old Kitchen vs Frankfurt Kitchen Design

RESEARCH PROBLEM

Although the contemporary societal struggles seem similar to the issues in the first half of the XXth century, they have different origins. The standards created in the past century do not respond to the changing and more commercially and technologically focused contemporary society.

Today, due to technological advancements, people are looking for constant stimulus from the environment. In the past century, the structure of families and households changed, from multigenerational families living together, through so-called nuclear families to hard to define contemporary structures of families which do not fit into previously known categories (for example, are made out of single parents with children). The changes include not only the number of family members but also roles within the household itself. The needs of 'contemporary users' are not only focused on biological processes but also on technological uses. Furthermore, within a domestic sphere, the relationship between living, leisure and working changed. Governments put attention on the controlled reuse or use of materials, keeping in mind their scarcity and influence on the climate. Under those pressures, buildings designed in the 'historical functional movement' are not functional for the 'new users'.

The paradigmatic shift of society, especially connected to the use of technology in everyday life, seems to influence the basic needs of users. Those changes impact present-day functions of buildings and the way we use them, demanding a certain shift in the design.



RESEARCH QUESTIONS

What is the relation between social changes and functionalism within the domestic environment?

SQ1: How does change in society (i.e.use of technology in almost all aspects of life) influence the perception of functional spaces and influenced our needs?

SQ2: What is the understanding of function in time? Why and how do we redefine?

SQ3: How do we create spaces which would be functional not just for the 'standard users', but also for the future?

SQ4: What is the cycle of the function and what conditions influence that?

SQ5: How did Wroclaw's society changed and how did it influence the functionality of WUWA development?

CHOICE OF SITE

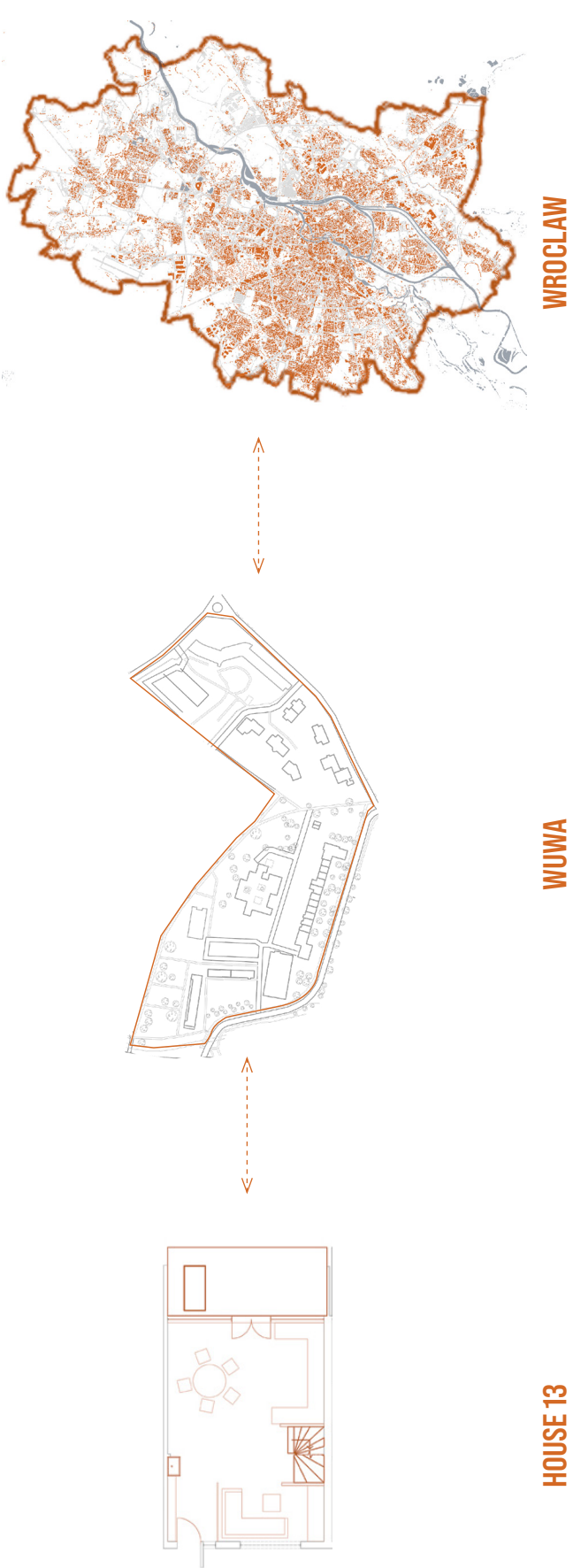
The plot located in Wroclaw, Poland, was chosen as a site for the project. The area was chosen due to the current use of the plot being the modernist development designed in 1929 (WUWA standing for Wohnungs- und Werkraumausstellung). Architects, aspiring to create houses for the future society, tried to create houses which would fulfil the functions of the 'modern user'.

As almost 100 years passed, the evaluation of the development can take place in order to see if the design from the XXth century still responds to the envisioned functionality. Modernist architects believed that architecture could help shape the new society. Houses, despite big losses of the city during the war, are still used today for living purposes, mostly by private owners.

The research part will be based on a case study of WUWA as a representation of the 'Functionalist visions'. Analysis will be focused on the comparison not only of the built environment on the plot but also around the site. Additionally, the evaluation of design responding to the needs of the 'standard user' now and then will help to assess the functionalism in the past and present.

RESEARCH FOCUS

The research will focus on the domestic sphere, as this is the basic unit that builds up the larger network of a city. To compare the conditions of the changes as closely as possible, the development built in the 20th century but still in use by private owners was chosen. Due to the political situation in Poland in the previous century, buildings did not have monument status; thus, some of them underwent changes. Due to the private ownership of most buildings, interior modifications are not as regulated, which can provide insight into the amendments made by current owners. The research will therefore focus on the functions performed at home, as well as the relationship of the house to the larger unit, in this case the entire WUWA development.



Use of different scales in the research

IDENTIFICATIONS

In order to create a uniform understanding of the concepts in the research, the identification of certain terms must take place.

Architecture is often subject to personal interpretation; finding a common interpretation of the terms can help shape the understanding of the problem. Establishing those terms aims to investigate or highlight the change that will be the subject of the research.

FUNCTION

The function in architecture is treated as the purpose that an object or building fulfils. Architects designing buildings have a function in mind and are trying to create spaces for activities, responding to it. Buildings, objects, and spaces can change their function over time and depending on the user. For research purposes, the function of buildings will be narrowed down to the domestic spheres, excluding public building functions.

FUNCTIONALISM AND FUNCTIONAL DESIGN

Functional spaces and functional design will focus on the practical side of the matter, not the symbolic functionality. The word 'functional' will describe a subject which is **efficient** (in the broad meaning of the word – physical, psychological, sociological) in fulfilling its purpose to its **current user**.

FUNCTIONAL MOVEMENT (HISTORICAL)

For the purpose of further research work, the 'Functionalism movement' will be focused on the architecture designed in Central Europe, mostly in the Weimar Republic, after World War I. This specification is due to the case study chosen of the exemplary development built in this location (WUWA in Breslau (currently Wroclaw, Poland).

PROGRAMME

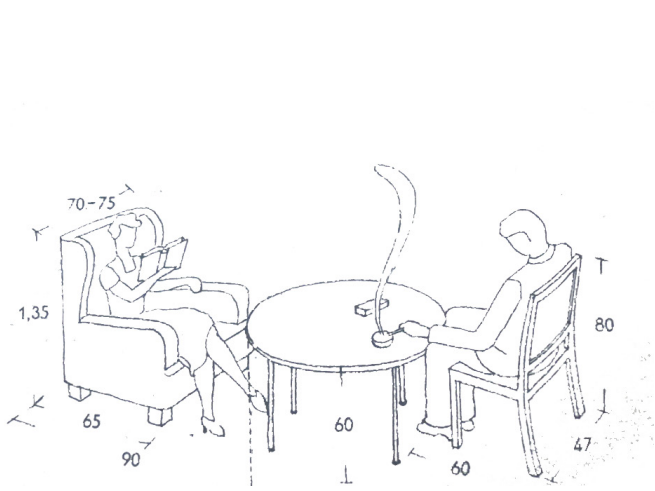
The programme in this case will be treated as a certain collection of activities which are predicted in a particular space. The concept very often defines the architecture of the space and is very strongly related to the spatial requirements. The programme is very often decided at the design stages, giving the architect and planner certain power over the user., The programme, however, can be evolving with time - this usually happens without the involvement of the designer.

USAGE

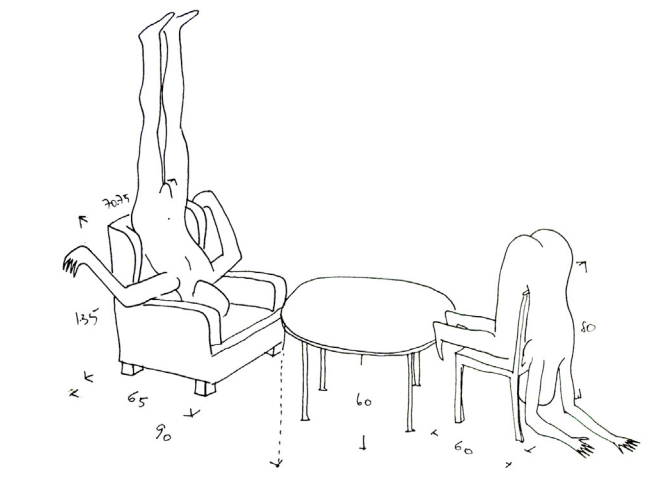
The understanding of the usage will be treated as a certain appropriation of the space, which allows it to transform into a place. What is important this appropriation will include all of the activities – formal and informal, planned and unplanned.

STANDARD USER

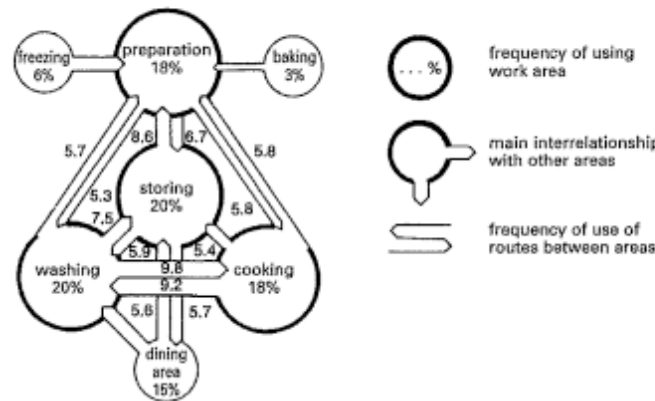
In the past century, the persona of a 'standard user' was predominantly based on societal roles, influenced by standardisation and mass production – for example, the standard user of a kitchen was a woman, staying at home and taking care of the household. The understanding of the 'standard user' as a twentieth-century phenomenon should be reconsidered. Previously known, mostly specified, societal roles have evolved, making it much harder to define who the 'standard user' is these days. The user will be treated in their pure understanding as a person who is using space or a building. The role within the society should be omitted, if possible. The understanding of 'standard user' extends not only to the societal role, but certain generalisation of the population. The typical measurements, for example, used for the mass production were based on the ergonomics of a very particular image of a person, influencing the industry until today.



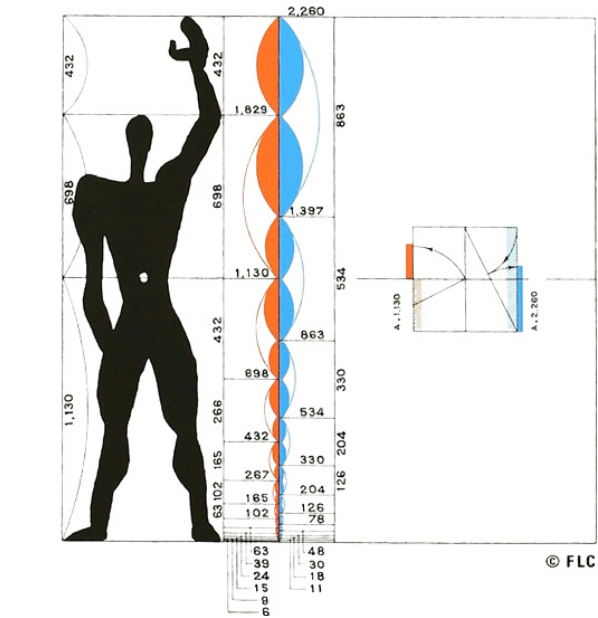
Neufert standard measurements for sitting areas (Meister, 2022)



Disturbing Neufert - 'extreme' example of the different use of space (Meister, 2022)



Arrangement of working space in the kitchen (Neufert, 1970)

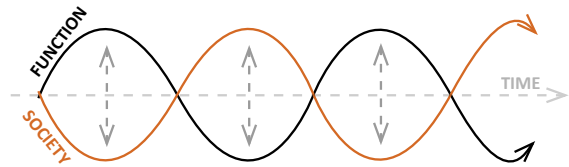


Modulor - standard user? (Le Corbusier, 1943)

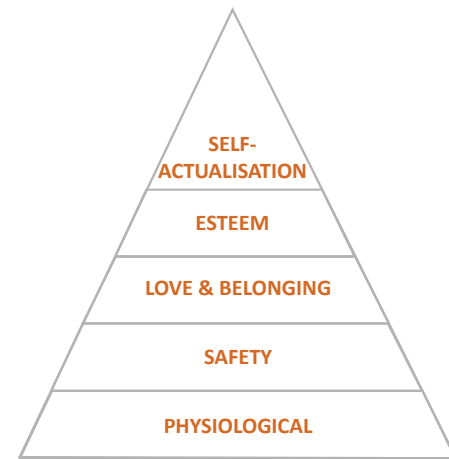
THEORETICAL FRAMEWORK

The theoretical framework used in the research focuses on understanding both the original and current conditions of the buildings in the case study, as well as their users, in order to observe alterations. The relationship between sociological changes and spatial representations will be examined through several theories and concepts.

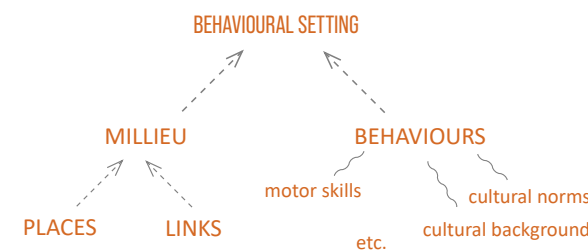
First of all, as these changes are observed over a period of 100 years, the aspect of temporality plays a crucial role in this case. Changes are usually caused by certain struggles that people undergo, such as the living conditions at the beginning of the 20th century. The critical circumstances, lack of hygiene, and spreading diseases forced the population to consider alternatives to the ways of living back then. However, the influence of rising standardisation and mass production led to movements like 'functionalism'. These new ways of living significantly impacted the population and seem to still affect the way we are living even today. The interaction between the built environment and societal behaviours appears to be interchangeable and dependent on time.



As the research is not only based in the architectural context, but also incorporates theories from sociology. The first of these is related to perception. This notion is connected to the very core of functionalism, where architecture and spaces are designed to respond purely to the needs of users, minimising their form and function. The theory applied in this case is the hierarchy of needs by Maslow (1954), which orders human needs, prioritising some over others. In the domestic environment, most of these needs can be satisfied; however, each individual may assign different values or orders to their needs. Thus, this relativity in the perception of needs can create a more complex understanding of the issue of changing needs. The paradigmatic changes in society that occurred in the past century, including the integration of technology into almost all aspects of our lives, may also influence the new hierarchy of needs.



The last sociological theory used in the research is related to the relationship between space and user behaviour. Barker (1968), in the 'behaviour setting theory,' highlights that certain behaviours are typically associated with and expected in specific environments. As the milieu (the place) and behaviour create a particular behaviour setting, if one changes, the other will also be influenced. For example, behaviour could be influenced by cultural differences or age differences, or it may occur at the individual user level, making the concept of changing patterns of behaviour more complex.



This diversity of theoretical frameworks aims to help understand, in greater depth, the spatial changes that will be observed. These theories also assist in creating certain conditions under which alterations should be studied using various methods.

METHODOLOGY

The initial step in the research was the delimitation of the area and time frame of the functionalism. This was crucial in order to observe the changes in the understanding of the change in the use of spaces. The term 'functional' in various cultural backgrounds will have different meanings due to the values and traditions of the population. This aspect led to the choice of the case study now located in Wrocław, Poland.

The analysis of one particular example allows for comparison and observation of certain differences between the past and present environments. Since the research question relates not only to architecture but also to sociological changes, a variety of methods should be employed for this purpose. From a sociological standpoint, interviews and observations of users' behaviours will take place on site. A conversation with people living in one of the houses in the development chosen as a case study can help highlight the differences and necessary changes, enabling contemporary users to create spaces that are 'functioning' better for them than the original design. Maps, diagrams, and floor plans, in this case, serve as architectural tools aiming to represent some of those changes spatially. The analysis of the original drawings must also be conducted – the collection of floor plans, elevations, and photographs aids in understanding the original visions of architects in 1929. The drawings are also examined from a quantitative perspective, looking at floor plans in terms of square meters and the number of units on the scale of the development and city.

APPROACH

Architecture provides possibilities but also certain limitations in regard to human behaviours. Design, on a big and small scale, influences the way we live, and that influences how we behave as individuals or society. This, however, does not mean that those are not affecting architecture back. Our needs change how we perceive functional products or spaces, influencing what we design and how. In order to observe that various scales will be used in the research, based on a case study of WUWA (one of exemplary developments) in Wrocław.

The first scale used will be looking at the masterplan level and its relationship to the surrounding area and the Wrocław city. The 'modernist' architects very often tried to look at the functions of the city as a whole, combined from different elements, creating a 'harmonious' whole. The contemporary

Parallel to the site observations and analysis, the literature review is conducted. Since social changes represent a cross-disciplinary phenomenon, a variety of sources should be utilised. The primary focus is on literature related to architecture and the sociological understanding of functionalism and spatial usage. The sociological sources primarily concentrate on aspects of human nature related to the needs of users and perception. Sociological papers can help identify, understand, and elaborate on the phenomenon. Another important sociological tool is the interview, wherein the researcher, through conversation, seeks to understand changes in user behaviour, which can also be observed in the physical environment.

All of the above methods aim to represent and help deepen the understanding of the differences between spaces and users in the past and present. The research is also divided into two scales – the neighbourhood and unit, seeking to understand the relationship between the public and private spheres, as well as the thresholds between them. Some of the conclusions will then be used in the design process and hopefully also help to challenge certain principles used in the design of domestic spaces.

perspective, even if relationships are still a primary focus, and tries to look at the city from a different perspective. The other scale is the scale of the units themselves. The research aims to observe if the social changes, watched also on a city and masterplan level, have certain influence on the households (almost like "primary cell of the city") and to try to understand the adaptations that happened internally.

The research will use different scales to understand the possible alterations in the built environment and social changes. The relationship between those two will be explored and analysed on the example of WUWA development in Wrocław. The conclusions from observations will help to guide the design process.

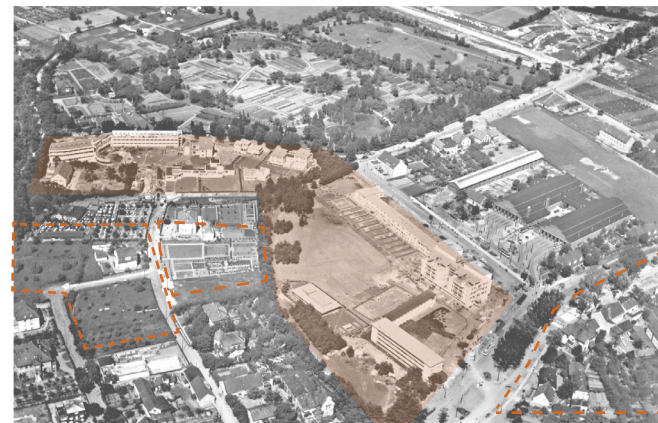
MASTERPLAN SCALE

MULTIPLICATION OF USES

Following modernist beliefs, architecture could change society. On an urban scale, the 20th-century architecture was based on the idea of separating functions (zones for working, living, etc.) and connecting them with mobility means (i.e. roads for cars) (Holzer, 2022).

The 21st-century vision of a lively city is slightly different. With the recent growth of the popularity of concepts, like for example “15-minute city” (Moreno, 2020), we can observe that the availability of multiplication of functions in closer proximity is more desired. More and more developments are designed with multiple functions in mind instead of one. The new urban architecture very rarely has a specific user in mind, accommodating a diversity of users and uses of spaces. Especially in urban areas, the variety of functions, as well as the diversity of users which is present, highlights the complexity of solutions that need to be used to respond to social issues.

The first aspect noticed while looking at the masterplan from 1929 is that this one is taken apart from the existing context of Wrocław city. The experiment was located close to the edge of the city, giving designers free plots. The area surrounded by houses with gardens made it impossible for designers to propose taller buildings (even if some of them were originally planned to be 10 storeys) (Dziwak, 2024). Urban planners in Breslau, like for example Max Berg, in that period were trying to design city following the principles of dividing it into zones, depending on their functions (Hala Stulecia, 2025). The neighbourhood seems to remain in a mostly residential area, however, a slight shift is starting to be observed.



Context of WUWA in 1929



Context of WUWA in 2024

As time passed, the context around WUWA changed. The line tram, previously going only to the tram stop behind WUWA, was extended as the city expanded. Additional tram and bus lines were introduced as the city increased its territory (Mironowicz, 2016).

Buildings on the other side of Wroblewskiego Street were demolished after the war and replaced with student accommodation, confirming the modernist views about the necessary increased volume of buildings in the area. As more people started living around the area, not many functions other than housing were introduced. The most recent shop was opened only a few years ago. The isolated neighbourhood now continues to be separated from the rest of the city by the Odra River in the south, Centennial Hall with recreational spaces in the west, Szczętnicki Park in the North and Aleja Wielkiej Wypsy - a newly constructed part of the bypass of the city in the East.

Currently, the most central part of the area is around the WUWA estate. Zieleniec (2018) in his paper highlights that the urban space is the primary place where social change occurs, as it is also very often subject to the control of local governments and planners. This might create a possibility for the creation of a unique character for the area and be a central point for more functions, making a vocal point of the neighbourhood by creating a certain environment to do so and introducing some changes even on the infrastructural level in order to enhance the feeling of neighbourhood.



PEDESTRIAN VS CAR

The 20th century was a period when technology, such as automobiles, began to be introduced into people's everyday lives. Initially a luxury, this elite invention gradually became more accessible, transforming urban mobility networks. During the communist era in Poland, cars were still viewed as luxury items up until almost end of the century. However, particularly in recent years, there has been a significant movement in cities, including Wrocław, towards prioritising public transport over cars.

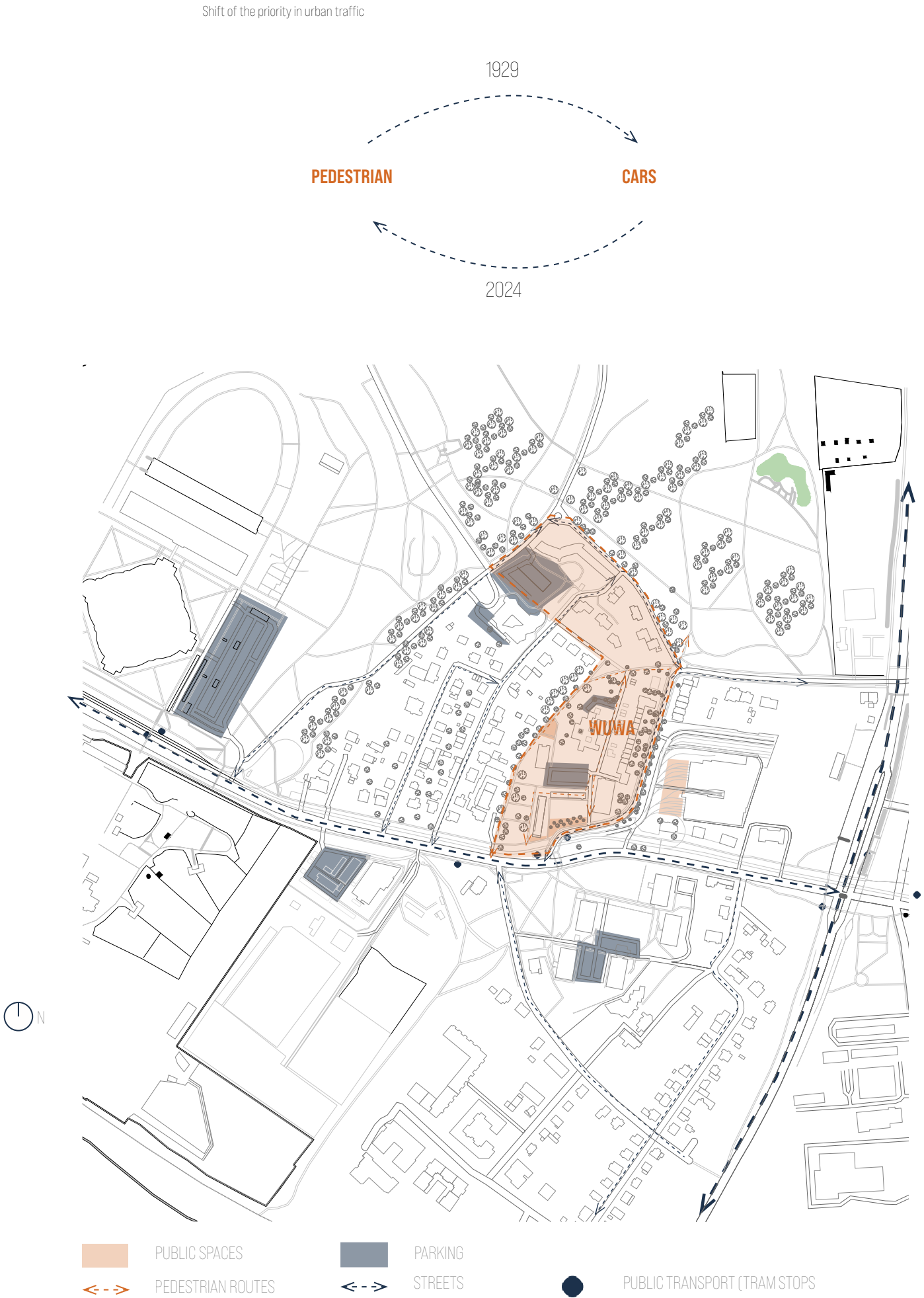
The local government increased the number of public transport connections. Those are very often extending even outside of the city boundary, as many people still commute daily. Multiple parking are provided on the borders of cities encouraging people to leave their cars outside of the city (Wrocław.pl, 2023). Especially in the city centre, more zones are becoming car-free zones, or parking is becoming more expensive. This allows more space for pedestrians and cyclists.



Weissenhofsiedlung 1927 - promoting use of cars in the new development

The masterplan from 1929, despite the division of plots, does not seem to accommodate public spaces as part of the design, even leaving the middle part empty. This highlights that the focus of architects was on the functions of houses. The design seems to be lacking the communal feel of the whole development.

The increased use of automobiles, which were one of the first signs of the commercialisation of life, was reflected in the initial design. Some of the houses were designed (already in 1929) to have a garage next to them. This was mostly for bigger villas in the north of the plot. However, as time passed, even owners of smaller units (designed in Existenzminimum) started to add garages in the back of the garden, as the use of cars became more common. This was the initial step on the road, and parking spaces were disturbing the mostly pedestrian use of the site. Currently, a big portion of the plot, behind the houses, is in use by either roads or parking places (for tenants or a kindergarten). This reduces the possibility of creating a community within the zone, not to mention the area that could be used as green space.

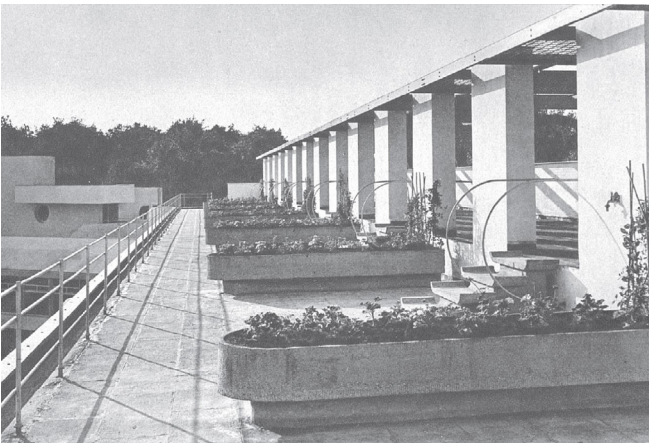


QUALITY OF SPACES

The other aspect of the masterplan is the public space. According to Lefebvre, space is neutral. Social space is a result of the interactions between people and places. Each of the societies (depending on place or time) will create its own spaces (Zieleniec, 2018). Space is created for social reproduction and economic gains – it allows new actions to take place, which then reflect in the social changes.

On the scale of particular developments, currently, the importance is put on the quality of public, private and semi-public spaces. This trend was also more highlighted thanks to the recent pandemic. The proximity of green spaces in the public areas, as well as quality private amenities, were desirable features and continue to be among residents of urban areas (Holzer, 2022).

The communal spaces, on the smaller scale, in the original designs were placed only in the scale of the multistorey buildings (House no. 7 and 31). The roof terrace in House No. 7 was enclosed after the World War, trying to accommodate more units inside the block. The glass-facade commercial space on the ground floor was built up with concrete and started functioning as a storage space. The frontage facing the street is completely blocked now, reducing any interaction with the street.



Common space in one of the houses in WUWA - highlighted on the map (House 31)

Another issue not fully addressed in the masterplan is waste management for the estate's current tenants. Each of the houses on the plot has a separate group of bins, now due to recycling the approach to the site, especially from Tramwajowa Street, is not as attractive and additionally disturbs the public space (Kolat, 2024). This aspect has not been mentioned in either the master plan or the archival material about the WUWA estate. This can highlight the practicality of the contemporary users and the need of designs to respond to the 'unwanted' everyday tasks with more thought.

Those aspects currently appear to be the most contrasting to the architectural design. Social spaces within projects often define the success of the built environment around them. Single-use spaces are becoming increasingly obsolete, as we tend to prefer multifunctional places and designs.

After the recently conducted renovation of some of the buildings and public spaces in WUWA it can still be observed that those are remaining empty for most of the time. For example, the public space just behind the bus stop could be used more efficiently and could encourage people to use this space, for example, while waiting for a tram. The series of trees planted in the square with concrete benches and concrete pavement does not appeal to users.



Quality of public space in WUWA now



To understand the origin of exemplary development, it is crucial to look at the approach of modernist architects. Despite the multiple divisions which literature offers (like for example Rationalist and Empiricist) (Lang and Moleski, 2010), the common characteristic is the belief that architecture can help to shape a future 'ideal' society. In order to initiate the change of this society, certain assumptions had to be made by designers. Especially in the case of so-called functionalist architecture, spaces are usually defined by the basic needs that humans fulfil while using domestic spaces. The problem did not lie in the definition of those needs, but in the oversimplification of them (Lang and Moleski, 2010).

According to the theory of behaviour setting by Barker a certain pattern of behaviour is expected to appear within certain environments (or milieu). Those are usually at least partially predefined by cultural norms and individual backgrounds (Barker, 1968). However, our behaviours change as well, for example, with age – the use of the space, even if the function remains, will be different for a 20-year-old and a 80-year-old. As behaviours change, certain transformations in our environment occur as well.

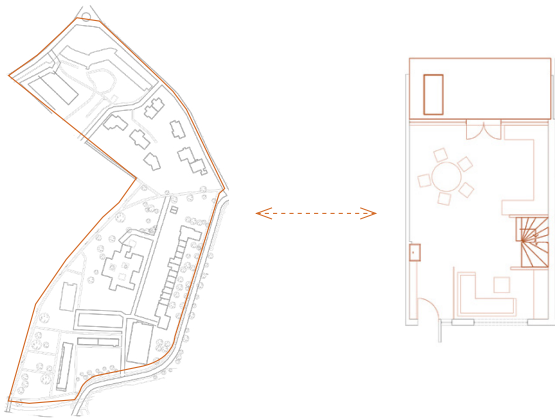
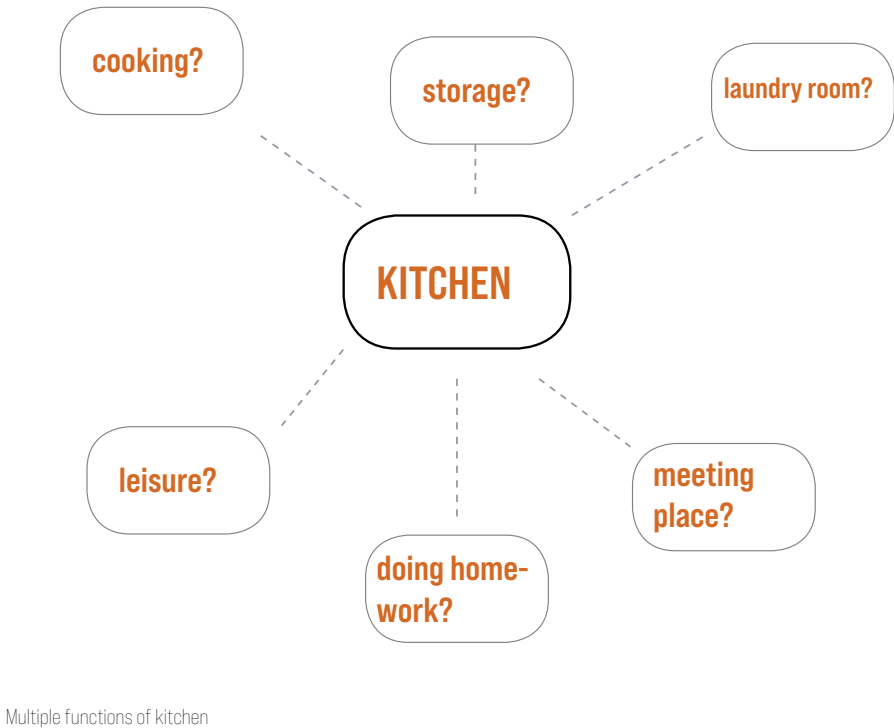
Changes in the functions of the domestic environment are connected to changes happening in our behaviours. The biggest modification that happened since 1929 was the introduction of technology. Using Maslow's hierarchy of needs, the changes in our behaviour can be observed.

The most basic, according to Maslow's theory, are physiological needs. This includes access to water, light, appropriate temperature and sleep. The use of technology partially influenced the latest one. Computers are used now in a big part of jobs and especially after the pandemic in 2020, working from home is practised by quite a big part of the population, especially in cities.. Additionally, contemporary homes do not have designated spaces for work, those activities are usually performed in bedrooms, continuously disturbing sleep hygiene and separation between work and rest (Copley, 2024).

Technology also has an influence on the 'Love and Belonging' as well as 'Esteem' levels. The use of social media, which is also used by the elderly, has an impact on the esteem and the loneliness of some people. As more and more people decide to live alone and work from home, sometimes the closest neighbourhood is the only place where they can meet other people. Following the Zajonc theory of "Mere Exposure" people start to change their neutral position to positive towards an object after multiple exposures to the object, even if we are not fully aware of this exposure. This can mean that the more often a resident sees neighbours, the more positive their attitude towards them (Izdebska, 2021). Spaces which accommodate those accidental meetings closest to the 'home' will be significant in order to achieve quality relationships. This should, however, be balanced with an appropriate understanding of the need for privacy for users.

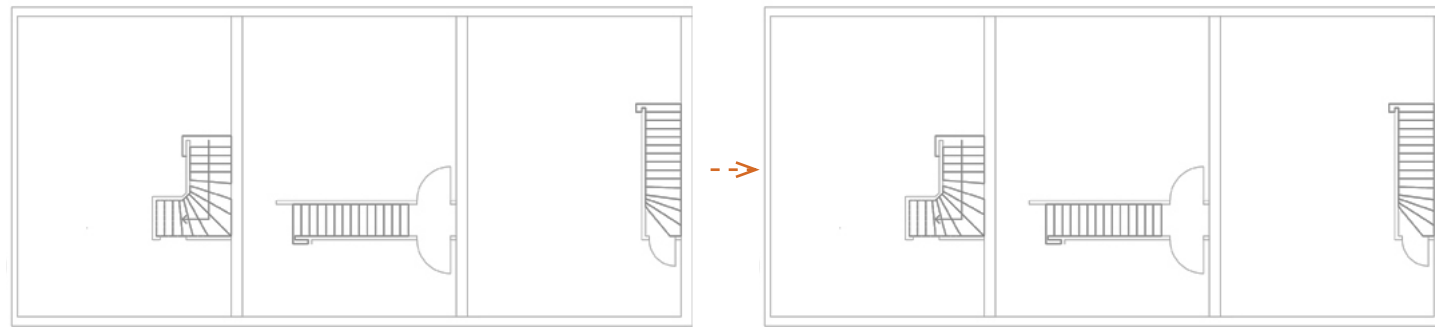
The comparison of floor plans of one of the buildings in the development will help analyse changes in the understanding of the 'standard users' of space as well as the evolution of the basic needs of contemporary users.

The term 'standard user' in the context of the twentieth century is limited. Users of designs, even in WUWA development, were predominant. This included not only the typology of users (i.e. family with a servant (house no.21) or couples without children (House no.31), but could even cover the role of its user within the society (i.e. House for a doctor (House no.36). Those objectives describing the users of spaces are limiting in their origin in the context of standardisation which was so desired back in the day.



The interview was conducted with one of the families living in the WUWA currently (Kolatz, 2024). The house was chosen due to the availability of viewing the property inside, but also due to the recent renovation that happened in 2022, after the property (close to the original state) was bought by its current owners and adjusted to the new functions. Due to the monument status of the development and all existing buildings, external changes to buildings are limited and controlled by the conservation officer. For the purpose of the research, most of the exterior changes will be omitted, and the focus will lie on the internal layouts of the building.

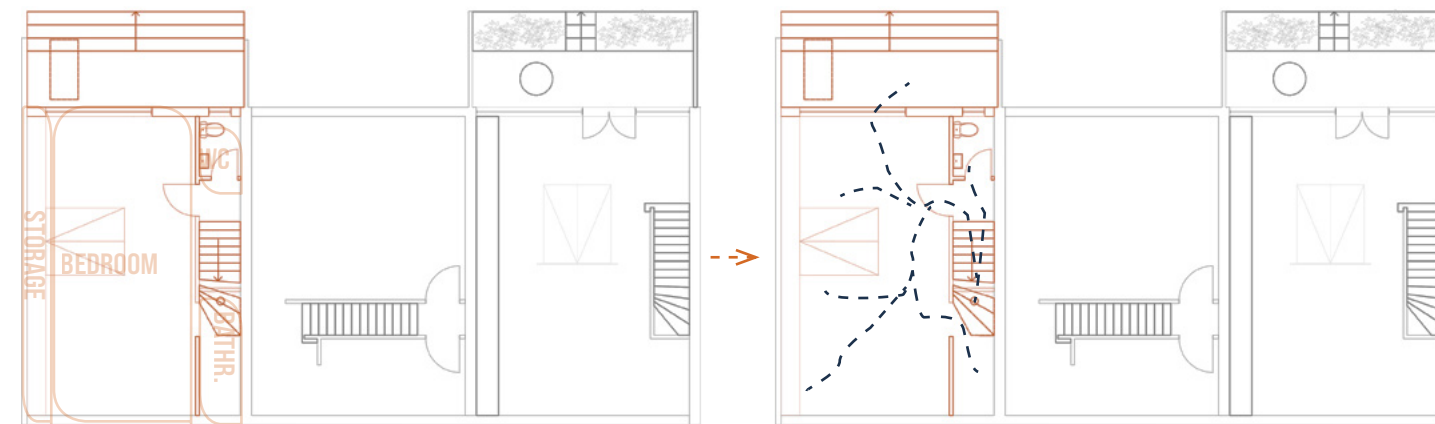
PAST



Basement - floorplan in 1929



PRESENT



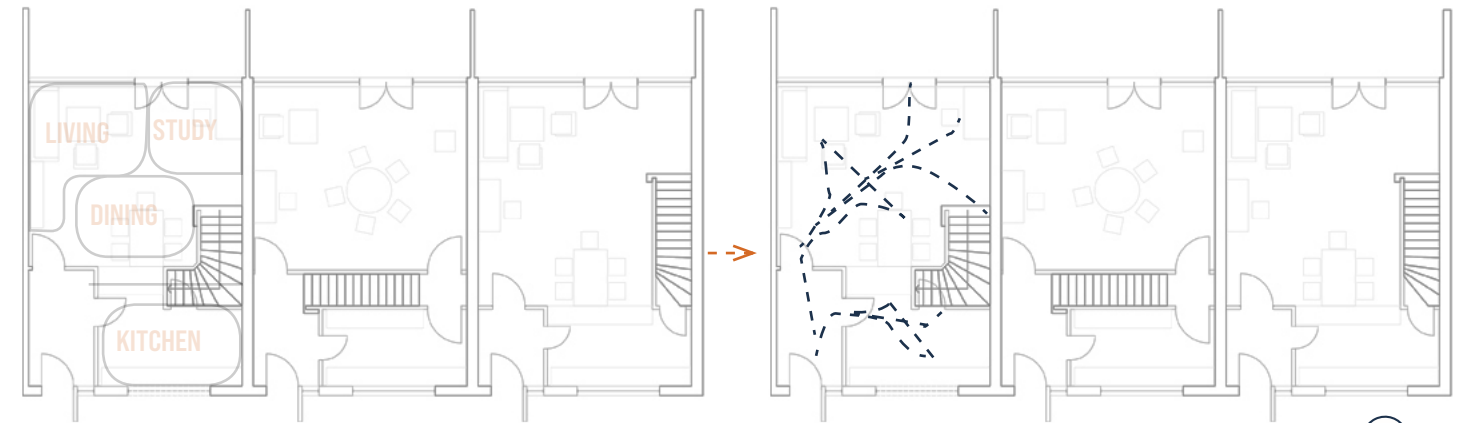
Basement - floorplan in 2024 with diagram of movement around the space

--- Movement of people

Changes to the internal layout happened on all of the floors. The basement was previously used only as a storage room for materials for heating and unused pieces of furniture. The function of the basement was completely transformed. The room transitioned into the master bedroom and also accommodates the storage and a private en-suite bathroom. The bathroom in this case is also doubling as a laundry room. The shower space is very often used for drying clothes. The design from 1929 had only one bathroom on the first floor of the house. The guest WC, also in the basement, is separated from the master bedroom with an additional door, separating the private space of the bedroom from the space accessible to guests.

A lot of contemporary developments (especially in the private sector) are also accommodating separate en-suite bathrooms next to master bedrooms. This highlights the need of current users for privacy even within the space that is home. Based on the original floor plan, we can observe that levels of privacy changed - parents in the family want to have even more privacy in regards to their children than they used to have in the past.

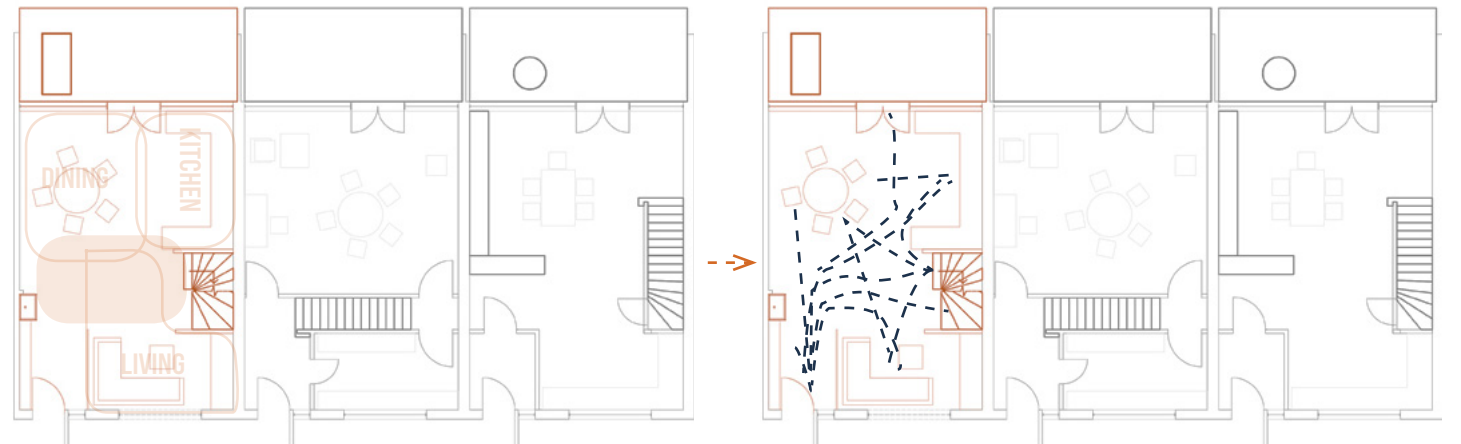
PAST



Ground floor - floorplan in 1929 with diagram of movement around the space



PRESENT



Ground floor - floorplan in 2024 with diagram of movement around the space

--- Movement of people

The big changes also happened on the ground floor of the building. The original version of the house accommodated the entrance to the house (separated from other spaces) and immediate access to the kitchen. That one was only connected to the living space with a service window to pass the meals. Spaces in the back of the house were destined for living, dining and study. The cooking function was strongly separated from other tasks that the home was fulfilling at that time. The new adjustment opened up all of the spaces and allowed for greater flexibility internally. The kitchen, being an important element for the homeowners, was moved to the back of the house and connected more to the dining zone.

The living room zone is now also part of an open space. The zones are all blending, and the clear separation between different functions is starting to vanish. The space, compared to the original design, is more flexible and potentially can serve also other purposes than previously more defined zones.

Flexibility also comes with the middle zone being used for different purposes, depending on the requirements at particular times. The central zone, for example, during family gatherings, can be extended into a bigger dining room or a bigger living room during a birthday party. Getting rid of the walls in the middle of the original plan allowed us to get rid of the dead corner and use it for living instead. The middle zone is also used as a circulation point, creating multiple functions of the spaces. The house also has big openings in the back, as returned to the original form of the house. Windows, however, are not covered with the curtains. It seems also that the approach of contemporary users to privacy changed here. Being exposed in communal spaces within the house seems less of an issue than it was in Poland, even a decade ago, when it was typical to use curtains to protect the interior of houses.

PAST



First floor - floorplan in 1929

PRESENT



First floor - floorplan in 2024 with diagram of movement around the space

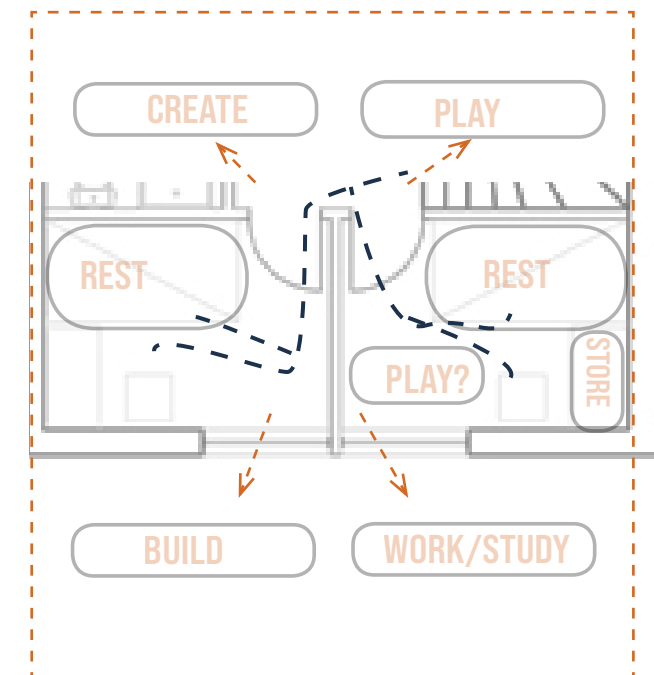
The upper floor is used by the children of the owners. Bedrooms in the west of the house were originally destined for parents, his and hers. Separate bedrooms at the beginning of the 20th century could have been used by couples who for example, had servants, and it was perceived as inappropriate for a male servant to see a female not dressed appropriately. What is interesting in this case is that the other two houses in the development, designed by the same architect (visible in the diagrams as well) have been designed with the master bedroom being a common room for 'parents' in the family.

The bathroom in the middle of the floor plan is used by all of the members of the family. The changes in the purposes of bedrooms are not the only ones happening on this level. While zooming in on particular bedrooms, it can be observed that the primary function of the bedroom (rest) remained the same, however, more functions were added to the space (work, study, storage, etc).

This highlights the need for bedrooms to accommodate multiple functions, due to the new activities that need to be accommodated within homes. This use of the private space for different purposes can lead to greater isolation, as more activities can be performed within the same space, reducing the need for communication with other members of the household.

Except the bedroom on the south east the area of the bedrooms remained the same, however, more functions were added to the space (work, play, more storage). This touches upon the changing of functions inside bedrooms due to the new activities that are needed to accommodate inside homes. The primary function of the bedroom thus remains the resting, however, here could be also observed the increased necessity for the storage, due to the amount of toys and accessories the children are having.

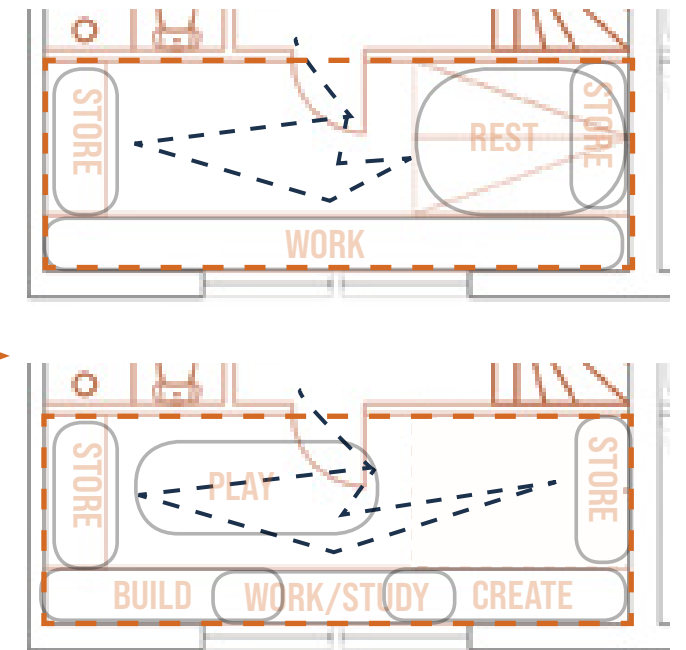
PAST



Bedrooms in the south east - floorplan in 1929

- Boundaries or their lack of functions
- Functions outside of bedroom or even household
- Movement of people

PRESENT



Bedroom in the south east - floorplan in 2024 with diagram the space

The bedroom on the south east underwent the biggest renovation and is used by the oldest son of the owners. The original two rooms were transformed into a one bigger bedroom with multiple elements giving flexibility and trying to maximise the usage of space. First of all, the bed hidden in the wardrobe in the wall allows to gain maximum space in the room when folded. As the user is a student, the space for working and studying was also necessary, however, the owners decided to extend the work bench across the whole length of the room, so that it can be used also for the other activities (hobbies related also to DIY). Underneath the work-bench the space allows to maximise the storage. The room thus, accommodates multiple functions (sometimes not related to the original idea of resting). The bedrooms thus, especially designed for the younger users are treated by them as their personal space where they can express themselves and explore their hobbies. Especially in smaller apartments in cities, which don't have access to workshops or other facilities the pursue of personal interests may be reduced.

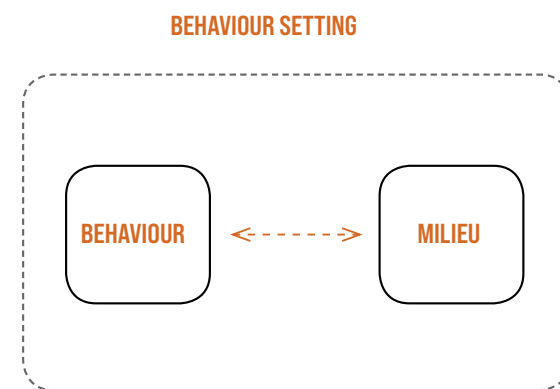
As our needs changed with time the desire for the standardisation got questioned. It seems that repetitive or standardised designed now allows to make products and homes more affordable and to a certain extent efficient, however, the personalisation of items and homes is more valuable. It seems that the value of houses lies then in their flexibility and adaptability to the users' needs, providing certain provisions for the most basic functions, keeping in mind those might be altered or exchanged in the future. Possible sustainability then will be achieved, when spaces can be adjusted and flexible enough to accommodate more or changed functions.

TYPOLGY OF HOME

Understanding of functional spaces has changed – the singular-use spaces are now becoming less and less exploited, giving priority to multipurpose spaces. This can be observed on a variety of scales. This flexible approach helps to accommodate a variety of behaviours in spaces and what comes with that expands the understanding of a user, from XXth century ‘standard user’ to the XXIst century – ‘diversified user’.

The perception of home has evolved within the past century. The number of functions that we expect a home to fulfil has increased, and satisfying the physiological needs at home is not enough. The functional home now has more open and flexible spaces than it had in the past. Each of the members of the household is creating their own environment within certain boundaries of their private spaces (very often connected to a bedroom, for example). Common spaces, on the scale of the home as well as the development or even neighbourhood, are allowing for real-life human interactions which are now becoming more and more rare due to changing lifestyles.

The sociological theory of “Behaviour setting” (Barker, 1968) was used in order to understand a bit more about the change in the case study analysed. We can see it as a change in one of the aspects (in this case behaviour) and as this element changes, the whole behavioural setting is influenced. This means that there is also a certain effect on the other element of it – being a milieu (or the environment). The environment (in this case architecture) is constantly influenced by our behaviours and the other way around. This can, for example, be seen in the change of kitchen being more open to the rest of the house. Kitchen now, in comparison to the previous design gained a certain social aspect and includes more of the person who is cooking within the social life of the house.



This can also be reflected in architectural terms. Christopher Lee (2011) in his article highlights the understanding of the difference between concepts of “type” and “typicality”. Type is characterising a certain common form, for example, for a given room or element. He uses the bedroom as an example of a type of room where there is usually a bed and a nightstand. Typicality is a certain interpretation that users have of a given space – in this case, sleep, sex, or illness (Lee, 2018). Lee understands typicalities as a collection of typical elements and situations that create certain frameworks of actions. The concept of behaviour setting and typicality is thus complementary and helps to understand that the changes of actions within given spaces are reflected in the environment (or typical elements) used in those.

The slight difference is the concept of typology or the classification of buildings according to their similarities, not only in form but also focusing on the functional. Vidler (1999) in his paper looks at the typologies of the production of architecture in the past. The first was a rationalist from a period of the Enlightenment, inspired by nature and a primitive hut. The second typology is Corbusier’s modernist one, with its origin in the mass production process, creating not types, but certain models of architecture. The third typology he suggests is the city, also suggested by Aldo Rossi. Vidler is highlighting the continuity of the city in history and form. It seems that the third typology is accepting the inevitable change of the cities, and the engagement of its citizens is crucial.

Home, especially fitting in the urban structure, is part of the bigger system-like neighbourhood. It seems that the quality of the home is not only the interior but also the exterior. Due to the good public transport connections, the use of cars is less and less promoted, giving space to the pedestrian use of the street and public spaces. The quality of those is also influenced by the opportunities it gives to connect to others. Following the theory of mere exposure by Zajonc (1965), the increased exposure of an individual towards the stimulus, an enhanced attitude toward it. This can, for example, be translated into human interactions – the more the person is seen, the more positive the attitude towards this person. This could be another reason for the creation of more accidental meeting places in the design and more public spaces for people to gather and spend time in. This can positively influence the number and quality of relationships in the given areas, blocks or neighbourhoods.

Seems that architecture and urban design have become, even more than before, a social tool. Those changes can be positive or negative, thus, the role of designers is an important role within society and understanding the complexity of the needs of contemporary users is an important task to design spaces of the desired quality on a variety of scales. We should keep in mind that the needs will also evolve in the future, and accommodating or giving the possibility of those changes will be part of the effective design.

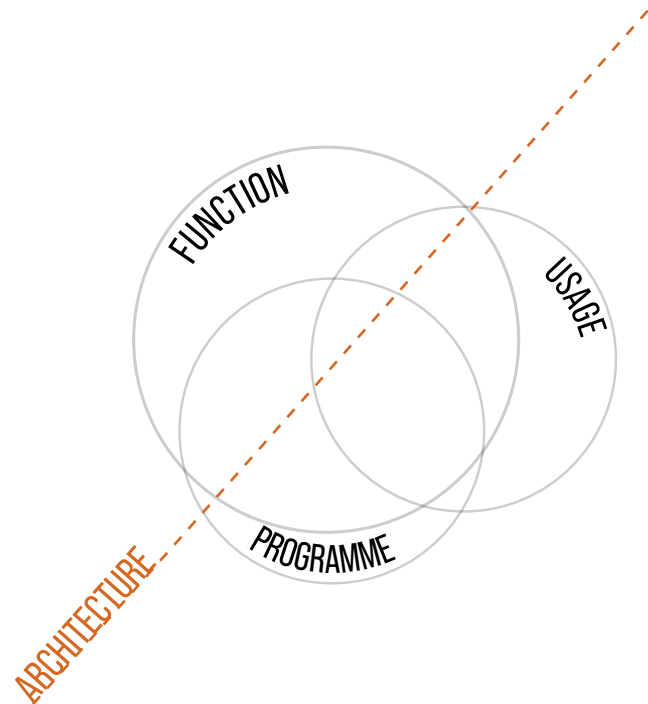
The application of those general theories on the particular case study of WUWA helps to understand certain patterns and describe a bit more the alterations happening. Maybe the comparison could be created in order to understand that kind of changes happening also in different locations, influencing the spatial aspect even more, but also on a different scale. The research is also linked to the temporal dimension, where certain relationships between the past, present, future and their respective temporalities, as well as their connection to space, create a particular situation. In this way, the extra dimension is added to the understanding of it. The particular use of space by a particular user is thus influenced by the series of events from the past, and can have a variety of options for usage in the future for different users. This is also related to the temporality theory, where spatial representation acts upon the functionalism of spaces and the other way around. The time and space and thus connected and keep on influencing each other.

FUNCTION, PROGRAMME AND USAGE

In order to discover the new paradigms which can be helping to shape architecture nowadays and in the future, it will be important to try to understand the relationship between the programme, function and usage.

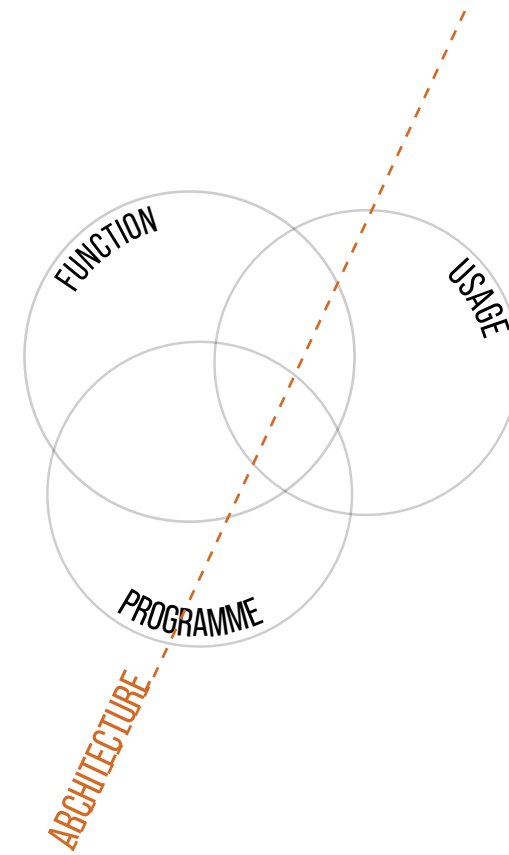
The relationship of those in the past century was slightly different from what it is contemporary, and probably will also be different when looking at the matter in different time frames, but also by different architects and cultural backgrounds.

Diagrams represent a personal interpretation of the matter.



Relationship in 20th century

The text by Hertzberg highlights that architects of (so-called) functionalism, especially on the urban scale, were trying to segregate the functions in order to achieve maximum efficiency (Hertzberger, 1991). The functionalism, in which all of the functions were supposed to respond to the given programme in the vision of architects, was supposed to create maximum efficiency in the use of those. However, it often led to the quite opposite effect, where architecture created for a singular purpose is limiting and results in inefficiency in other aspects. The 20th-century approach of architects is, however, very strongly rooted in the process of standardisation. In the context of the architecture standardisation of the users can be looked at, resulting in the generalisation of the users and creating a uniform society. In this context, architecture becomes almost political, where people being part of the bigger system, being uniform and almost lacking personality, are more easily 'manipulated'. This is interesting, while looking at it from the perspective of architects trying to shape the new society. Hertzberger also uses the word 'flexibility', which was also started to be used in the 20th century – this is, for example, used with the introduction of the 'free plan'. The concept of standardisation and flexibility for him is very strongly connected, as the spaces which are flexible are good for everybody; thus, at the same time, they are never perfect for anybody. This is not to suggest that architects become politicians in that period, however, certain reflections of the socio-political aspects can be thus reflected in the designs. In the 20th century programme was almost completely overlapping with the function of the building/space, as the form and the function of the spaces were supposed to be purely dependent on the envisioned or programmed activities within the spaces. The precise usage or the appropriation of the spaces, even though it was often tried to be fully predicted by the architects, is never possible. In the context of housing, the certain very archetypical way of using spaces is used, however, there are still some variations in how people use the spaces. For example, in the context of the case study, the architects envisioned the bedroom for children to include a sleeping space and, small wardrobe; however, as it can be suspected, the space was also used for play, which did not seem to be included in the programme of the room. The proximity or the relationship between all three aspects of the architecture – programme, function and usage is in this case close to each other, however, certain room for a personal interpretation of the space remained, as it is never fully possible to fully predict human behaviour.



Relationship in 21st century

This relationship seems to change in the context of contemporary architecture. The function of the spaces has not changed drastically, which has to do with the standards created in the 20th century, which, until this day, have a powerful influence on our understanding of the necessary functions of the home. This uniformity of usage of homes is passed down in multiple generations, making it almost impossible to break free. However, the appropriation of space or usage seems to play a bigger role these days. Very often, the visions of architects, even if they are still playing an important role, are slightly shifting. This shift these days still seems to be quite delicate; however, it might become stronger and stronger with time. The function and programme in this case signify, to a certain extent, this power, while the usage represents the user aspect of architecture. Based on this, the power of shaping architecture seems to be gradually shifting away from the architects and designers towards the end users (this could be, for example, observed by the multiple projects with public consultations and end users' involvement. Should architecture and architects relinquish some power, or should we strive to understand the end user better in order to somewhat control the appropriation of space?

In the context of the architecture these days, it seems that the flexibility, which previously could be almost understood as designing for 'nobody', should start to be perceived as a possibility of architecture to adapt to the individual users and instead of segregating functions should try to integrate them. The problem encountered here is following the rules and standards established in the previous century, in order to create this architecture of integration. The flexibility also in the case of the further design process is very strongly connected to the certain temporality of changes in the society and also the diversity of users, which can be even more observed in the 21st century than it was 100 years ago. For architects, then is very hard to create a solution to the problems, as the problems we are facing are in constant flux. Maybe the contemporary design should not only create conditions allowing this variety of usage, responding to the changing problem, but also encourage the variety of uses. The architecture then should be able to accommodate the diversity, which can help to shape a new paradigm of living. but also be able to accommodate the changes with time.

FURTHER RESEARCH

The research could be continued, and other aspects could be explored as well. This could, for example, be investigated on a larger number of houses in the development. But also it could be explored at an even bigger scale, meaning the inclusion of other exemplary developments from the modernist in XXth century, like Baba in Prague. This was also an example of other developments built, not that far from Wrocław and maybe could be treated as another case study in the comparison, keeping in mind that the ownership of the houses is playing an important role in this case.

The society also changed due to the enormous commercialisation. The modernist architects and the imagined way of living by them probably did not envision the number of products that an everyday person would have in their houses. The images of the interiors designed by them are usually minimalistic, following the principles of Existensminimum. This aspect could also be explored in further research.

Further research could also explore in more detail the qualities of public spaces in 'Functionalism' architecture. As the functionalism movement was an international phenomenon, some representatives likely focused more on this aspect. This would also be important for the research outcomes, highlighting that communal spaces are becoming increasingly significant at both the neighborhood and individual levels. The relationship between public and private spaces could be further examined, particularly concerning the thresholds separating these different spheres. Perhaps the understanding of these thresholds has also evolved and could be explored across various cultural backgrounds, contributing to a broader perspective on the issue.

LIMITATIONS

The conducted research has certain limitations. The first aspect is the use of Maslow's hierarchy of needs as the basis of the research. The given order can be chosen only in a particular (so-called Western) context, as the hierarchy of the mentioned needs may depend on the cultural background. The perception of the given hierarchy can also be dependent on personal preference; however, for research purposes, the original hierarchy was used. If the research were conducted in a different cultural context, the order used would have to be adjusted.

The next limitation lies in the complexity of the social phenomenon. The changes occurring can be either spread in time or strongly related to the cultural context of a given community. A lot of the changes, especially in this particular context, would not be possible as none of the observations of users were done just after the exhibition in 1929. The full picture of changes in users of spaces is thus obscured, not giving a full comprehension of the changes.

Interviews conducted as part of the research are another constraint for obtaining full results. As homes are usually perceived as safe spaces for their owners, not all of the activities may be presented by the people giving tours of homes. A similar note can be made about the interviews conducted. The homeowners in this case may manipulate even more the passed messages. Those aspects limit the possibility of observing the true uses of spaces (to a certain limit). The researcher may input certain assumptions based on their own experiences, influencing the final results of the study.

RELEVANCE

The research aims to understand the changing needs of users of architecture in order to create a more responsive design within the housing typology. Social changes are a constant process. They happened in the past and will happen in the future. Maybe the understanding of our roles as architects has to be partially reconsidered as well, as parties are not only responsible for buildings but also actively shaping new neighbourhoods and societies.

The research aimed to get a new understanding of functionalism in the XXIst century. It will not be the last one, and should be treated as a contemporary interpretation of the matter. If the given rendering of understanding of functionalism is not the last one- how to approach those changes?

The question posed in the further process will also be the approach to the monuments in architecture. Does the status of a monument decide about the building being almost 'untouchable' even if not only is not fulfilling the original function or has no function at all. How sustainable is this approach, and can we afford this in bigger cities, which are sometimes starting to run out of spaces for construction?

INTO DESIGN

The further step, the design, will attempt to create a contemporary version of the development of the plot of WUWA from 1929. An initial examination of the existing structures, as well as an analysis of the context, can help to create a new, contemporary version of development houses, trying to create the environment of living for a current and possibly future society.

The social changes that could be observed through the research should be considered going further into the design. On a bigger scale, the design should be focused on the reduction of car usage on the site and promoting pedestrian movement. The space gained should be used more for the public spaces. They should be providing a possibility for planned and unplanned meetups between residents in order to create a more friendly and open environment for living. The threshold between the public, semi-public and private spaces should be considered as they will help to define a bit more the quality of spaces. The variety of degrees of privacy can help to address the higher needs of Maslow's hierarchy. The flexibility of spaces should be considered on the scale of units as well as on the scale of the neighbourhood. This includes the multipurpose use of spaces, but also the adaptability of units to different users. A successful neighbourhood will attract all generations and the changing needs of contemporary families, whatever the structure. This kind of flexibility will be perceived as long-term and can allow for a more sustainable approach.

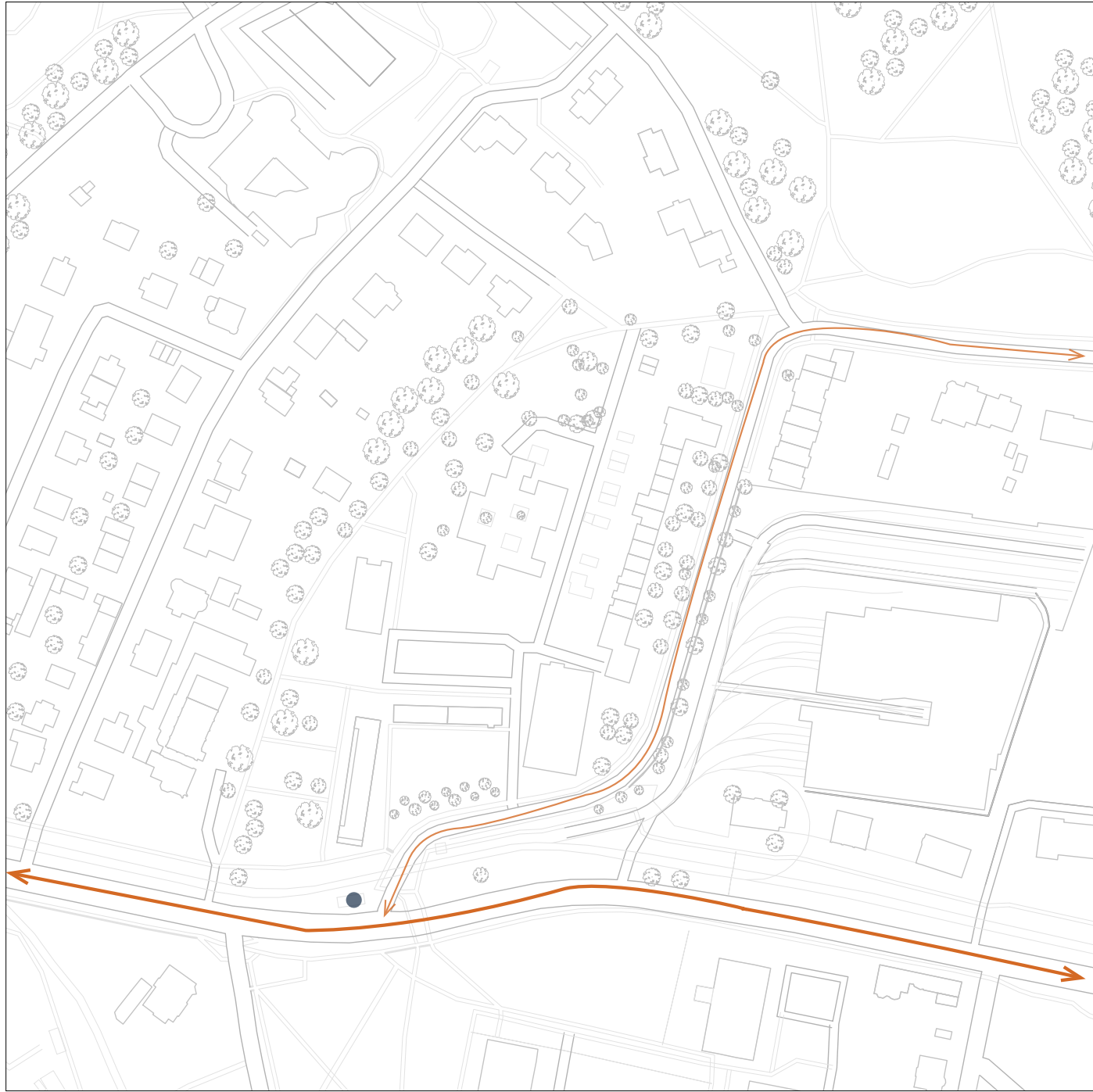
The research helped to inform the design process, and the other way around and what is important these two continue to inform each other. The most noticeable difference between the contemporary version and the XXth century one will be focused on social spaces and to somehow give them priority in the new design. I think the understanding of community and privacy is somehow changing, and the population of Wrocław is becoming more inclusive, open, and social, but also understanding of the importance of relationships, especially on a more local scale. It does not mean, however, that the feeling of privacy is not valued. The project is trying to explore what the boundaries are for the users and how the thresholds between the spaces are treated in order to encourage or discourage people from using those spaces. In the era of technology taking over, houses need to accommodate more functions than before, especially in the context of the pandemic in 2020, where the homes were very often the only spaces we were spending most of the time in, and social connections were missing. The design part also helped me to understand that the surroundings of the home these days can become as important an element as the home itself. This is different from the approach of architects in XXth century, where the spaces in between were usually a grass field, paradoxically without function.

I think the research, especially from the architectural perspective, helped me to observe those changes, or sometimes lack thereof, in the built environment. As the physical object is easier to examine, I think the more problematic part might have been the understanding of the behaviour of the users in more depth. Some of the functions are easy to recognise through furniture or objects; however, especially when visiting somebody's home, some elements might be hidden or not shown by the owners. I think the biggest limitation of the research was the tools from the sociological side and their dependency on the other side, or the 'subject' of the analysis. However, I think even only the observation of the changes introduced in the layouts, for example, is already providing quite a lot of information about what the 'more contemporary way of living' is. I think this is also part of the cross-disciplinary research, unless done in teams (being multidisciplinary then) is hard to control fully the results or the observations, and those might be slightly biased.

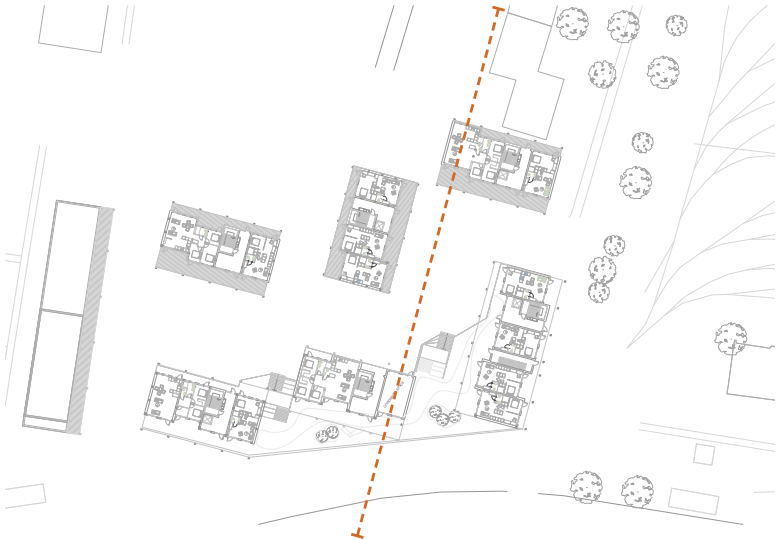
The theme of the project is supposed to ask questions also about the minimum requirements of the spaces, quite often given by the governments. We have to ask also about the current approach to the creation of living spaces, from the perspective of cost-effective developers. The efficiency should be taken into consideration when it comes to the materials used but maybe there is a way to provide a bit bigger spaces which would accommodate the changes of the society also on the smaller scale – of the house or maybe this is just one side of the design and the importance lies also in the relationship between the units on the scale of the neighbourhood. This is reflected then on the value of architecture as a social tool, which is often used by architects and planners, consciously and unconsciously, to decide about the way people live and interact with each other. If we, as a society, are changing, should we also adjust the way we live or are those ways somehow unchangeable?

The approach of the 'Functionalism rendering' project is probably just one of the multiple possible alternatives and is probably not the final answer as well, as the changes in society will continue to happen in the future. This has to do with the factor of perception and individuality of each of the designers, but also the user. However, maybe as architects and designers, we can create an architecture and cities which in the future will be able to accommodate those changes without the need for demolition or oblivion, but reuse and repurposing of buildings. This would allow us to create a more responsible and sustainable approach.

While looking at the project, I realised that the aspect of efficiency has also had a big impact on me, even in the beginning of my 'career'. This also highlights the influence and use of the concept of 'efficiency' in contemporary design, rooted back in 20th-century architecture I have analysed. The questions that were coming up while doing the research and design are: what would be the alternative if history had taken a different route, or was the change towards efficiency inevitable? If the function of the home has been adjusted to a certain extent in the past century, in which direction will it go in the future? And most importantly, looking from the perspective of 20th-century functionalism, where function was the primary thought of the designers, should designers try to find the right balance between the function and the usage of the architecture? Where function is planned by architects, and the usage becomes the appropriation of the space by the present and future users? How to create spaces adaptable to the future functions and changing social norms without jeopardising their current functions?



SECTION WITH BIGGER CONTEXT





GROUND FLOOR





FIRST FLOOR



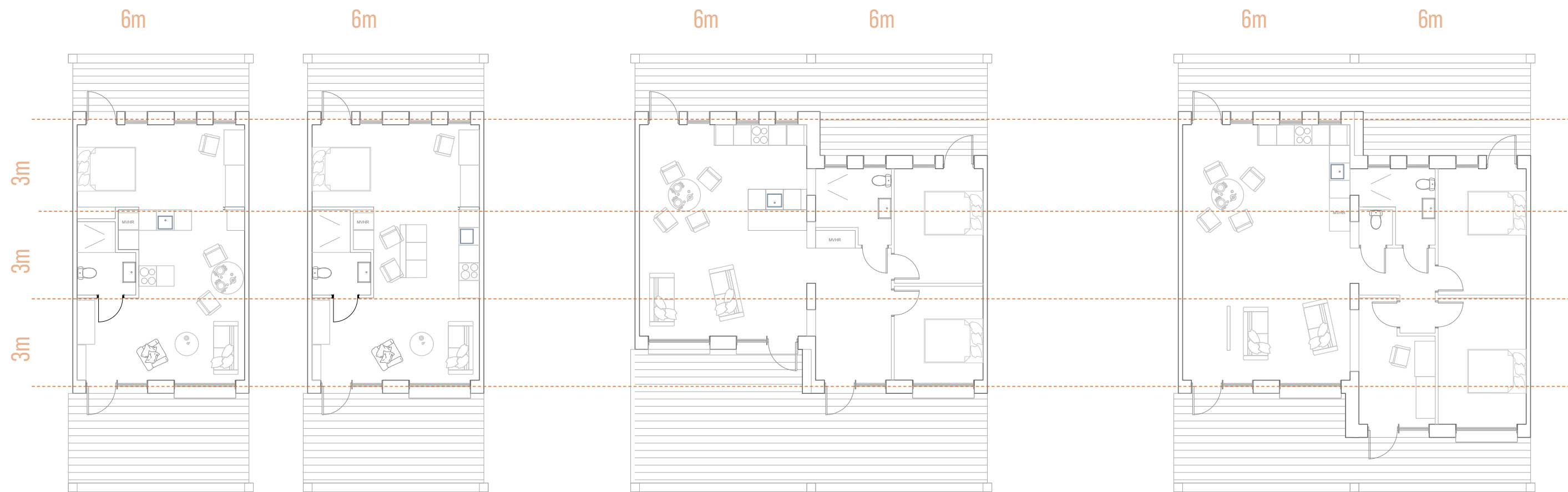
TYPICAL FLOOR (3RD FLOOR)



ROOF PLAN

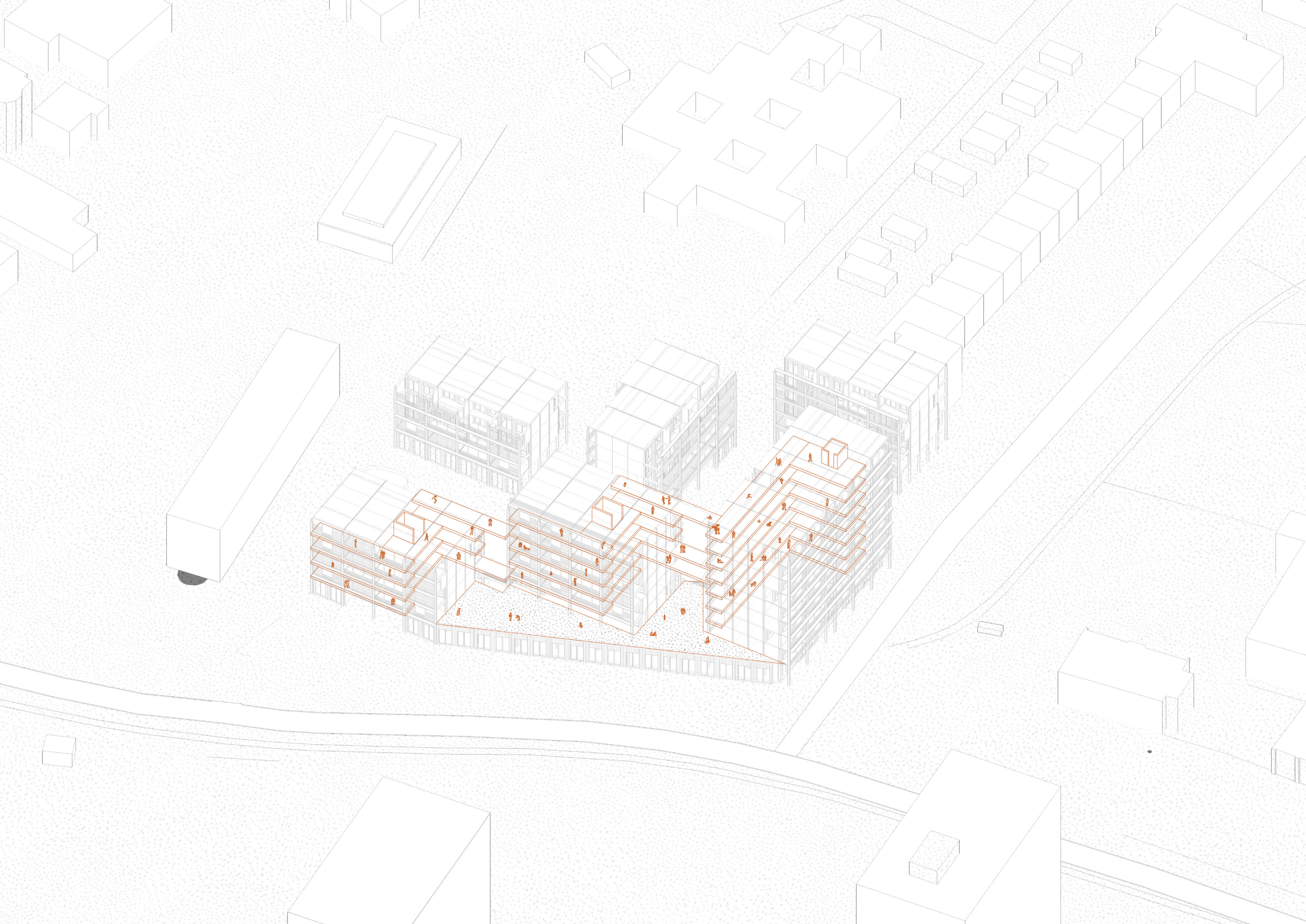


TYPICAL UNITS

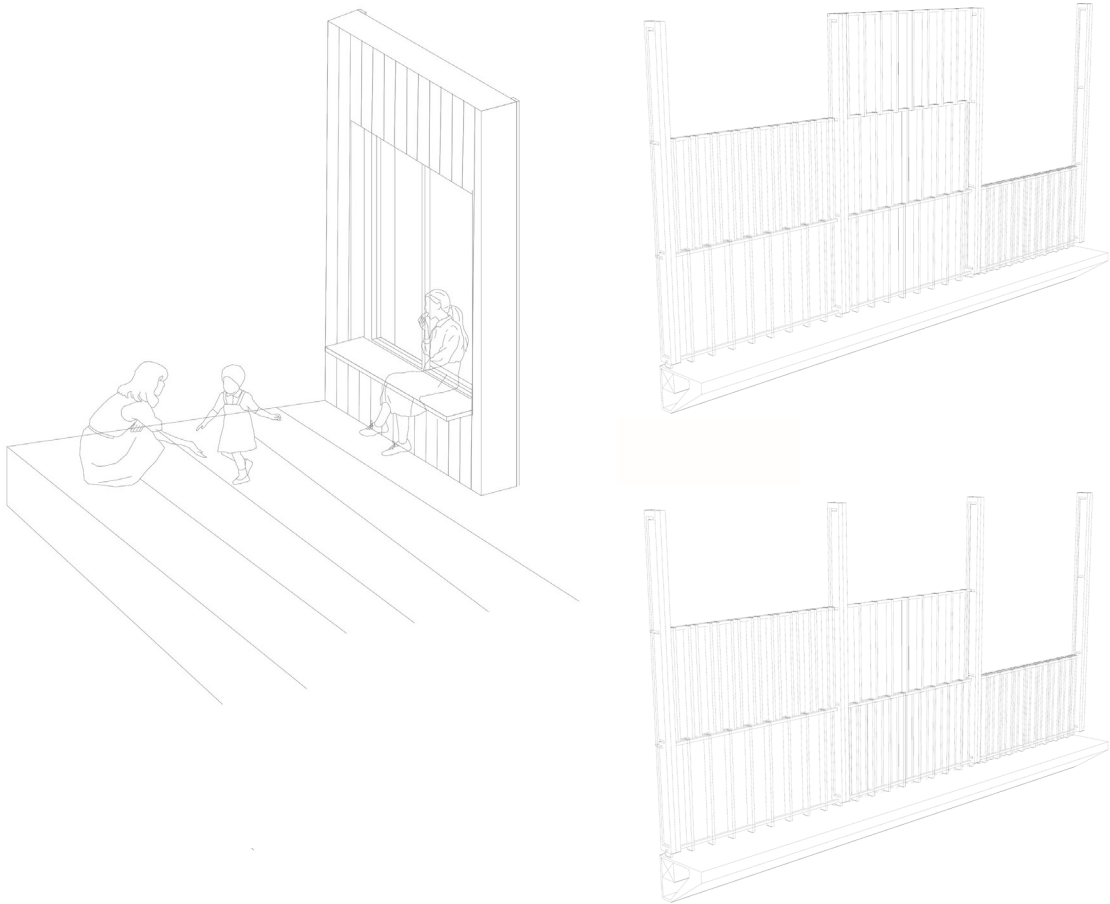
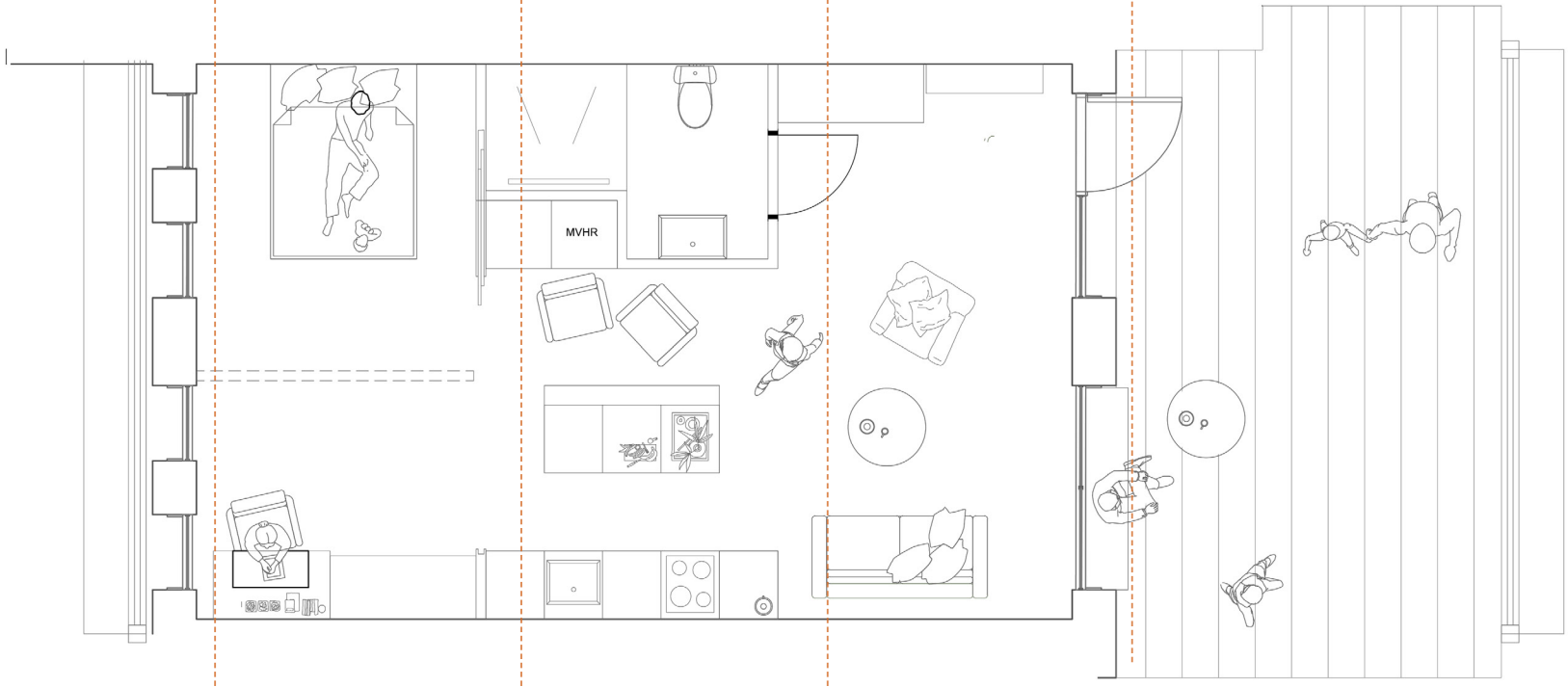
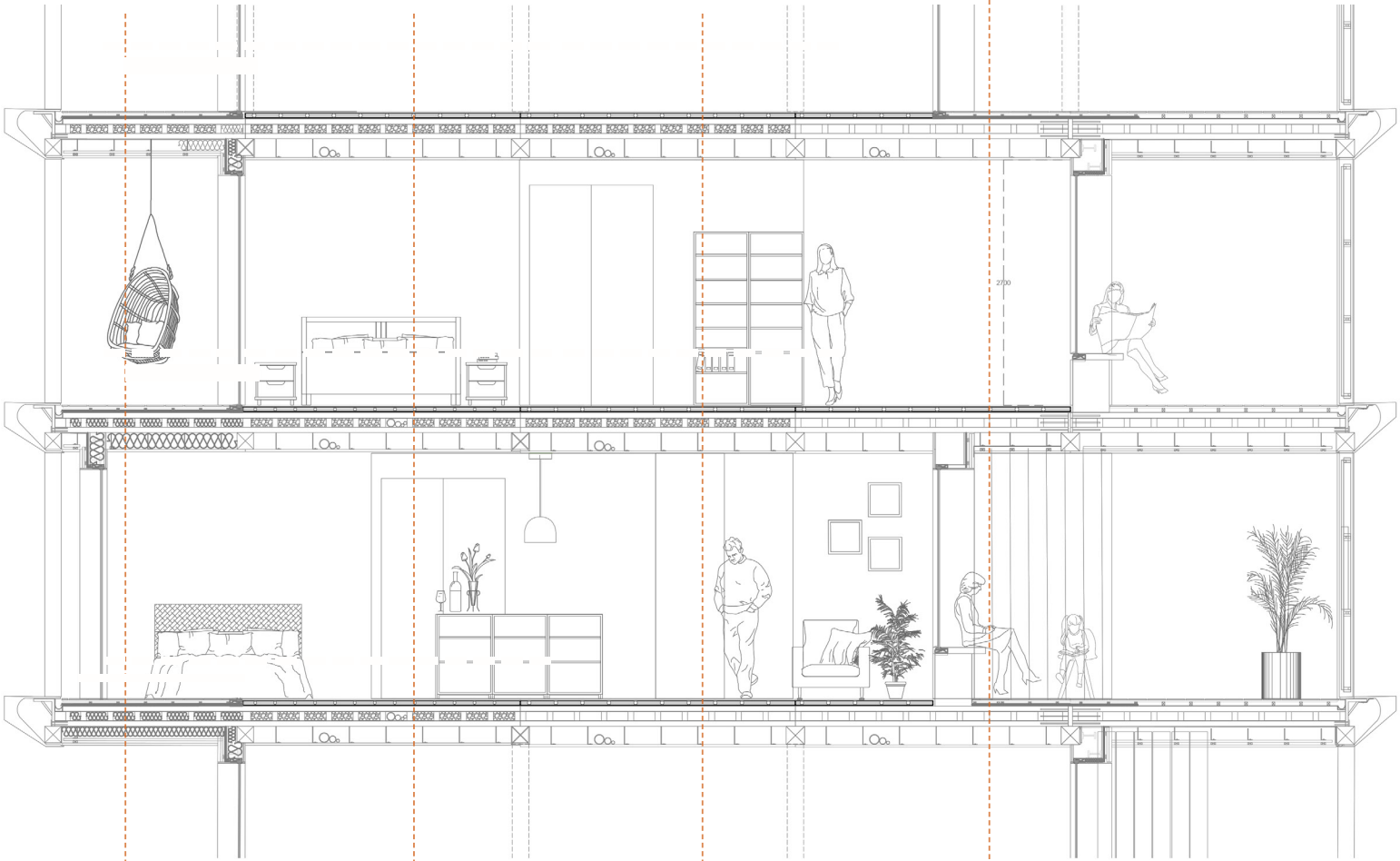


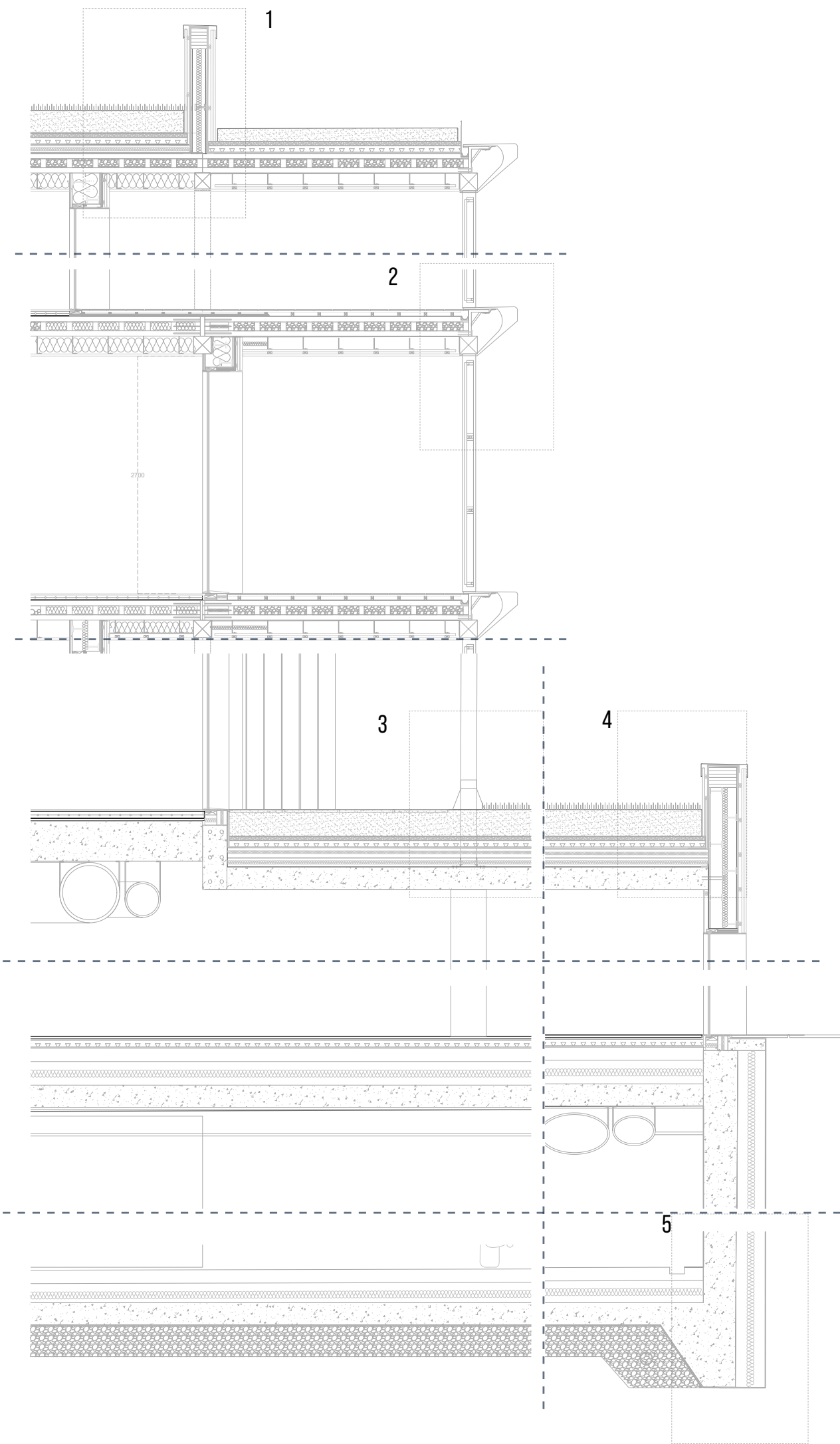
ELEVATION SOUTH





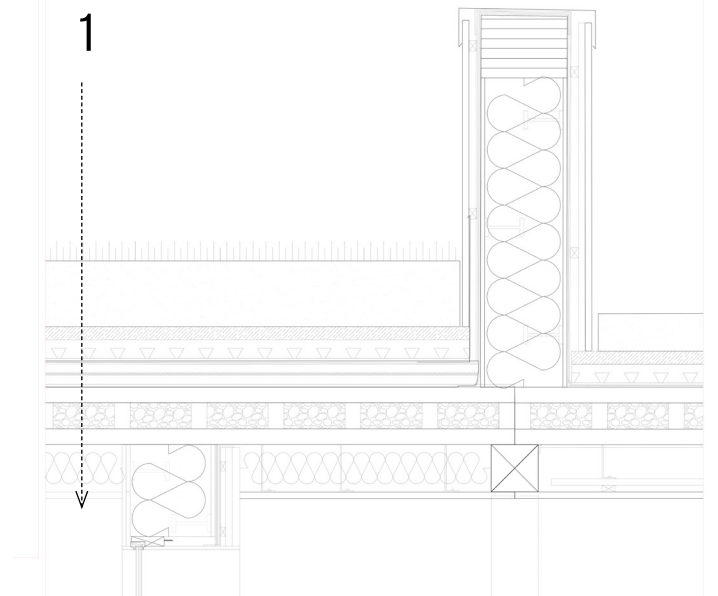
PART OF FACADE





1 ROOF - FACADE - TERRACES

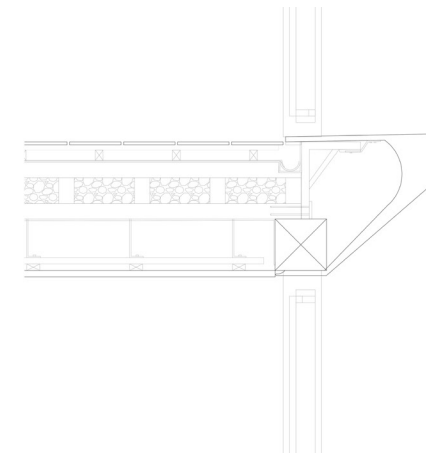
capping on the terrace column + paving tiles
 vegetation
 300mm soil
 50mm filter layer
 70mm drainage
 2x5mm waterproof layer
 2x100mm mineral insulation
 5mm protection layer
 220mm hollow clt slab
 suspended ceiling + 12.5mm plasterboard



2 TERRACES EDGE

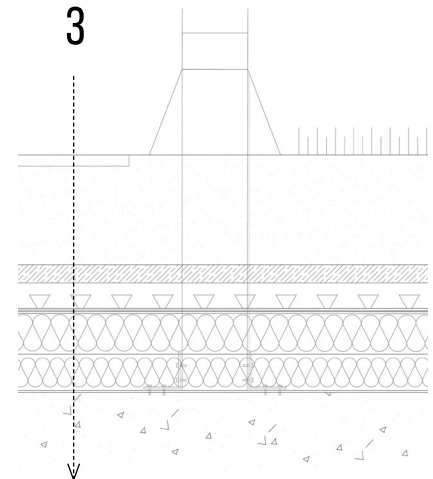
-25mm timber slots
 -timber battens
 -timber couterbattens
 -2x 5mm waterproof membrane
 -(mineral insulation)
 -220mm CLT hollow panels with gravel or insulation
 -waterproof membrane
 -(mineral insulation)
 -suspended timber battens
 timber couterbattens
 -25mm timber slots

- fibre concrete profile



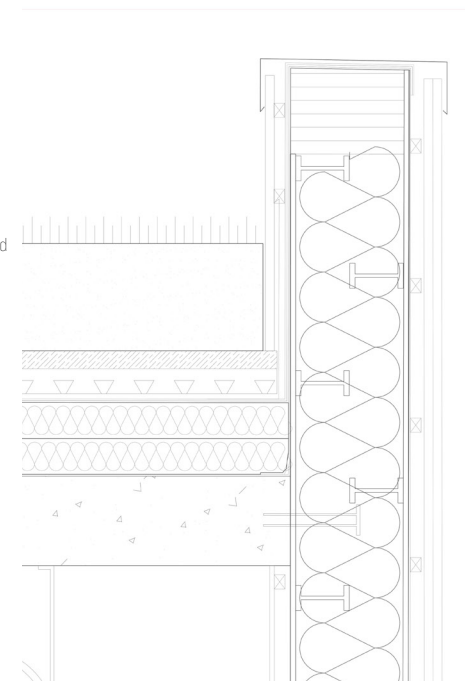
3 TERRACES -PLINTH

capping on the terrace column + paving tiles
 vegetation
 300mm soil
 50mm filter layer
 70mm drainage
 2x5mm waterproof layer
 2x100mm mineral insulation
 5mm protection layer
 250mm reinforced concrete



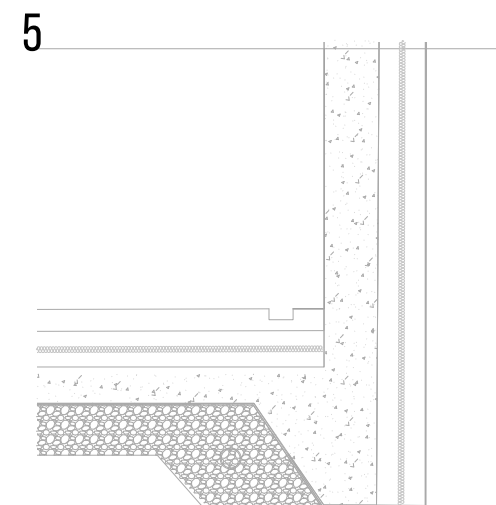
4 PLINTH - FACADE

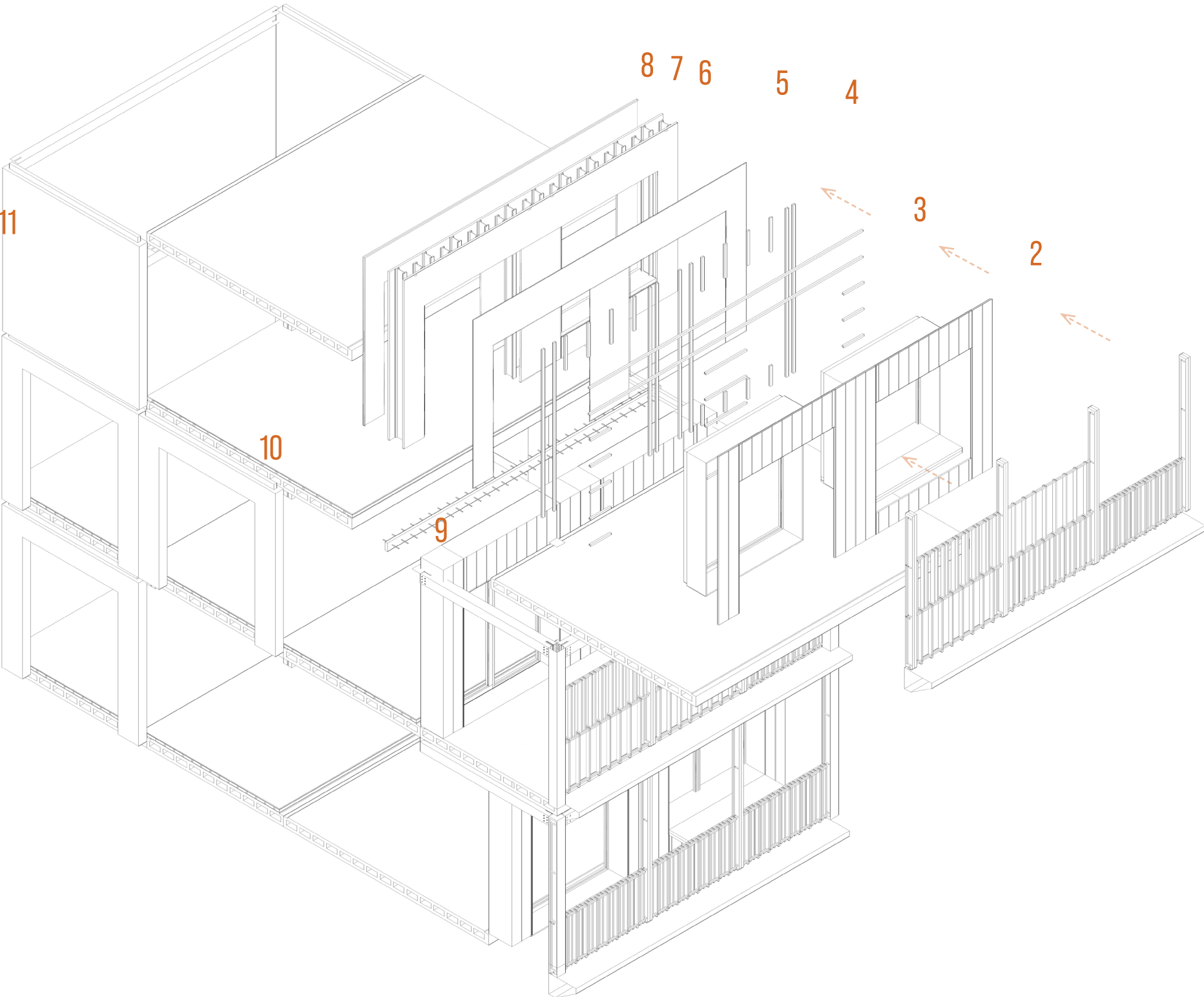
25mm timber cladding
 25mm timber battens
 25mm timber couterbattens
 5mm waterproof membrane
 boards (20mm) with I-joist and mineral insulation
 25mm timber battens
 12.5 mm plasterboard



FOUNDATION - BASE-MENT

-waterproof layer with concrete footing
 -gravel layer with drainage
 -5mm waterproof membrane
 -250mm concrete
 -250mm insulation
 -200 mm concrete screed with drainage





- 1 ADJUSTABLE FACADE WITH OVERSHADOWING ELEMENTS
- 2 25mm TIMBER CLADDING
- 3 25mm TIMBER BATTENS
- 4 25mm TIMBER COUNTERBATTENS
- 5 5mm WATERPROOF MEMBRANE
- 6 330mm - BOARDS (20mm) WITH I-JOIST AND MINERAL INSULATION
- 7 25mm TIMBER BATTENS
- 8 12.5 mm PLASTERBOARD
- 9 THERMAL CONNECTOR BETWEEN CLT PANELS PREVENTING THE COLD BRIDGE
- 10 HOLLOW CLT PANELS WITH MINERAL SOUND INSULATION BUFFER (GRAVEL OR MINERAL
- 11 CLT WALL PANELS
- 12 CLT BEAMS WITH STEEL ELEMENTS

INSULA-

TION WHEN MEETING WITH OUTSIDE) + APPROPRIATE FLOOR FINISH (INSIDE VS. OUTSIDE)



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p.13- Witczak, B. (2024) Map of WuWa and context

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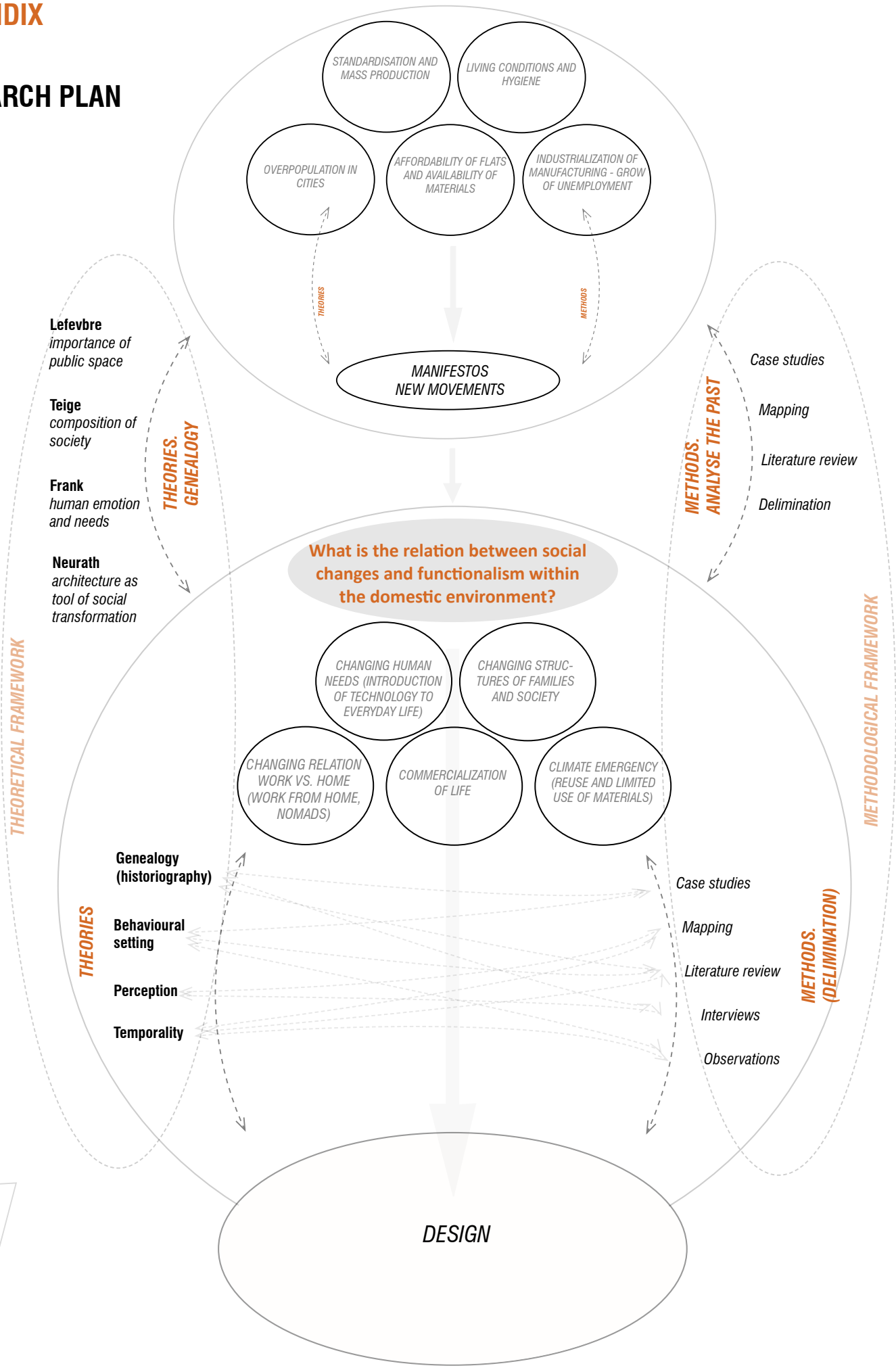
p.18-27 Witczak (2024-2025)- drawings based on archive drawings and observations on site, and diagrams

RESEARCH PLAN

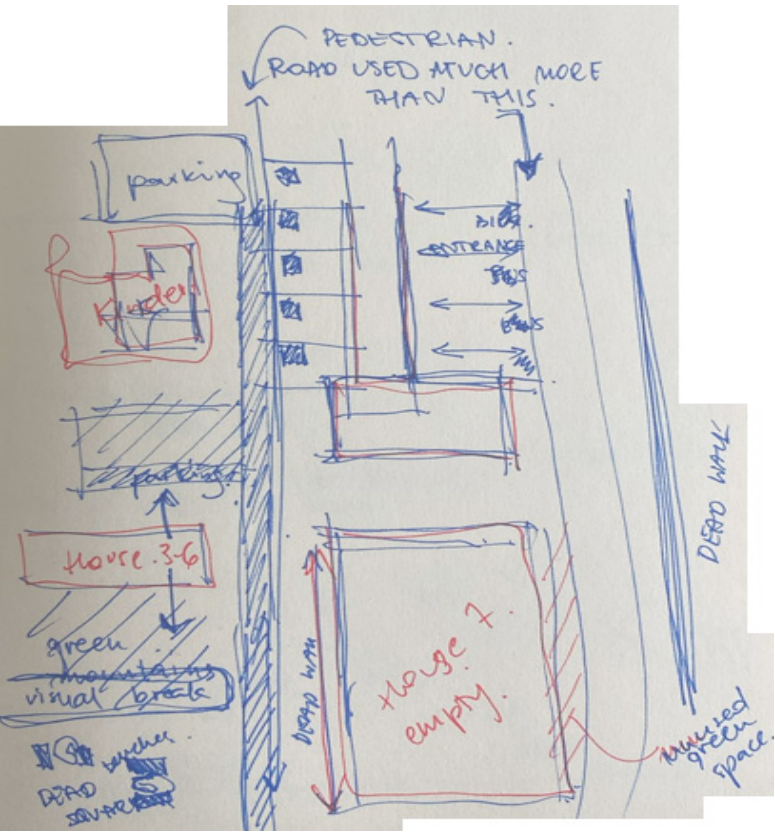
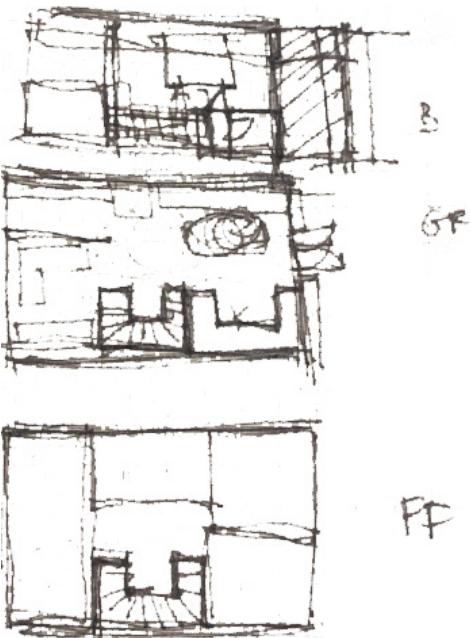
PAST

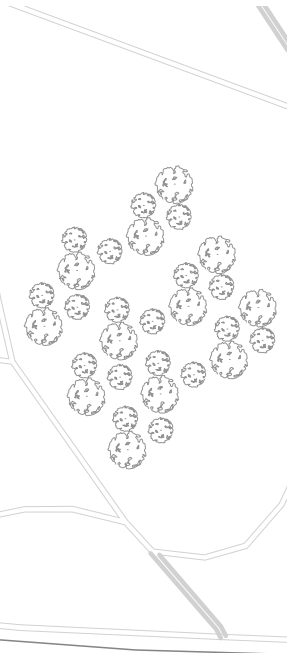
PRESENT

FUTURE

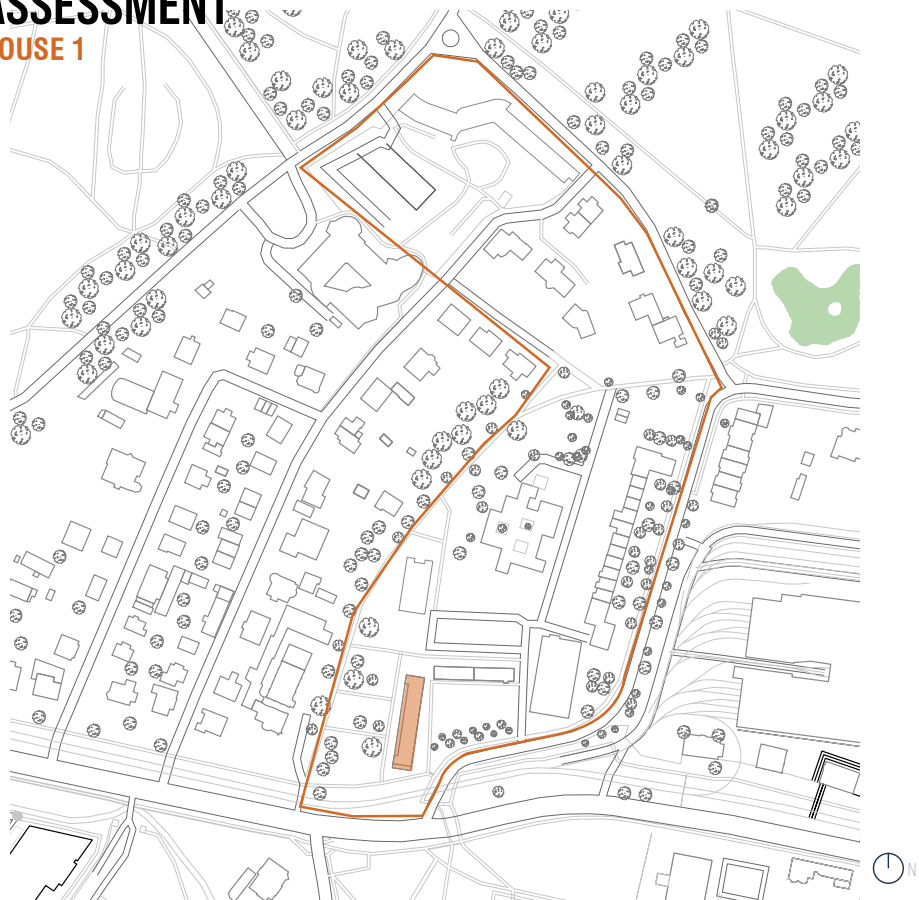


SITE VISIT - SOME OF THE DOCUMENTATION

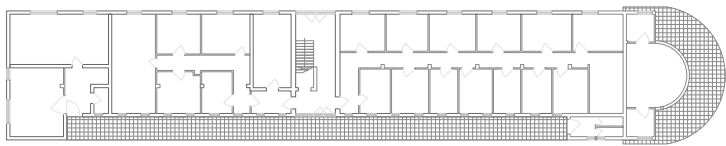




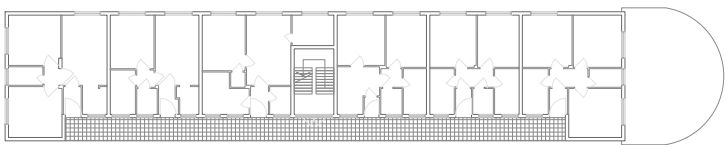
ASSESSMENT
HOUSE 1



GROUND
FLOOR:



FIRST
FLOOR:



STATE OF BUILDING (2019):
good, after the renovation

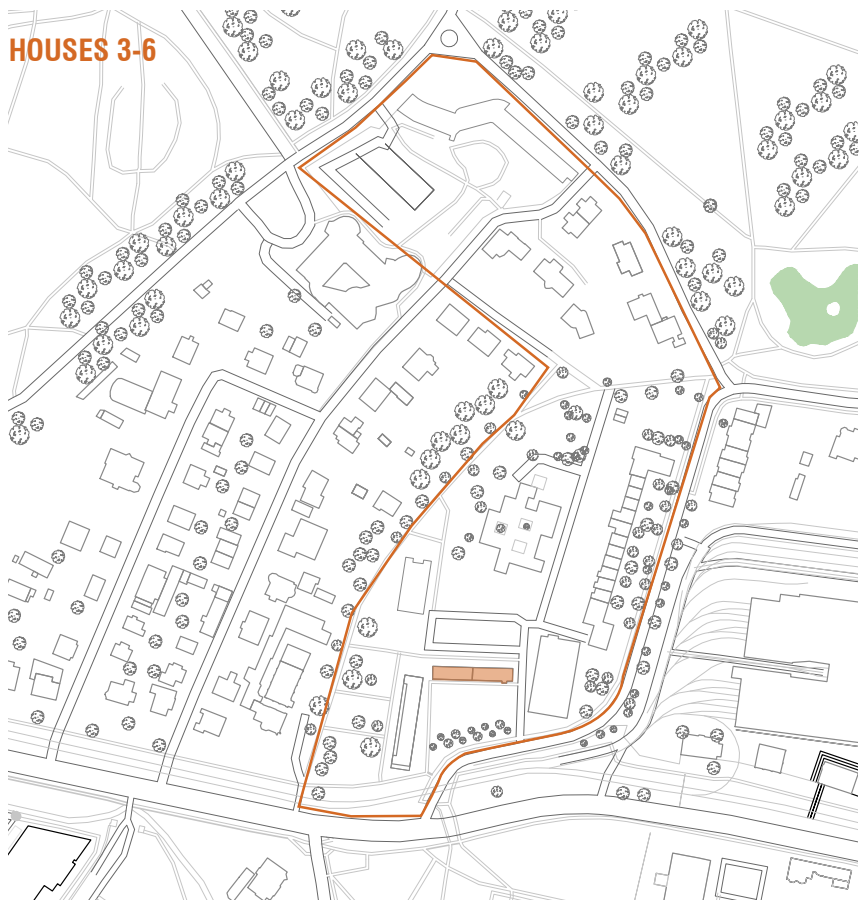
CHANGES:
change of function of the corner of the building - from tram stop to cafe

MIX:
12 units of 48sqm
6 units of 60sqm

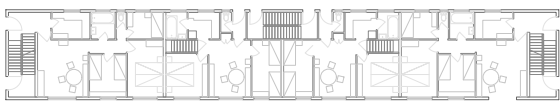
CONSTRUCTION:
reinforced concrete framework filled with slag brick
isolation made out of cork

FLOOR SURFACE:
1712 SQM

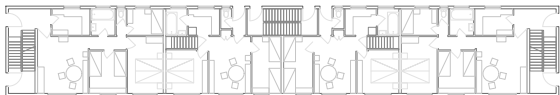
HOUSES 3-6



GROUND
FLOOR:



FIRST
FLOOR:



STATE OF BUILDING (2019):
good, after the renovation

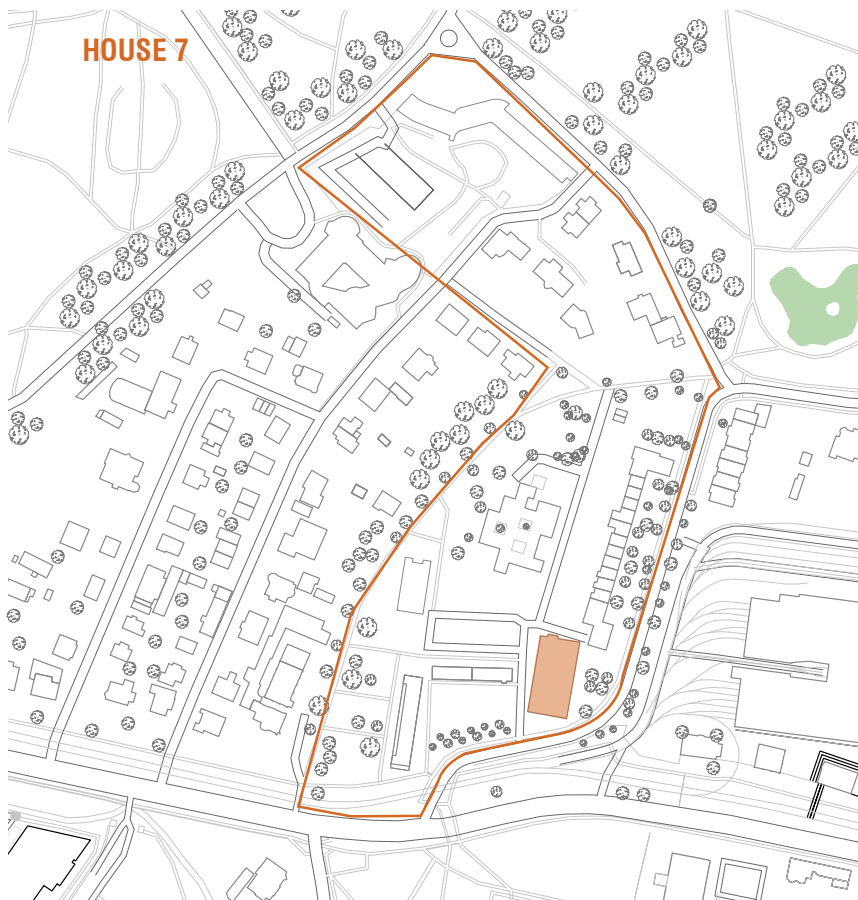
CHANGES IN PROGRAMME:
none

MIX:
4 units of 45sqm
4 units of 70sqm

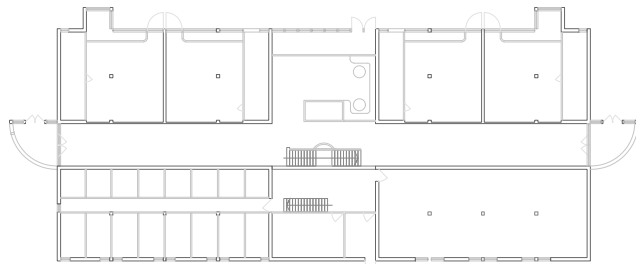
CONSTRUCTION:
half-timbered construction (beams of 100x200mm)
floors in basement out of concrete and upper floors of timber

FLOOR SURFACE:
1768 SQM

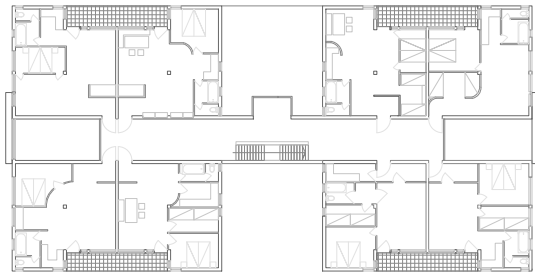
HOUSE 7



GROUND
FLOOR:



FIRST
FLOOR:



STATE OF BUILDING:
bad

FLOOR SURFACE:
3570 SQM

CHANGES IN PROGRAMME:
student housing, refugee shelter

MIX:
24 units of 57sqm

CONSTRUCTION:
steel framework (grid of 4x3.5m) filled with aerated concrete panels made on site
isolation from cork