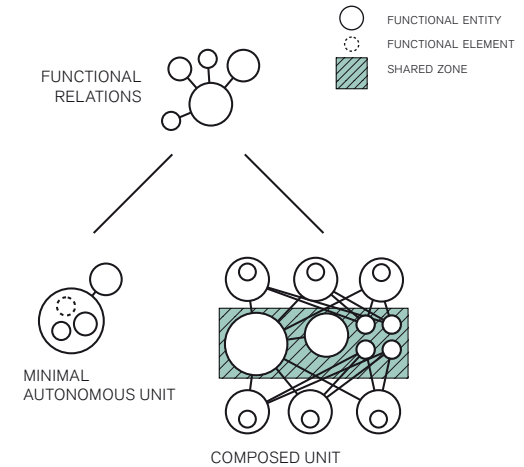
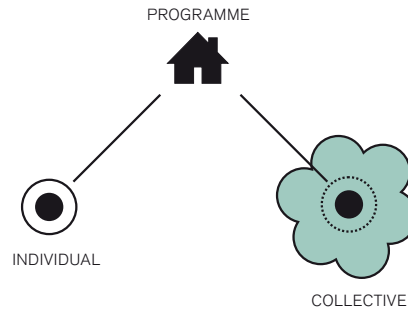
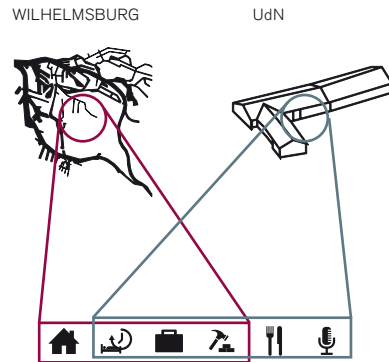


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PROGRAMMATIC APPROACH

INDIVIDUAL & COLLECTIVE



Within the two strings of research five different programmes can be defined which are suitable for further exploration.

The research of themes and aspects of Wilhelmsburg and the Reiherstiegsviertel leads to a more classical programming to include temporary dwelling // permanent dwelling // desk work // manual work. On the other hand the examination of the UdN reveals the question about relations between the individual and private realm according to collective and public zones and facilities of different programme activities.

To bring the two different approaches to a level of comparability, the general way of operating programmes needs to be displayed. As a next step, the programmes need to be conditioned for an application on a new proposal. Therefore each

programmatic scheme is explored in terms of its capability of individual and collective distribution possibilities. The accent is on defining a minimum of required area in two extreme hypotheses: an individual independently functional unit (autonomous unit) and a composed unit with the highest possible degree of collective functional entities.

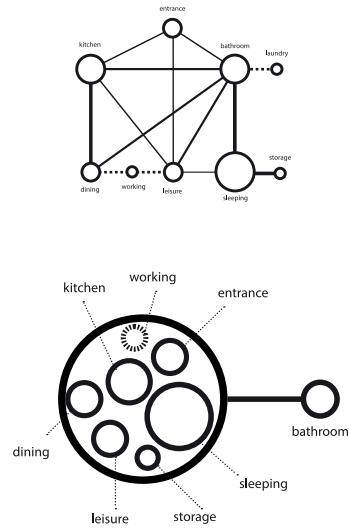
In this understanding a functional entity is defined as a fully equipped and independent operating system (e.g. kitchen) while a unit is comprised of a combination of functional entities (e.g. functional entities: sleeping room + kitchen + bathroom + toilet = dwelling unit).

An autonomous unit can function fully on its own without outsourcing its basic functions. The minimal autonomous unit

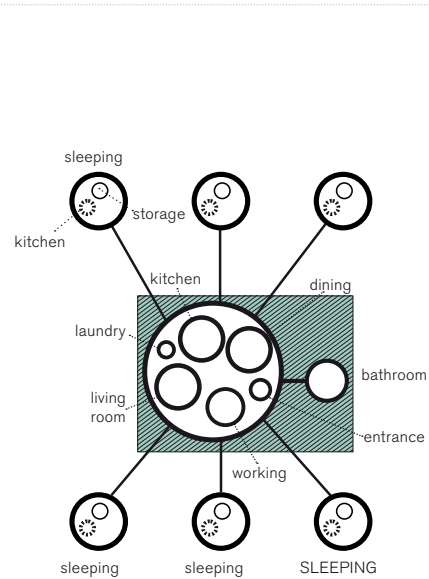
shows which functional entities of a programmed unit can be integrated within other functional entities. In this reduction process not all inherent elements of a functional entity can always be completely obtained. The reduction of the functional entity "kitchen" by merging it with the functional entity "office" can result in a dissolving of the entity "kitchen" into single remaining element such as cooker, storage, basin. In this way the full entity "work" is preserved with additional kitchen elements. Another possibility of merging a "work" and a "kitchen" entity culminate in sharing specific elements such as a chair and table so that only one of the functions can be carried out at the same time. Therefore each programme activity is limited by a chronological order.

CONCEPTUAL PROGRAMME

PERMANENT DWELLING

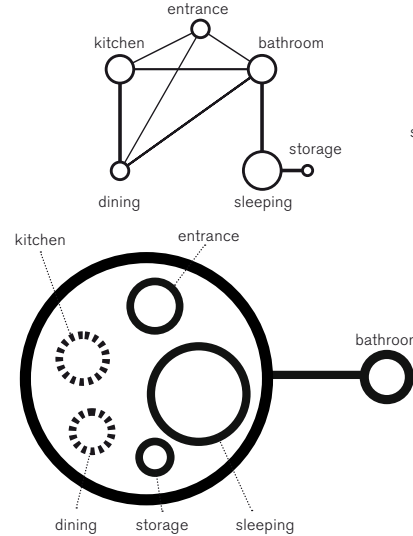


Within the permanent dwelling programme, the minimal plausible autonomous unit is reduced to one single room with an adjacent toilet. All the different necessary functional elements can be integrated within one room.

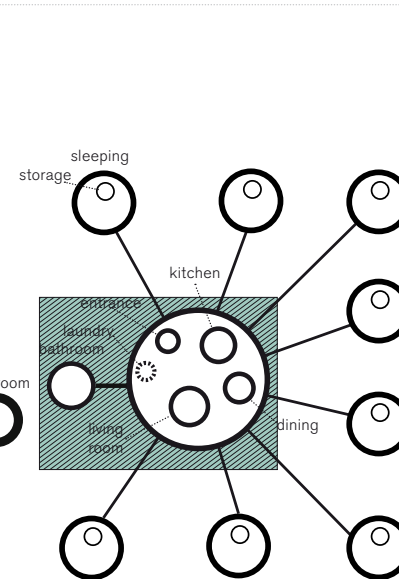


The composed permanent dwelling unit is characterised by the reduction of individual space to the single function of sleeping plus additional possibilities to store private belongings. All the other functions are shared within this unit collectively.

TEMPORARY DWELLING

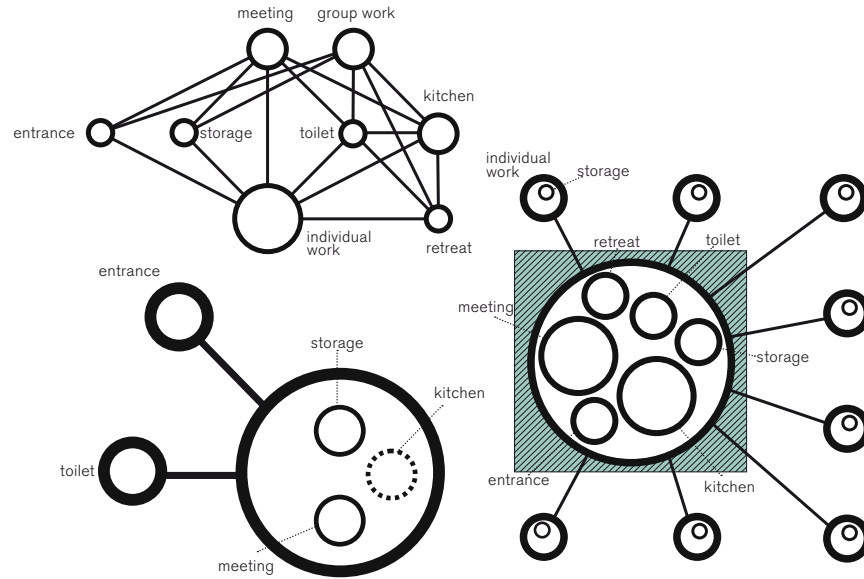


The units of the temporary dwelling are following the scheme of permanent dwelling. The difference between the two, arise from the less required functions necessary to achieve autonomy of the programme. In detail, this means that



a fully equipped temporary dwelling unit does not need to include working entities to operate. Therefore in the following approach, both temporary and permanent dwelling are considered as dwelling in general.

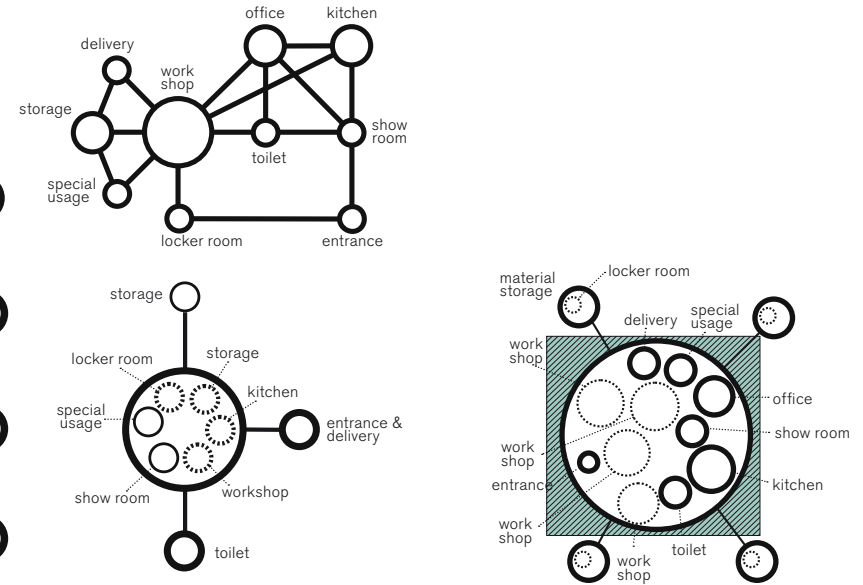
DESK WORK



As a minimal autonomous unit, a working entity can include all necessary additional functions except for the sanitation facilities and the entrance as self-contained functional entity.

In a composed unit the individual space is reduced to the work function with a combined storage possibility. All other functions can be collectively shared.

MANUAL WORK



The specific difference in an autonomous manual work unit is that the entrances need to serve delivery requirements. Furthermore depending on the sort of production a separate storage function sometimes needs to be added.

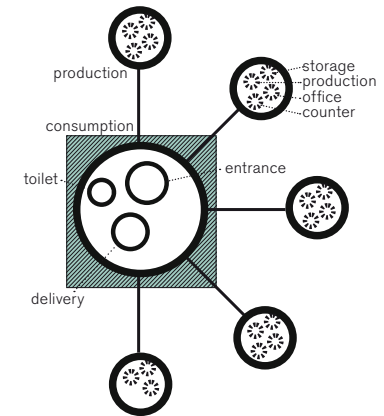
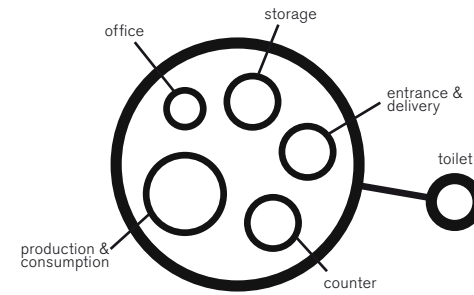
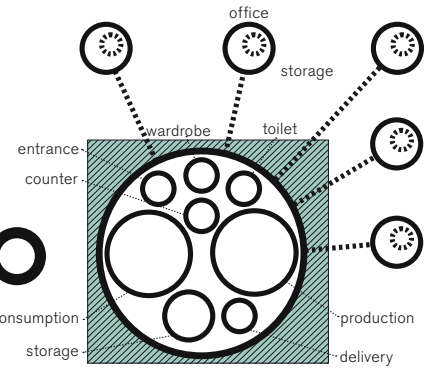
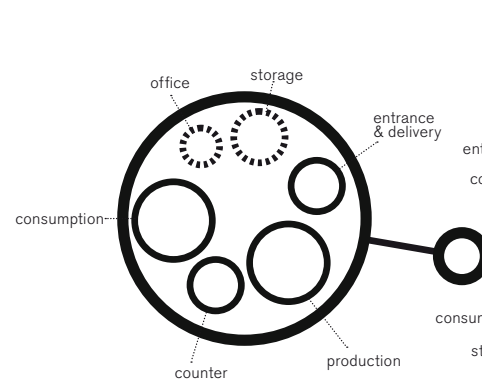
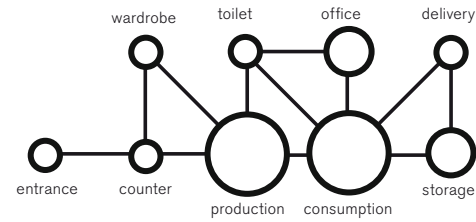
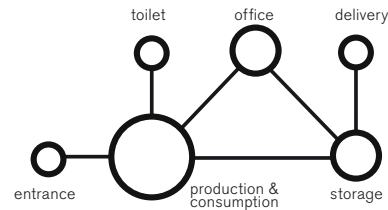
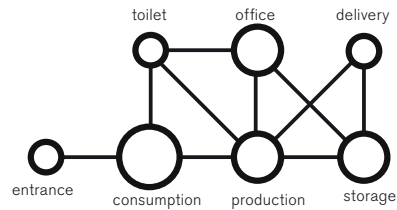
The structure of the collectively used composed unit follows the already mentioned example besides specific changes to delivery and storage requirements.

CONSUMER ORIENTATED PROGRAMMES

GASTRONOMY

SHOP

EVENT



The basic composition of functional entities within an autonomous unit of an event, gastronomical use and retail are very similar and vary only in their equipment. The main characteristic of

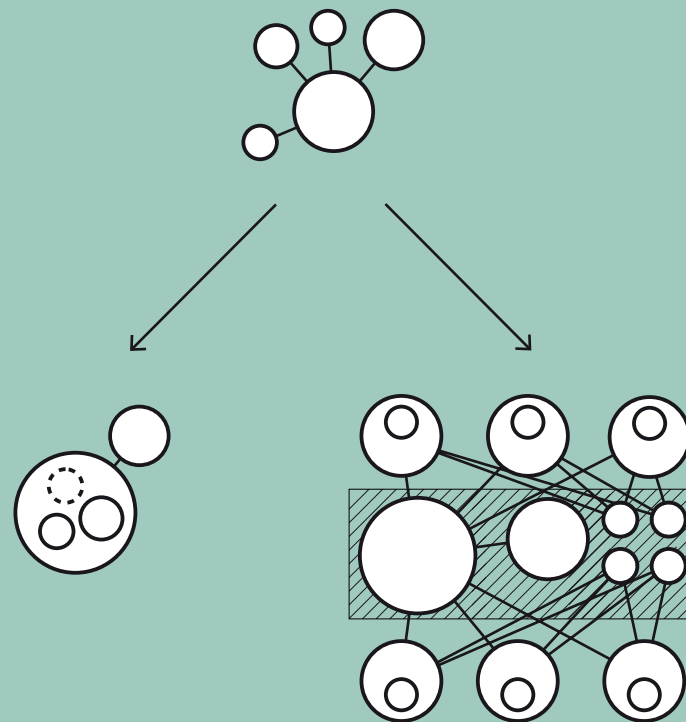
these programmes is their direct relation between production and consumption.

The general analogy between the composed unites of these three programmes

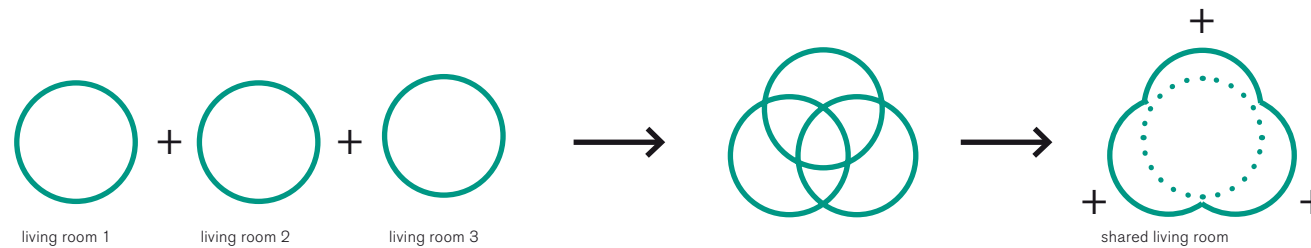
is their possibility to share the consumption area. The latter one is the core of the shared entity, whereas other functional features within them can vary depending on the programme.

The examples show that an autonomous unit for any programme can be minimised to its main functional entity, which can incorporate all additional sub-functions. The only exception are sanitation facilities that require a secluded entity.

Considering the composed units examples on the other hand, the conclusion can be drawn that individual area can be reduced to a single functional entity if the collective space features all needed requirements. This suggests that merging similar functional entities reduces the required space and leads to the idea of *combination and surplus*.



COMBINATION & SURPLUS



The spatial surplus which results from combining programmes and functions is becoming a crucial element of the new programme. The example of merging three individual apartments visualises this surplus. Instead of three autonomous minimal apartments, the kitchen as functional element of each separated flat can be combined to one room which is accessible for all three residents. Therefore the available space is tripled while the spatial demand for the equipment of the kitchen stays consistent and only the individual storage possibilities need to be added. This surplus can then be used to increase the quality of the kitchen by adding equipment (additional cooking plates, washing machine, seating area ...).

COMPOSED UNITS

SHARED ROOM

SHARED UNIT

SHARED ROOM

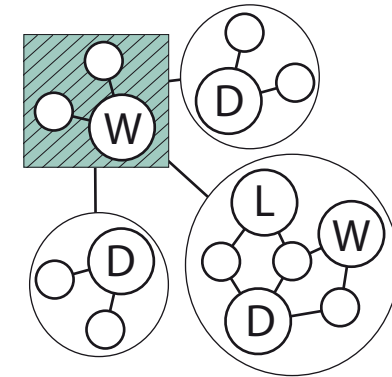
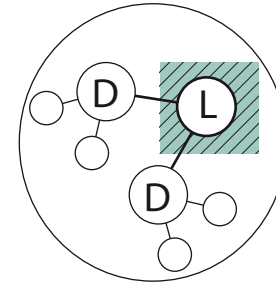
A: within Unit

>> kitchen & living room

B: between Units

>> shared terrace or kitchen

- Ⓓ dwelling
- Ⓕ leisure
- ⒲ work
- Ⓖ gastronomy



SHARED UNIT

A >> Work Unit

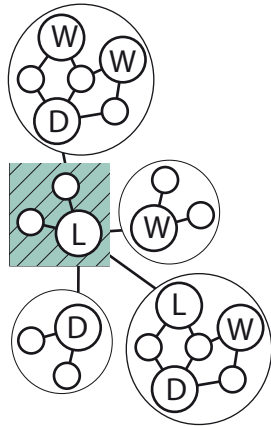
B >> children or guest room

The idea of the combination and surplus of space and quality which has been revealed at the UdN but is also gaining popularity in contemporary society, seen in the rising amount of flat shares amongst families & the elderly as well as in the trend towards co-working or the idea of collective consumption. Therefore, this project introduces a new type of unit which brings this idea to a higher level and integrates it directly in the design approach of the building.

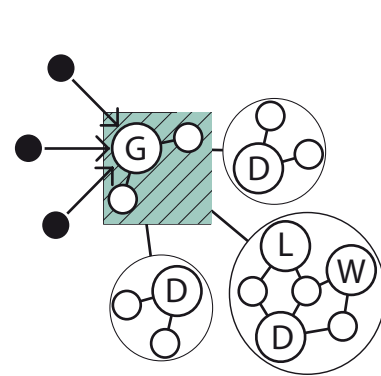
The first level of a composed unit is the shared room which generally includes one function. This type of sharing is commonly known in flat shares. In this case it can also be applied to different units which have a shared winter garden. The main attribute of this shared room, is its necessity to be accessible directly from each adjacent unit and contains only one function.

Two to four units can use a collective unit together. The users of a collective unit need to have an individual connection to it. This means that the collective unit can be accessed by a private person directly from his apartment. Examples for this typology are a collective work / atelier unit, or a unit which is used as children play room and independent guest room for visitors.

COLLECTIVE ZONE COLLECTIVE DOMAINE



On the level of the entire building complex several common spaces are distributed. These common spaces are accessible for all residents and are located in the additional collective structure. Typical uses which these kind of space can accommodate are laundry or fitness rooms.



The highest level of common use are the public functions. These programmatic typologies are the central elements of the additional collective structure. Possible function which could be implemented in those spaces are a café, which is accessible for every customer which passes by. The second sub category of public functions are those, where the user needs to be registered, such as in a library service. Furthermore, the threshold

between the public room and the typology of a collective space can be widened by functions which could be open for external clubs / groups who have a specific agreement over a use. For example the neighbouring school which could use the event space as a teaching kitchen.

COLLECTIVE ZONE

A >> laundry room
B >> fitness room

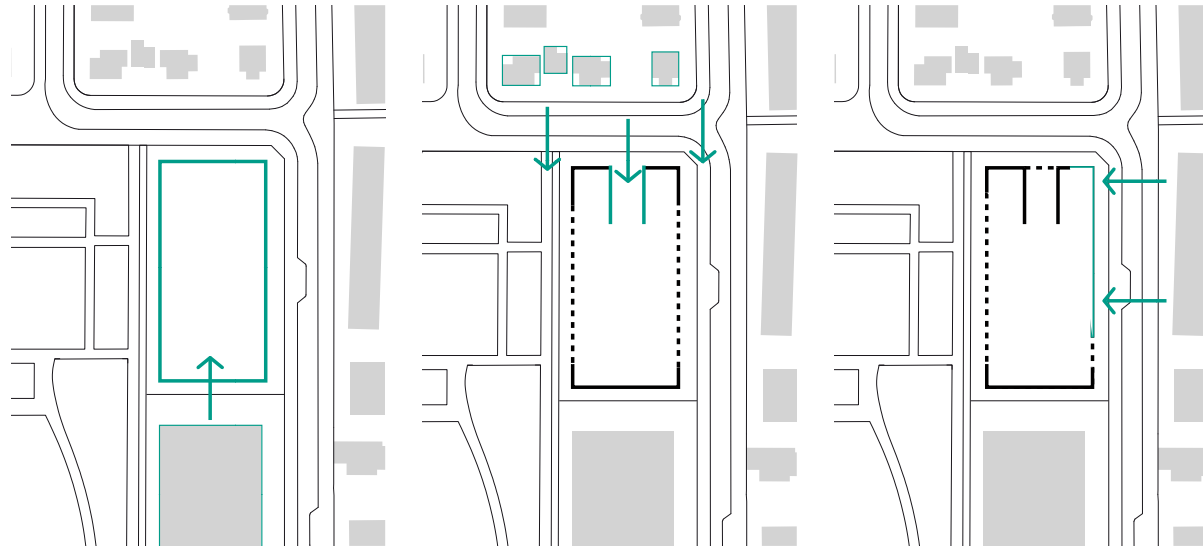
COLLECTIVE DOMAINE

A: café - visitor
B: library - registered user

BUILDING CONCEPT

URBAN PARAMETERS

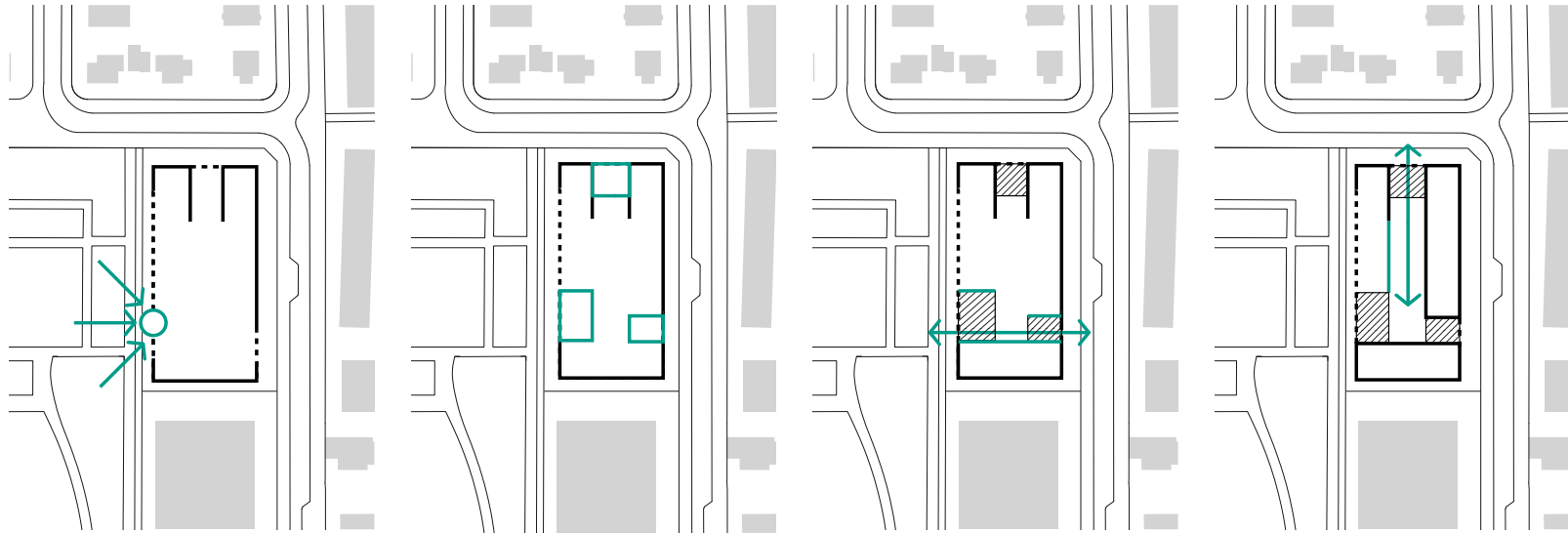
The concept of the building is based on the urban studies of the neighbourhood including the potentials of different building typologies. This knowledge is related to the specific revealed aspects from the UdN case study. Out of this combination of different scales and layers a strategy of subtraction and addition is used to define the urban parameters of the new development:



1. Following the building typology of a big block for public buildings to cover the majority of the perimeter.

2. Reacting to the small detached dwelling typology by opening the north-facing facade.

3. Creating a strong counterpart to the multifamily row buildings in the east.

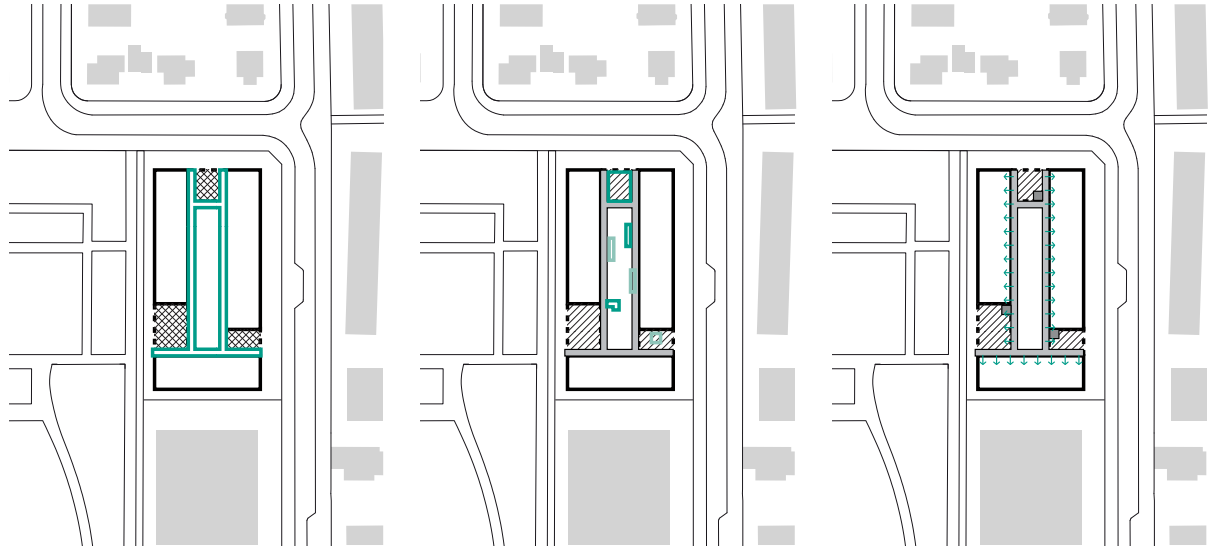


4. Opening the building towards the Rothenhäuser Park.

5. Setting common spaces in qualitative locations next to the park, towards the detached dwelling typologies at one end of the building and along the Rothenhäuser Damm towards the neighbouring public buildings.

6. Enabling a direct connection between Rothenhäuser Straße and Rothenhäuser Park as main traffic arterial within the development by connecting two common spaces.

7. Establishing a secondary north-south axis to create a court situation and enable circulation in between all three common spaces.



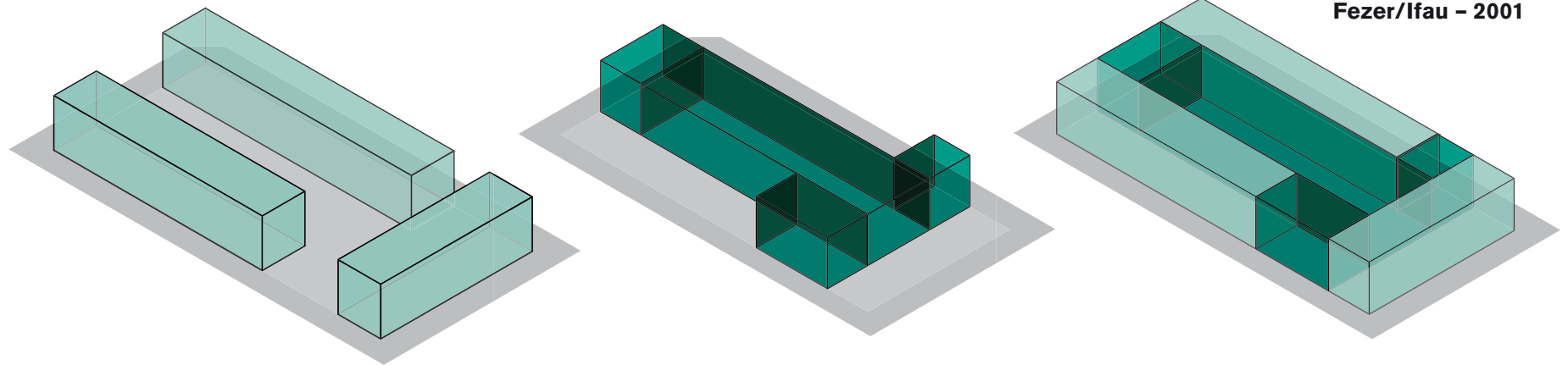
8. Implementing corridor access on the upper level to facilitate movements between the common spaces.

9. Apply vertical circulation in the common spaces to multiply intensity.

10. Orientation of the dwelling blocks towards the inner corridor.

BUILDING CONCEPT

»Der Entwurf ist dabei nicht die definitive Lösung, sondern wird vielmehr als ausformulierte Problemstellung begriffen. Gezielt eingebrachte Komplikationen und Überlagerungen sollen dazu herausfordern, Konflikte produktiv zu artikulieren.«

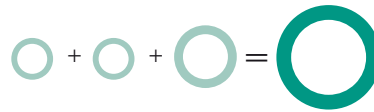


COMMON SPACES

CONFIGURATIONS

SPATIAL DIMENSIONS

The major determination made in the very beginning is the definition of different parts of the building in terms of spatial qualities and accessibility level. In the following understanding, the common spaces are zones which are open for appropriation by various (overlapping) activities and programmes. This means, that they are defined by spatial attributes and qualities. The qualities do not only regard natural and spatial factors, but can also include specific functions such as "shower" or "kitchen". Furthermore these functions cannot be completely transformed into isolated programmes such as a restaurant or a sauna. They are part of the common space and therefore accessible for all residents. Furthermore, the common spaces can be used by any residing programme. Therefore an individual unit adjoining the collective space can accommodate a consumer orientated programme (café, wellness) and appropriate the common space.



To allow a superposition of activities within the common spaces it is important that the specific requirements of quantity to an activity are guaranteed within the spatial system. To enable a great variety of different programmes three different strategies of configurations are possible.

SPATIAL RELATIONS



1. SPATIAL DIMENSIONS

The first strategy implies the addition of spatial dimensions to one big room which can host several different activities at the same time.

2. SPATIAL RELATIONS

Another strategy is to design a diverse system of zones and niches of different sizes which can be combined to func-

TEMPORAL RELATIONS

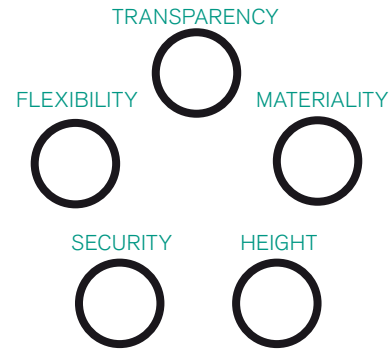


tional units by each individual activity independently. In this scenario a higher variation of qualities allows for a higher level of superposition.

3. TEMPORAL RELATIONS

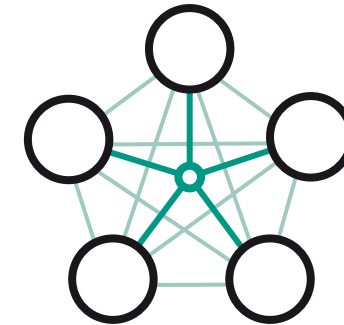
Not all activities need to take place at the same time. Arranging a temporal order can reduce the required space and still enable a variety of superposing activities.

ATTRIBUTES



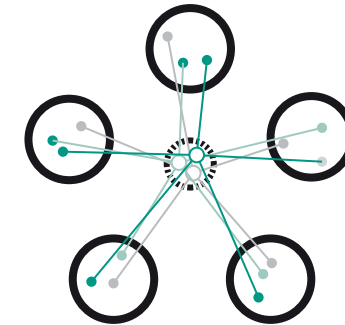
As already described in the introduction of "PART I: Re-Design Rotenhäuser Damm 30" the design is based on the understanding that a level of privacy is determined by the grade of appropriation. To be more specific, the practice of appropriation goes along with the arrangement of elements (social and non-human) which is then perceived by

an individual person as a level of publicness / privateness. Following this theory the design of the common areas is determined by spatial attributes which facilitate or prevent appropriation by the residents.



Out of the case study research at the UdN five categories of attributes are developed.

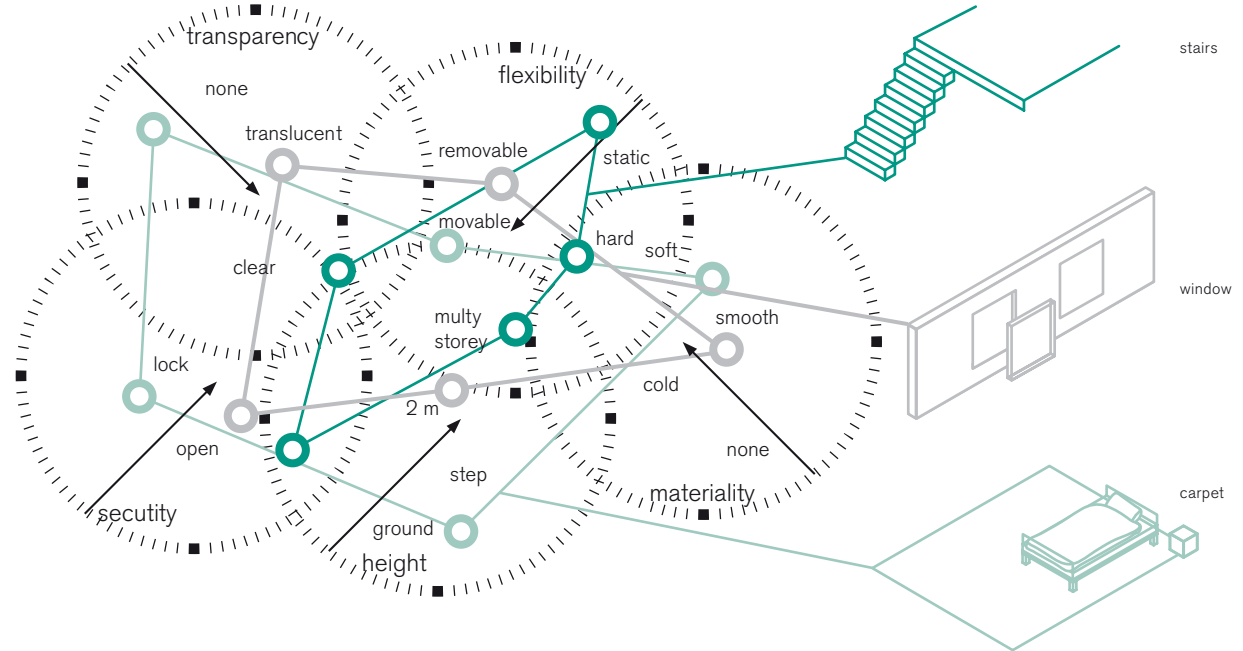
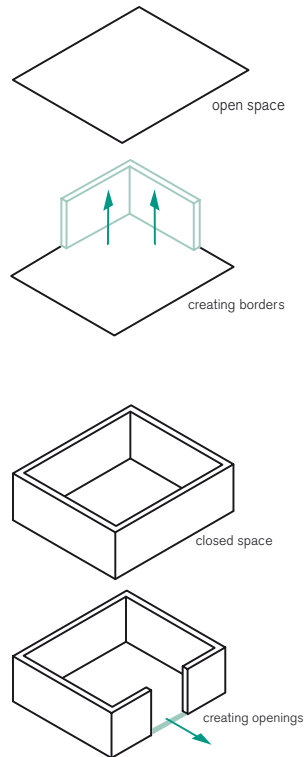
Each of these categories features a high range of options from low to high, open to closed or soft to hard etc.



As the categories can be related with one another a high range of combinations are possible.

Different combinations of attributes result in various spatial elements which characterise the possibility of appropriation.

STRATEGY



The design process strategy is grounded on a system of spatial attributes, which can be applied on architectural space by following two different approaches. On the one hand a volume can be seen as minimum accessible. In this case the architectural space can be imagined as a closed room where the attributes are

used to create a higher level of accessibility. On the other hand, it is possible to understand the area as an open territory in which the attributes create obstacles to narrow the openness.

At this point, it is to say that there is no designable level of appropriation. Only the qualities of the physical space can

be determined through placing spatial attributes. Further on, it is these qualities that are more or less suitable for specific activities or actors. Only this relation of location, architectural qualities, the actor and the activity of appropriation generates a perceived level of privacy / publicness.

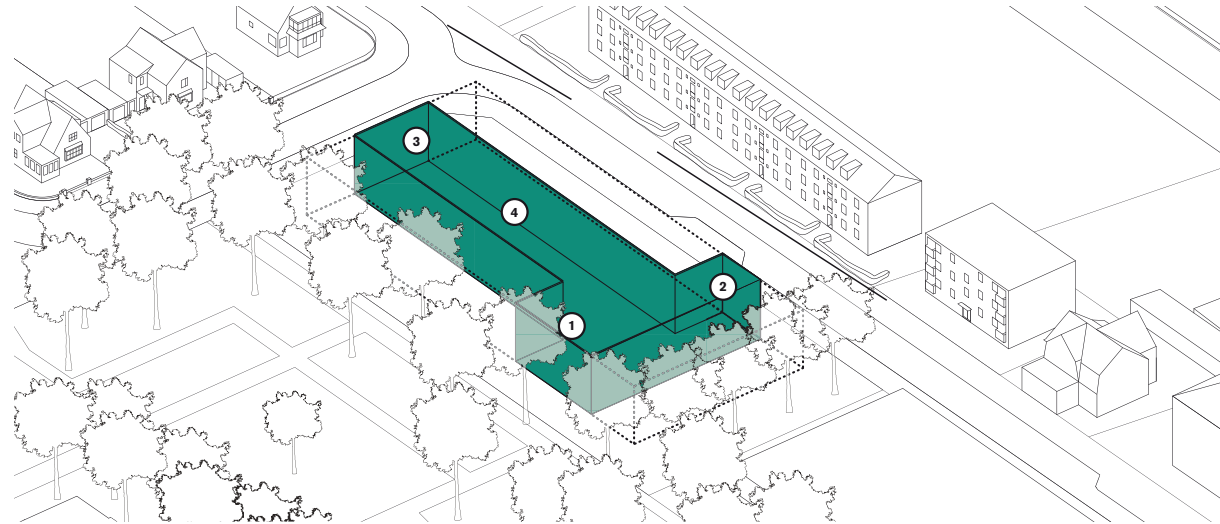
QUALITIES

Definition of the common spaces is articulated in three moments. The first one represents the inherent spatial qualities due to its location (view, sunlight, accessibility, etc.). The second one is assigning attributes which define the space further (placing a wall or a kitchen) but still leaving it open for appropriation through activities, which is the third moment in space definition.

The design defines the first two steps, while the third one is to be accomplished by the users.

VOLUME 1: ROTHENHÄUSER PARK

The main quality of this volume is its close connection to the park. Its ground floor has a direct access to park and a foot-path is running along it. This side is not frequented by cars and the orientation enables users to enjoy the evening sun. The upper floors are characterised by a view on the park, as well as exposure to the evening sun.



VOLUME 2: ROTHENHÄUSER DAMM

This volume is strategically placed next to the street, representing a potential main access to the building complex with its location. Moreover, it is exposed to the morning sun.

VOLUME 3: ROTHENHÄUSER WETTERN

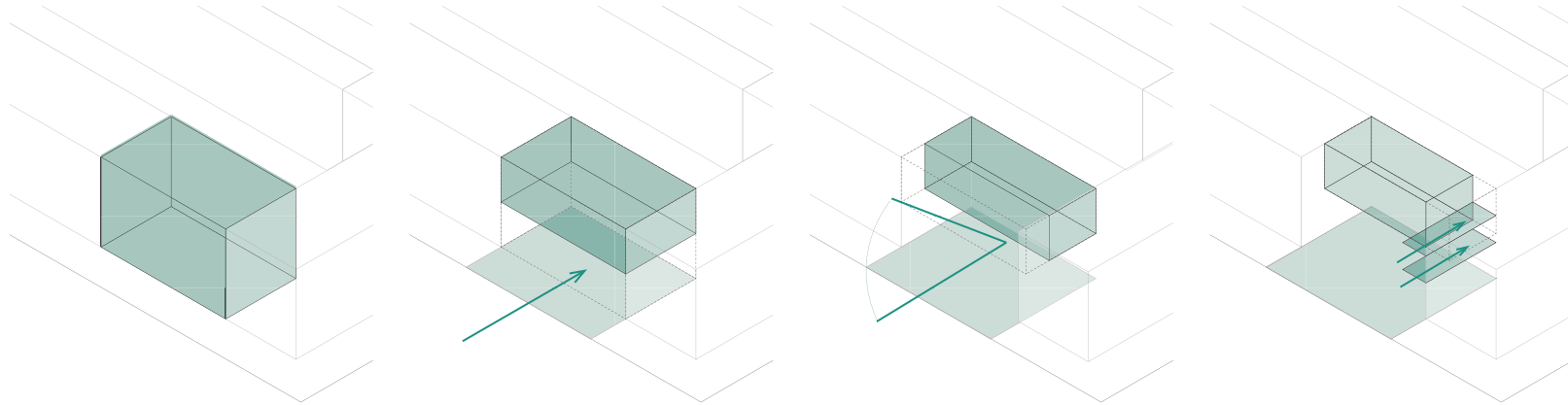
The first intrinsic quality of this volume is its north-south orientation. Furthermore, it is located next to a calm street, facing single family houses in the north. Its southern facade stretches along the whole width of the courtyard.

VOLUME 4: COURTYARD

Its strategic central position makes it suitable both for transit on site and connecting different parts of the building complex. Moreover, it provides vertical access to the upper floors.

VOLUME ONE

PARK TERRACE & EVENTS SPACE

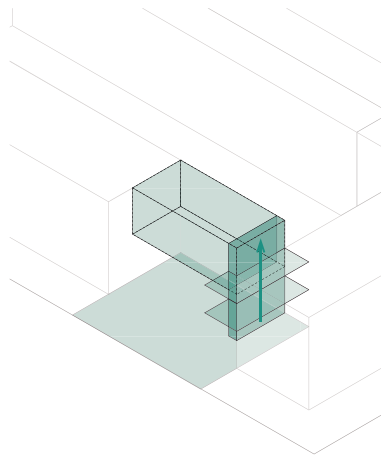


The attributes of this volume derive from the listed qualities and thus the decision was made to completely open the ground floor to enable communication between the inner courtyard and the park. In order to add quality to the space, its height is increased to five meters. The upper floor

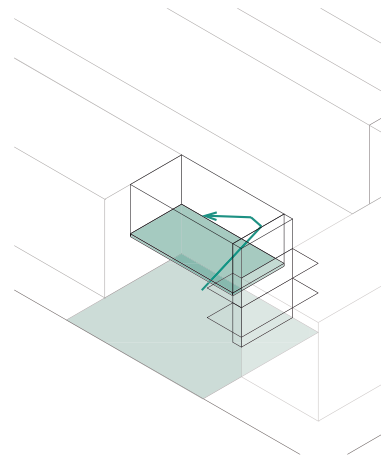
is shifted inwards to enable a greater exposure to the sun. Its surface is extended all the way to the park. Due to the height difference of 60 cm two large steps are added. These can be used for placing tables or as an amphitheatre facing the park. Furthermore, adjacent

individual units could accommodate a consumer orientated programme and thus appropriate the terrace space as a consumer area. A bearing wall on the southern side separates the collective space from the access corridor to individual units and accommodates a

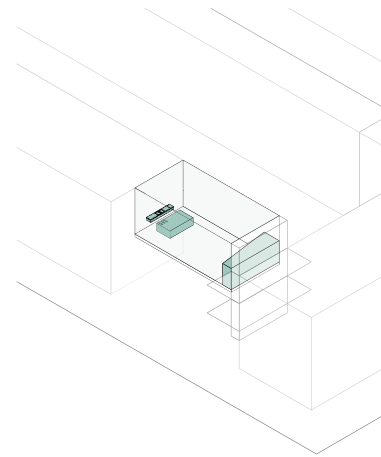
publicly accessible toilet facility. The upper level also has a height of five meters and is conceived as a single volume. In order to have a maximum exposure to the sun, its skin is translucent with wide open transparent gates. It consists of polycarbonate ribbed double sheets,



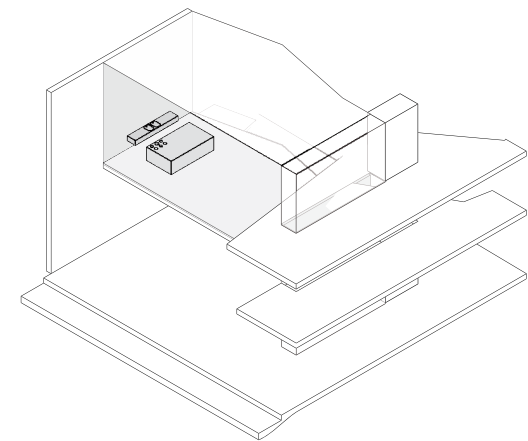
a material that also creates a pleasant atmosphere when it rains (view and the sound of raindrops). The northern wall contains water and drainage plug-in with an adjacent kitchen block. On the southern side a concrete wall separates the grand volumes on the ground level and

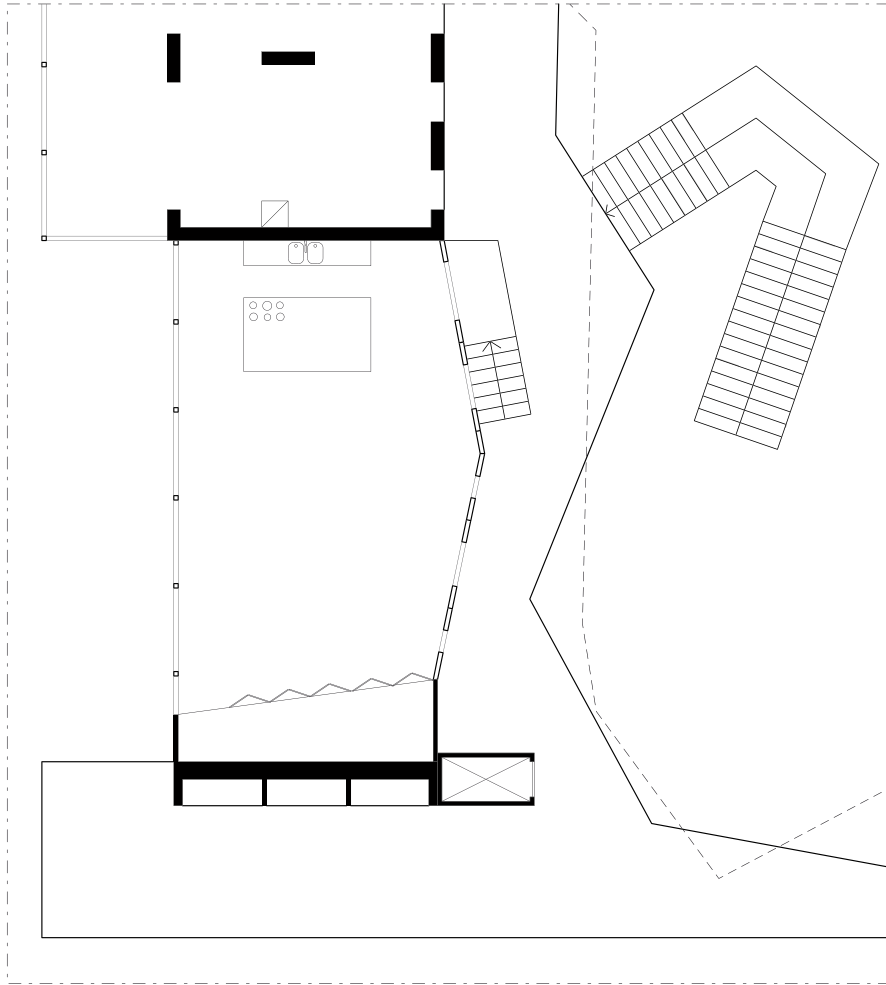


upper floor from the access corridors of the individual building block. It accommodates storage possibilities for the collective space on the one hand, as well as for the individual units towards the gallery. While the ground floor is undefined in terms of functions and completely open

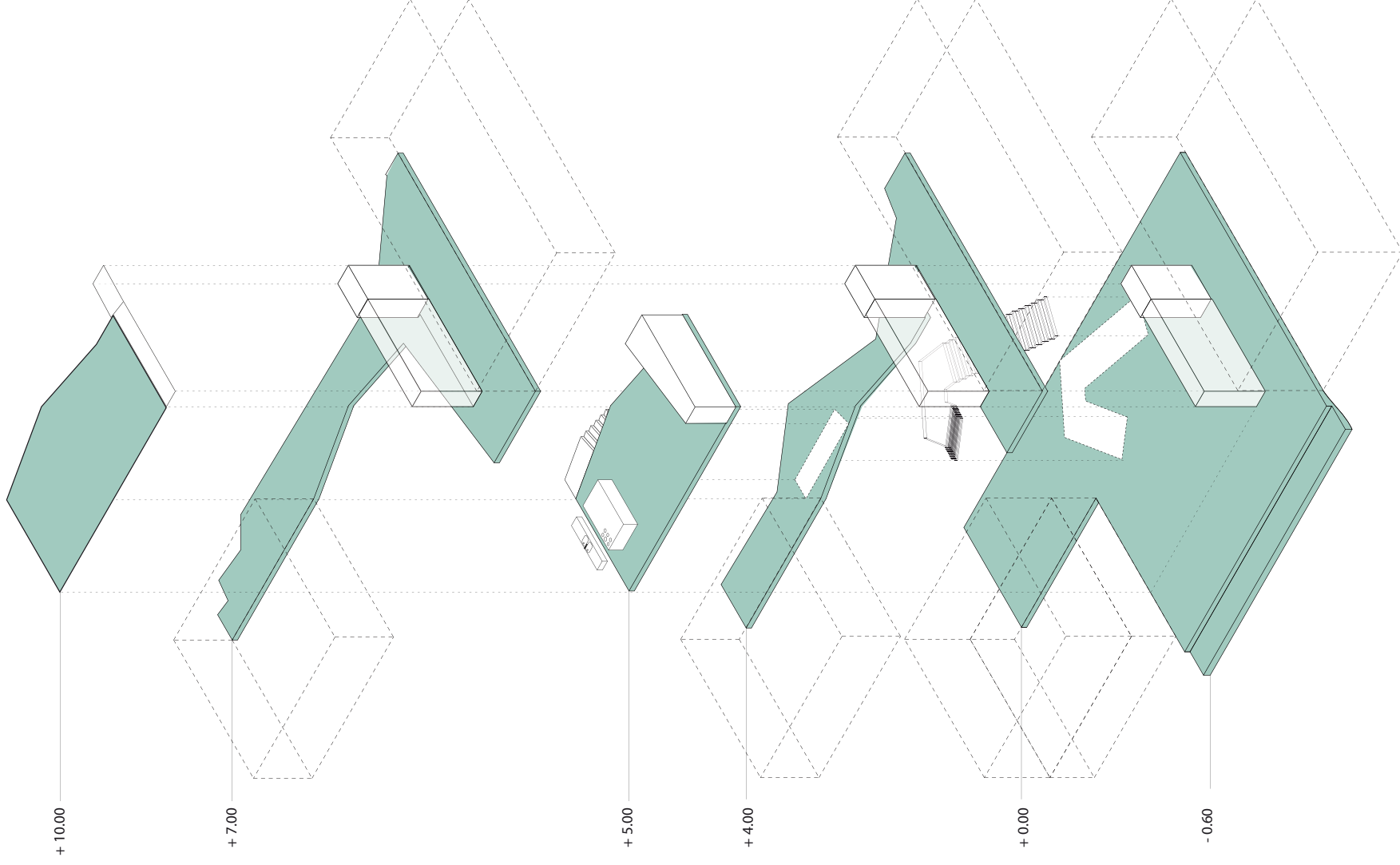


for appropriation, the upper floor is characterised by its kitchen element which makes it suitable for a variety of different cooking-related activities. Furthermore, it is separated from the gallery and therefore has a lower level of accessibility.



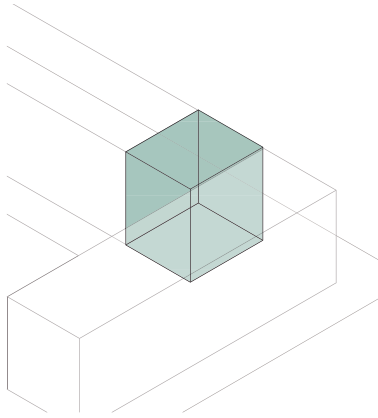


first floor

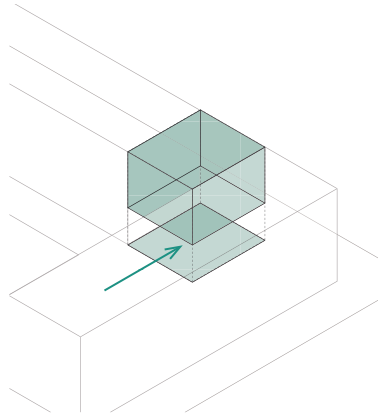


VOLUME TWO

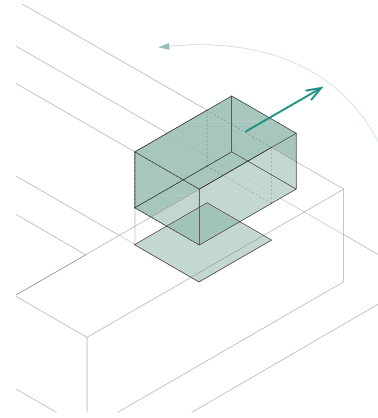
PASSAGES & NICHES



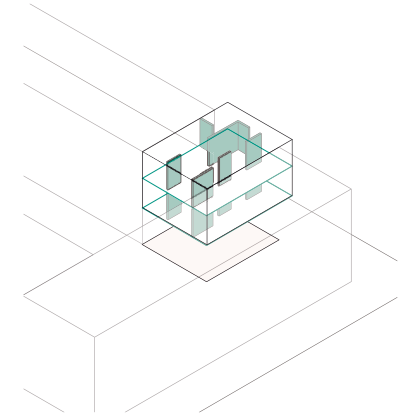
Its ground floor is completely open to the street and creates an inviting passageway through the courtyard towards the park. Its location makes it suitable as a main entrance to the building complex and hence its width was set to eight



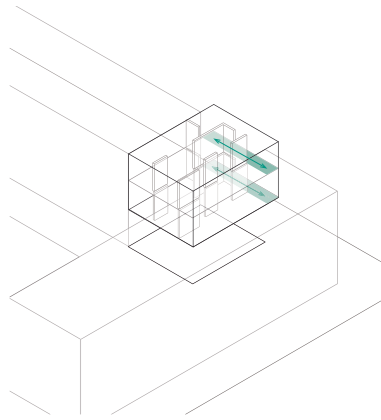
meters as to create a prominent "gate". Moreover, its vast surface makes it convenient for appropriation, either by a consumer oriented programme or by residents (e.g. it could host a bicycle parking).



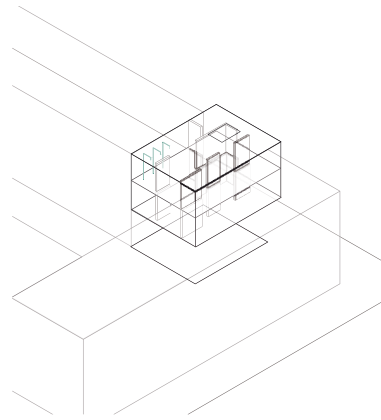
The upper two floors are extended towards the street to highlight the passageway and to enlarge the view angle for the collective areas on these floors. This extension accommodates a bright gallery next to a translucent facade



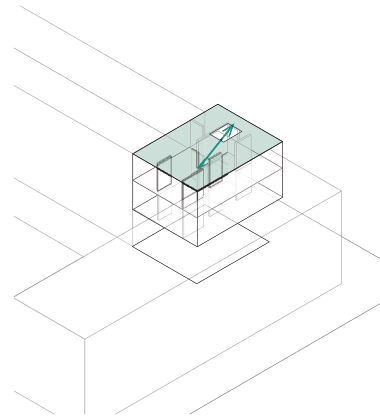
which is interrupted by vertical transparent elements. The remaining floor area is fragmented by wall segments in order to create potential niches. The intrinsic quality of these spaces is manifested by its possibility to keep them connected



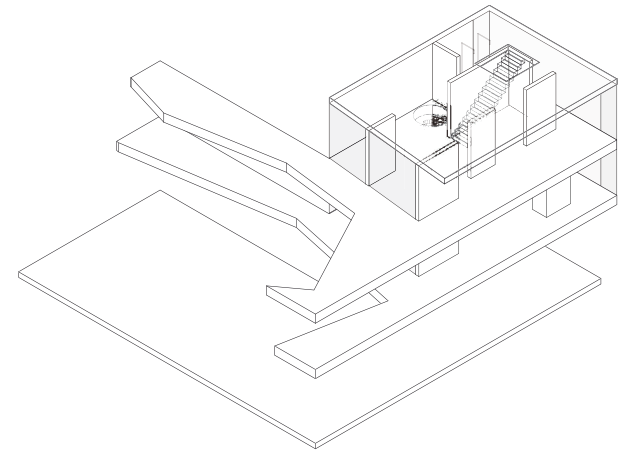
(various size spaces in sequence) or to close them in order to create a higher level of privacy. However, open space is also left along the southern wall in order to retain a direct access to the gallery.

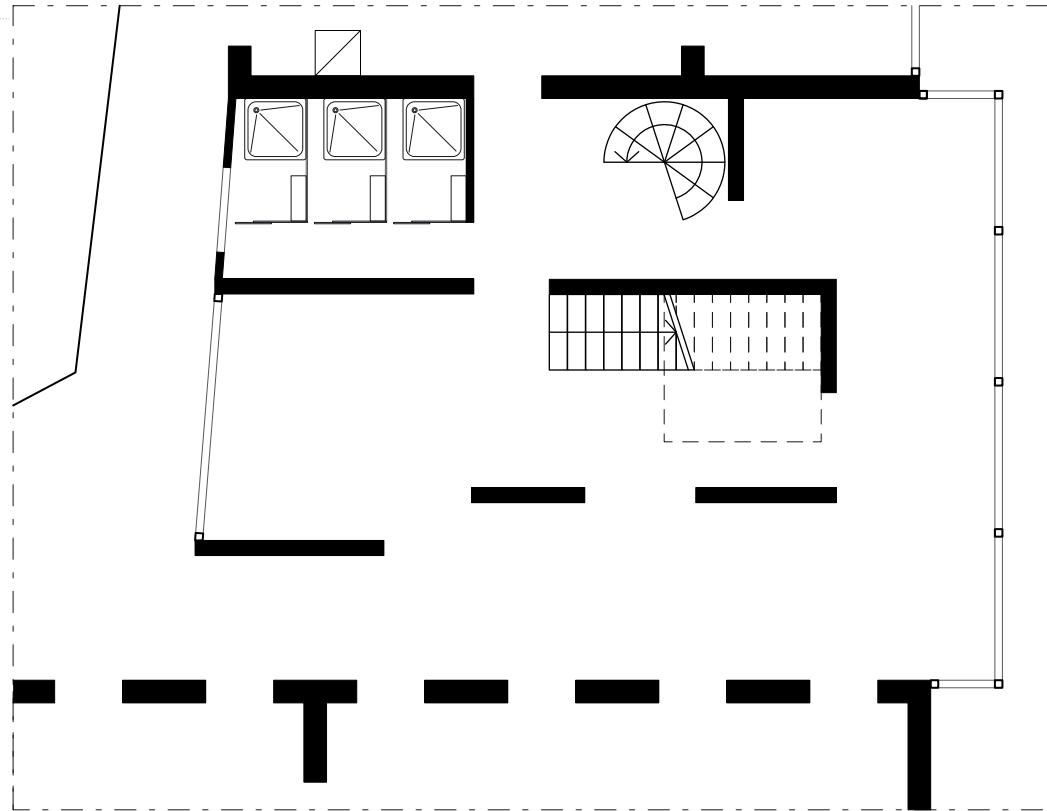


Furthermore, this facilitates possible appropriation of the space by adjacent units. Additional showers are placed on the northern wall hence making the space more suitable for appropriation by certain programmes (e.g. a wellness

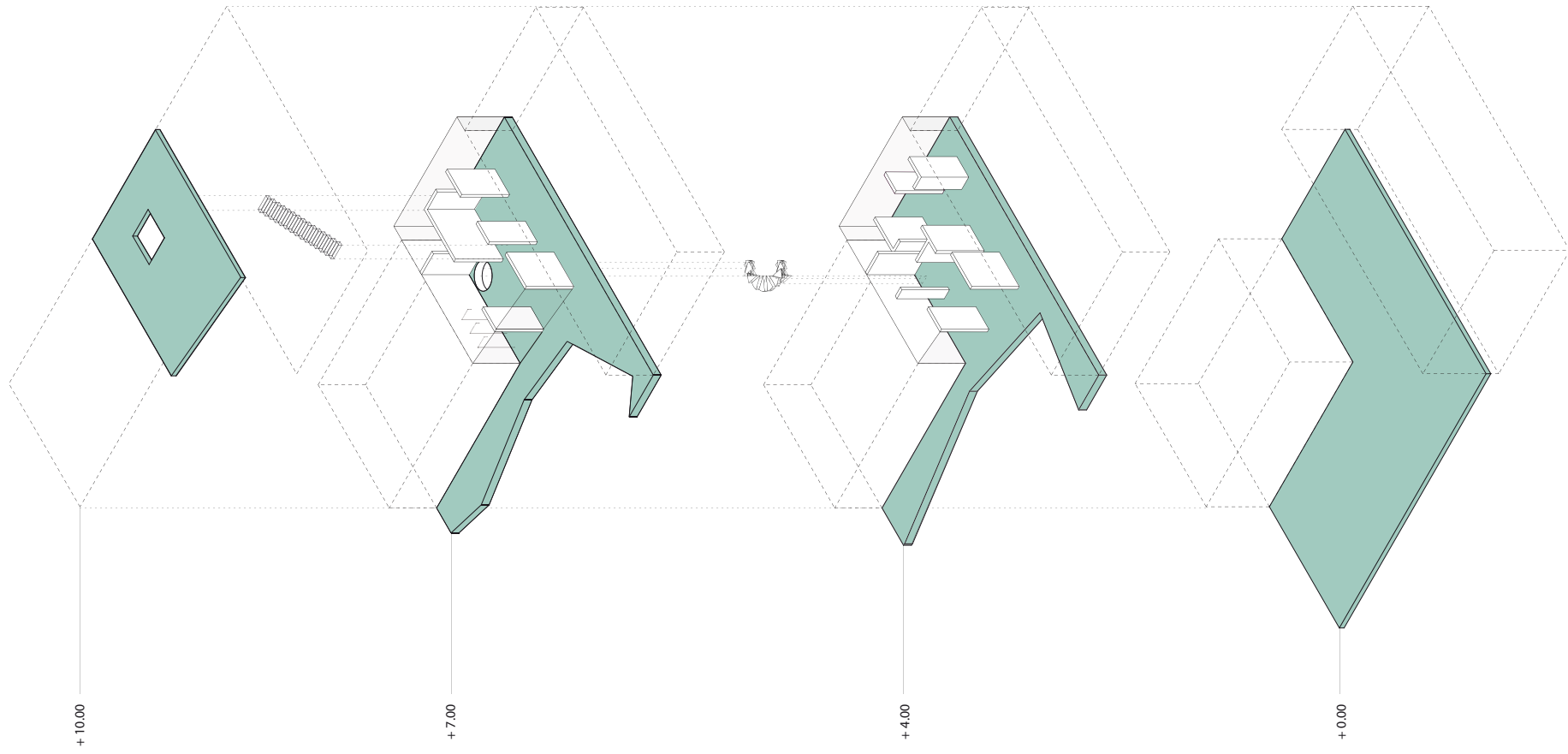


programme). The two floors are connected by an internal staircase which then continues to a roof terrace.





second floor



+ 10.00

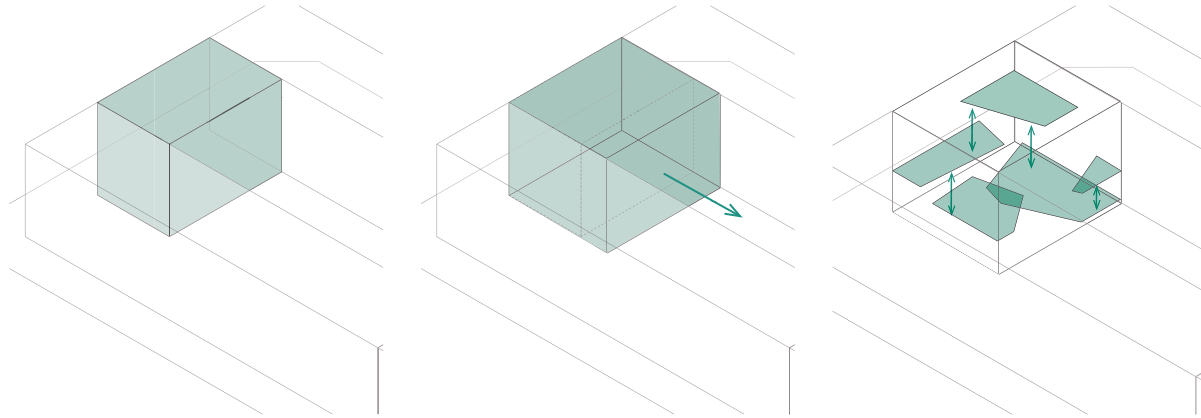
+ 7.00

+ 4.00

+ 0.00

VOLUME THREE

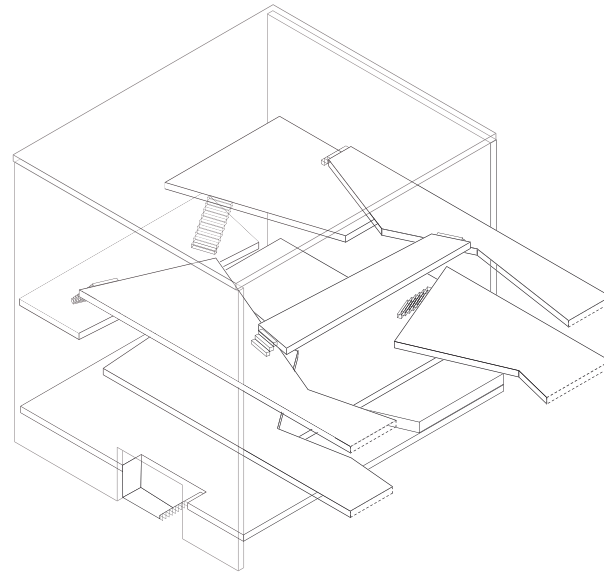
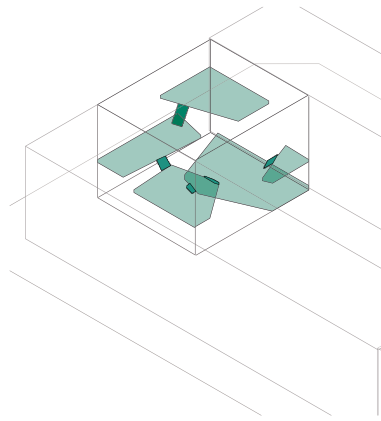
HELIX PLATFORMS



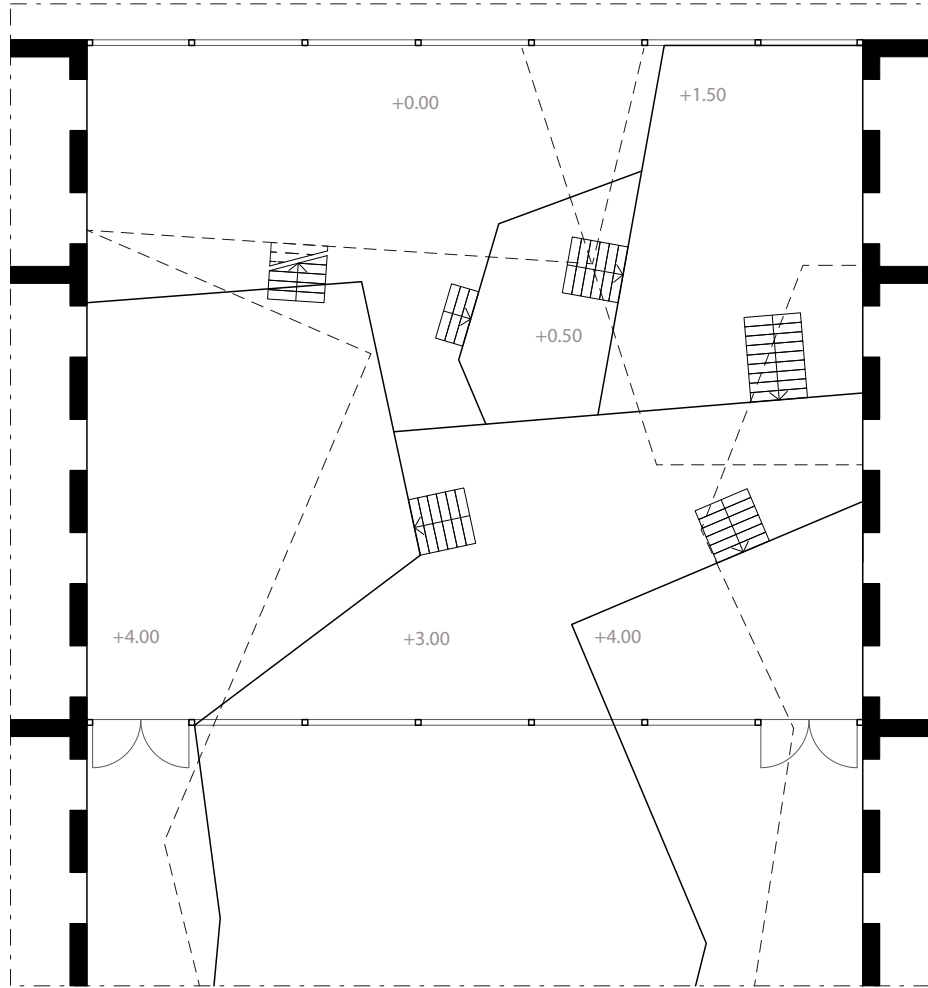
As there are already two main existing entrances to the courtyard, this third entrance is designed as a smaller connection through the volume. In this way, the flow of people is integrated into the collective space, which is elaborated

as a single volume. It is characterised by diverse sized platforms positioned on different heights, thus enabling simultaneous separation (due to height differences) and visual communication between its parts. This arrangement

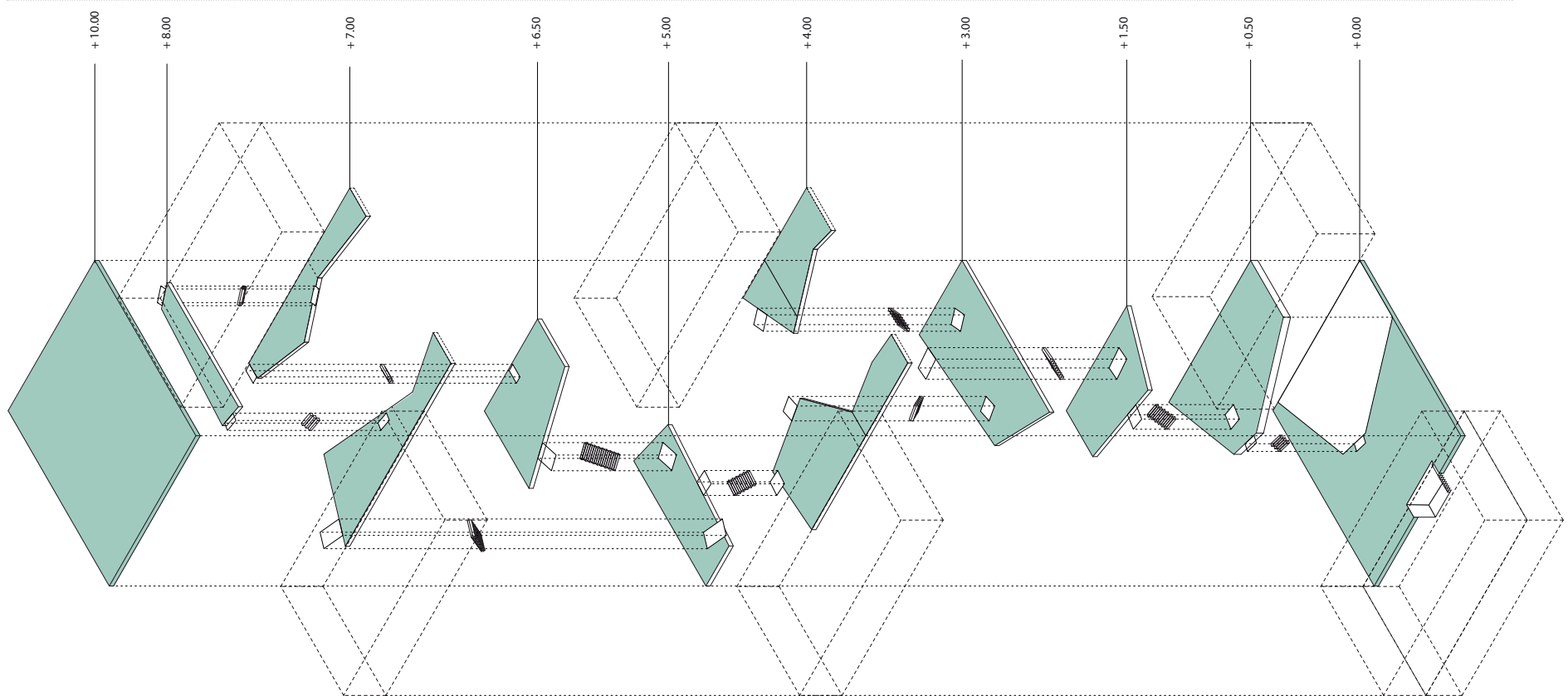
allows an appropriation of a single platform as well as the utilisation of several connected platforms for one programme. The whole volume is framed by a glass facade creating a bright atmosphere similar to that of a winter garden. The



adjoining individual units are accessible
through this collective space and allow a
direct appropriation by the residents.

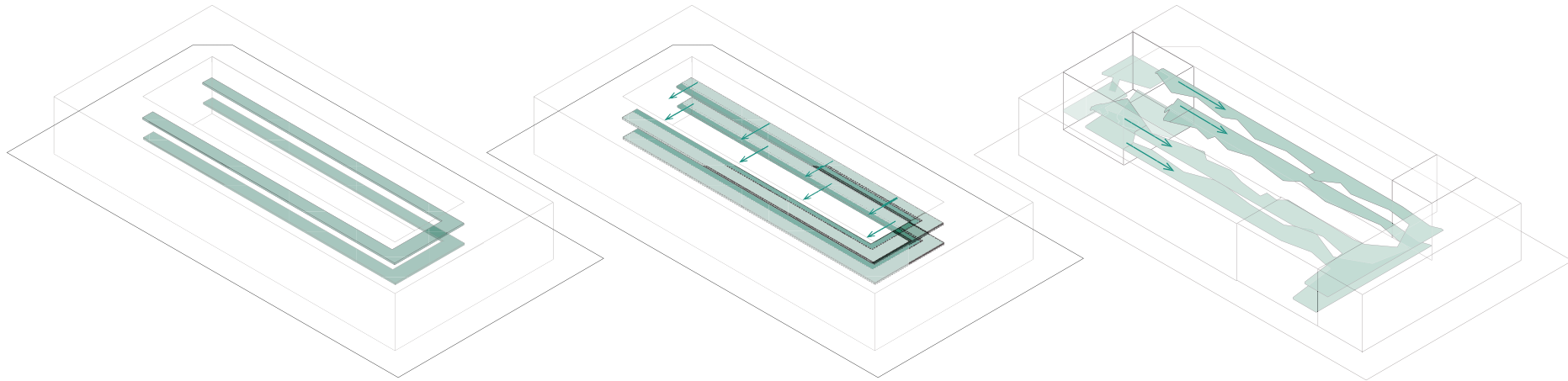


first floor



VOLUME FOUR

GALLERIES

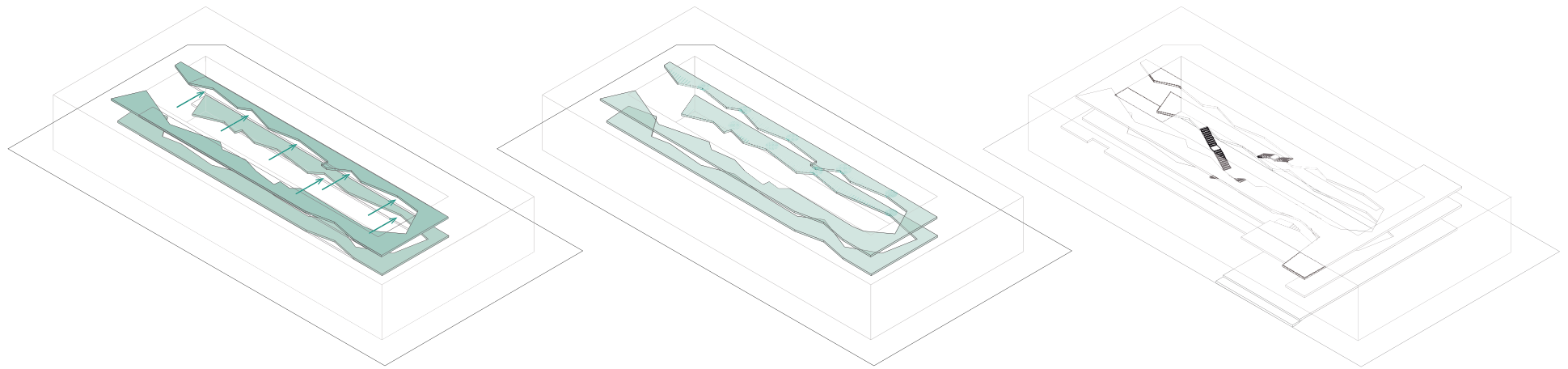


The ground floor of this volume is left completely open to communicate with entrances through the other volumes. It represents a circulation zone for residents and passers-by. Its area is big enough to accommodate different activities, such as flea markets, exhibitions and

other events. The upper two levels are configured as external gangways providing direct access to individual units and collective spaces on the upper floors. The design of these galleries is conceived with the idea of access space as living space. In

order to create different situations for appropriation, the attributes “constricting” and “widening” are implemented. Consequently, the galleries follow an irregular design causing constant variations of the gallery width. This oblique shape forms different sized areas in front

of the individual units to enable a variety of activities and functions to take place. The future adaptation of these zones by the inhabitants in combination with the narrowed situations of the gallery generate divergent levels of privacy. Moreover, the gallery floor surface blends into the



common spaces, highlighting unity and equity of these as a special supplement to the individual units. The courtyard and the galleries are interconnected in several ways. The fastest connection is the elevator, integrated in the volume of the park terrace and events

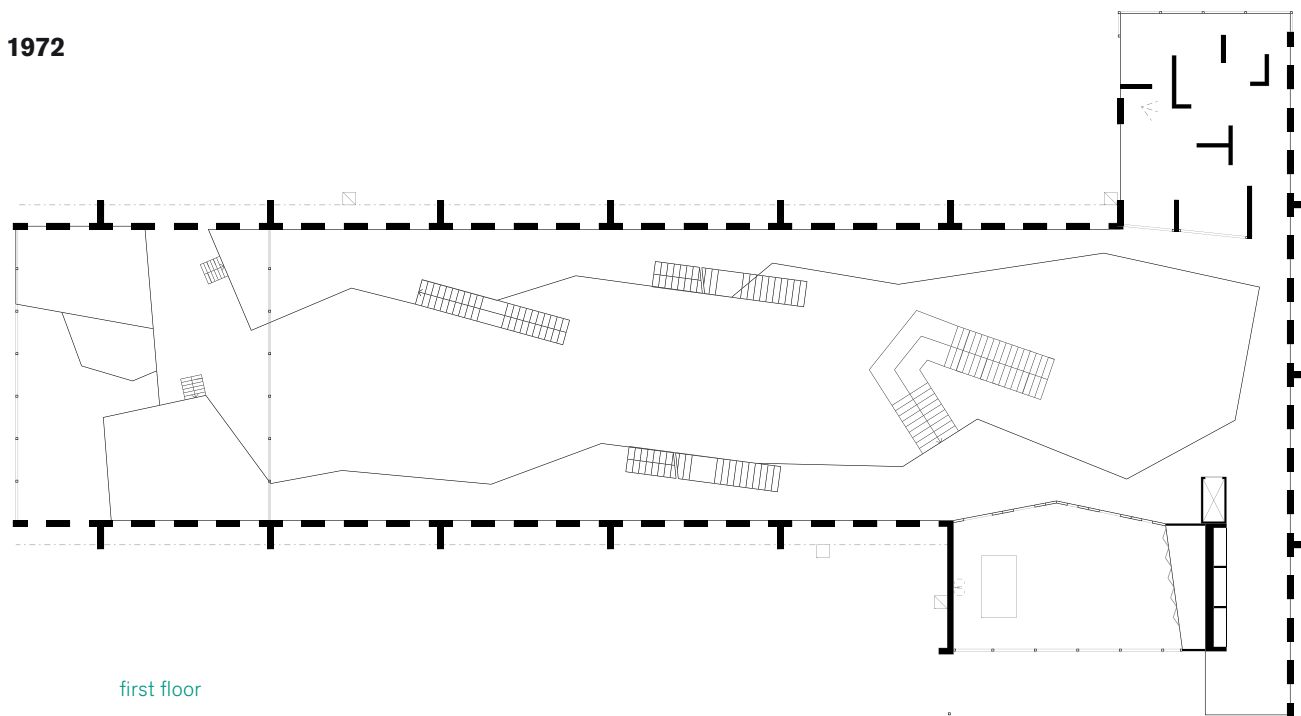
space. Another access is provided by additional staircases connecting these three levels in the centre of the building complex. The most eminent access is a wide staircase to the first floor next to the opening towards the park. Its attributes, such as double width of the stairs makes

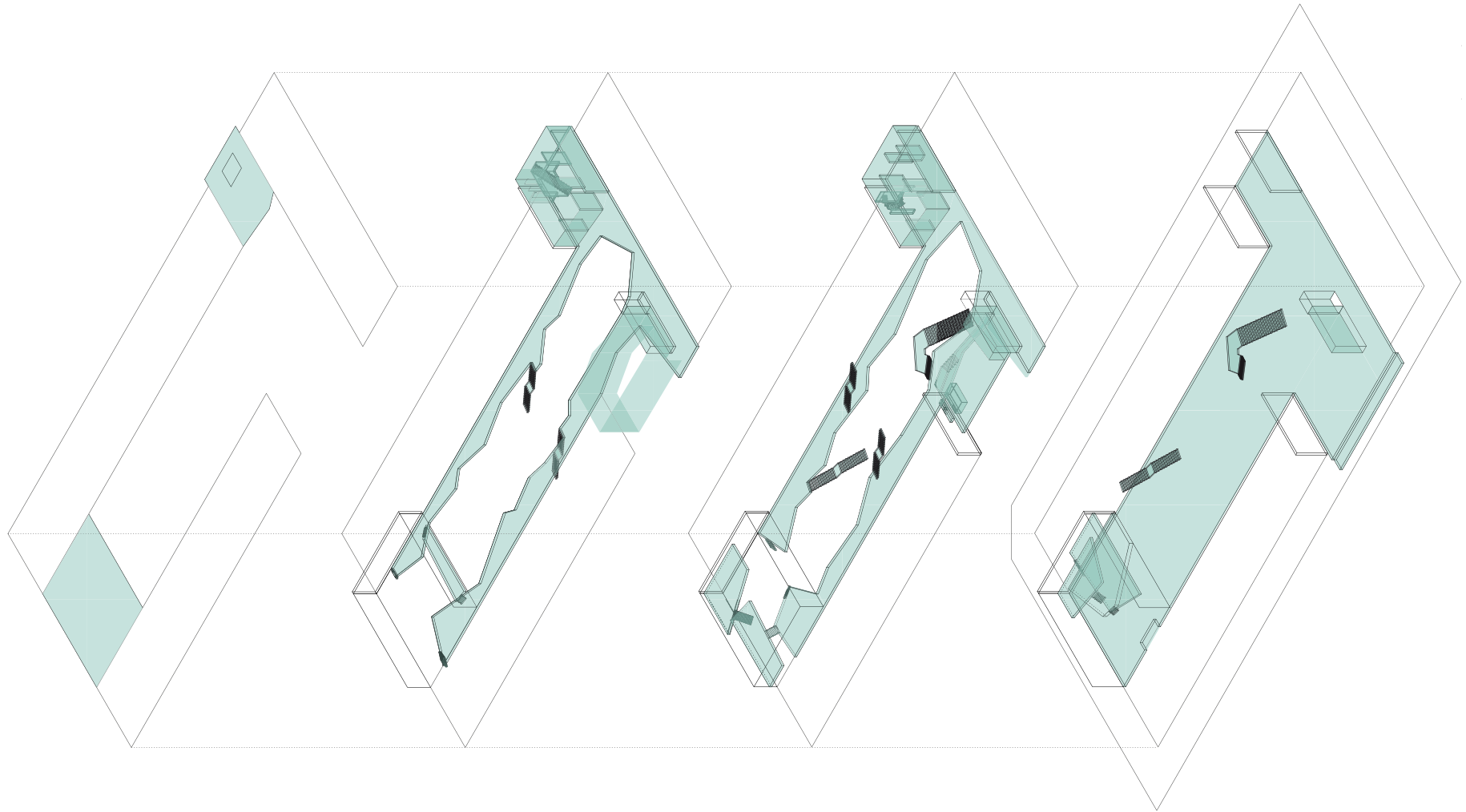
it more suitable as meeting and lingering spot. Furthermore, its twisted shape create a direct link between the events space with the kitchen element and the park terrace to facilitate a combined use. A third, indirect vertical access allow the helix platforms in the north of the

courtyard. The platforms are connected with each other and linked to the different gallery levels.

»Create a minimum of determined form and a maximum of potentials to activate the resident«

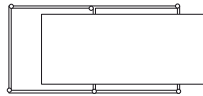
Burckhardt/Förderer - 1972



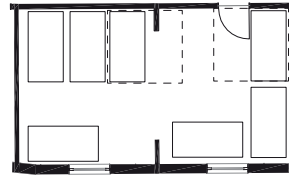


INDIVIDUAL UNITS

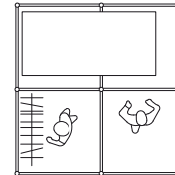
MINIMUM UNITS



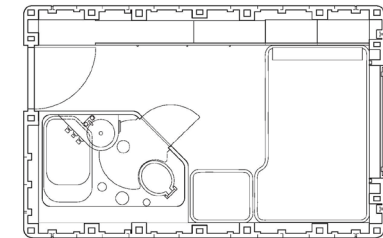
Hotel? tube capsule 2 sqm/person



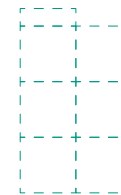
sharing 28 sqm 4 sqm/person
room shared with 7 people



Hotel? capsule 6,24 sqm/person

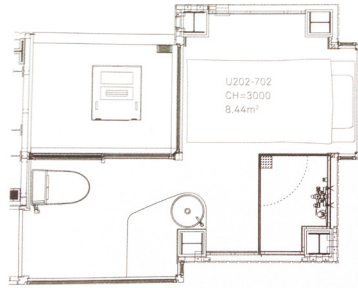


Kisho Kurokawa, Nakagin
Capsule Tower, 1972 8 sqm / person

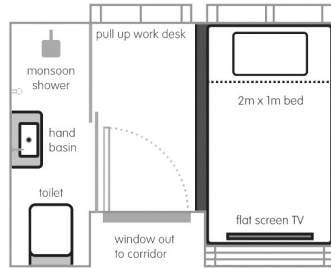


One of the major questions which arise from the general discourse of individual & collective is the question of the minimum amount of private space.

The UdN provides a 1:1 case study with its project "Hotel? Wilhelmsburg", analysed both during the building process and in its daily praxis, hence the choice to develop a spatial strategy starting



aat + MAKOT YOKOMIZO
architects, TEO 8 sqm / person



Hotel YOTEL,
Gatwick Airport 6 sqm / person



Qbic Hotel,
Amsterdam 8 sqm / person

from the minimum of private space in the context of dwelling.

Furthermore, several examples of built case studies are taken into consideration, starting from the archetype of minimal dwelling - Nakagin Capsule Tower, the first capsule hotel designed by the Metabolism movement architect Kisho

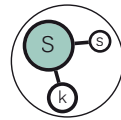
Kurokawa in 1972. Out of this prototype many contemporary interpretations were developed, such as Das Parkhotel (2006) by Andreas Strauss to hotel chains as YOTEL at Gatwick airport or the Qbic Hotel in Amsterdam. Moreover, in Japan, the homeland of the first capsule hotel, minimal units are also often used for permanent dwelling due to high density of

the population and lifestyle (working and leisure outside, only sleeping at home). An illustration of this trend is the project TEO by AAT+ MAKOT YOKOMIZO architects, where all the dwelling functions (sanitation, food and shelter) are literally squeezed into an 8 sqm unit.

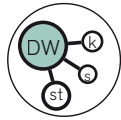
As these references relate either to short term & ephemeral sleeping functions or are based in the setting of Japan with its limited land resources, the sizes had to be adapted to the local context. Therefore the minimum for the single function of sleeping within the programme of permanent dwelling was set with 6 sqm. This amount of space can accommodate activities of sleeping, storing and changing clothes. However, in order to have a complete functioning dwelling unit, an additional space for ancillary rooms such as shower, toilet, kitchen, which is also taking 6 sqm had to be added. Hence, the union of the functional entity (sleeping) with the ancillary entity forms an autonomous dwelling unit of 12 sqm.

This concept is applied to the different programmes of desk work, manual work, gastronomy and retail which by analogy led to defining minimum mono-functional units consisting of a functional entity plus an ancillary entity.

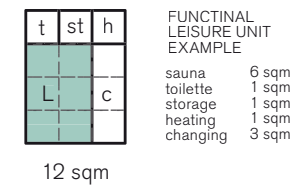
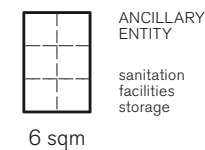
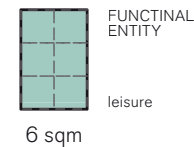
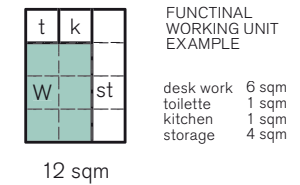
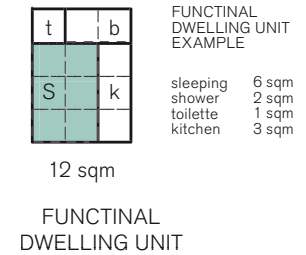
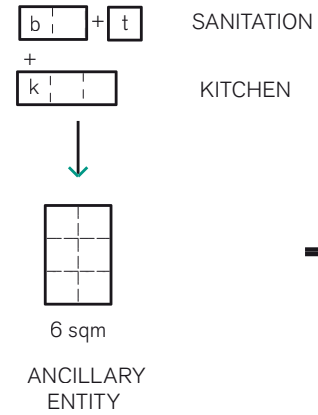
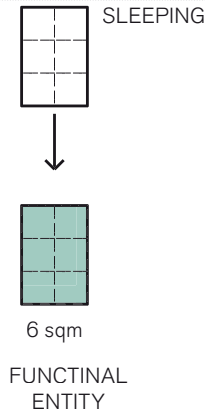
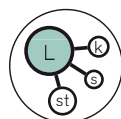
DWELLING



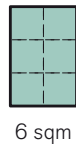
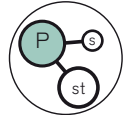
WORK



LEISURE

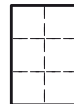


GASTRONOMY



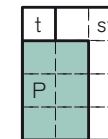
FUNCTIONAL ENTITY
production

+



ANCILLARY ENTITY
storage
sanitation

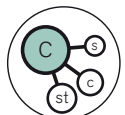
-



FUNCTIONAL GASTRONOMY UNIT EXAMPLE

production 6 sqm
toilette 1 sqm
storage 5 sqm

RETAIL



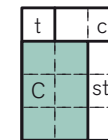
FUNCTIONAL ENTITY
consumers area

+



ANCILLARY ENTITY
counter
storage
sanitation

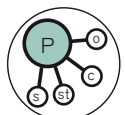
-



FUNCTIONAL RETAIL UNIT EXAMPLE

consumers 6 sqm
counter 2 sqm
toilette 1 sqm
storage 3 sqm

EVENT



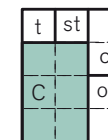
FUNCTIONAL ENTITY
production

+



ANCILLARY ENTITY
office
counter
storage
sanitation

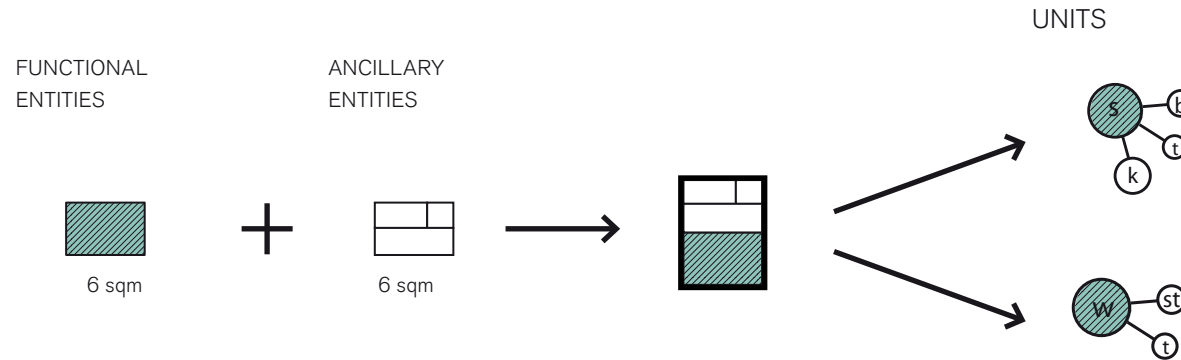
-



FUNCTIONAL RETAIL UNIT EXAMPLE

consumers 6 sqm
counter 2 sqm
toilette 1 sqm
storage 3 sqm

SYSTEM OF ADDITION



The potential of this standardised catalogue of minimal units is to use it as a base for developing a system of unit configuration. Elements available for combinations are functional entities and ancillary entities. The minimum combination merges one functional entity with one ancillary entity which results in an autonomous unit containing one programme (e.g. dwelling). The sequence then continues by adding more functional entities and trying to establish rules of

when additional ancillary entities are needed.

The reflection on different housing typologies lead to the conclusion, that three functional entities can always share one ancillary entity. This system can be adapted for any combination e.g. three dwelling entities + one ancillary entity (flat share) or two dwelling and one leisure entity + one ancillary (flat for a small family).

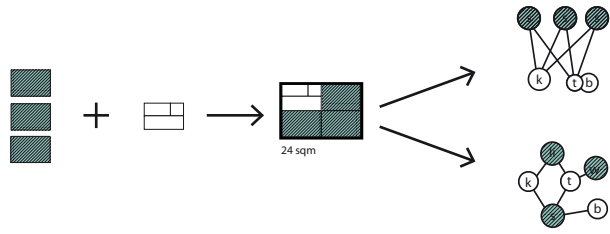
Each two additional functional entities require the addition of another ancillary

element. Ancillary element represents a component of an ancillary entity and varies depending on the programme in question. In a dwelling programme a complete ancillary entity consists of a kitchen and two sanitation elements, hence the addition after every two functional entities in practice means adding another element-toilette.

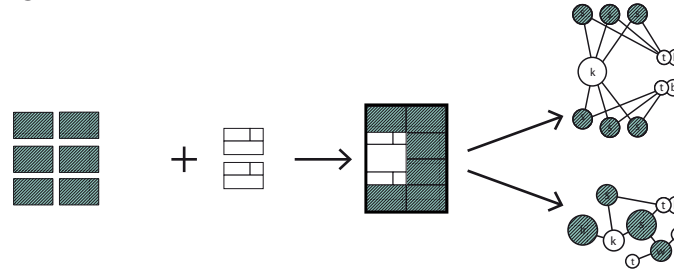
Apart from illustrating the dynamics of adding ancillary entities or their elements, the unit examples furthermore

illustrate that these schemes function independently of the chosen programme. For example, a 48 sqm unit (C) consists of 6 functional and 2 ancillary entities, and can equally well accommodate a flat share of six individuals with shared kitchen and sanitary as well as a small family dwelling with one person working at home (there is a mix of ancillary elements from both dwelling and working programme schemes).

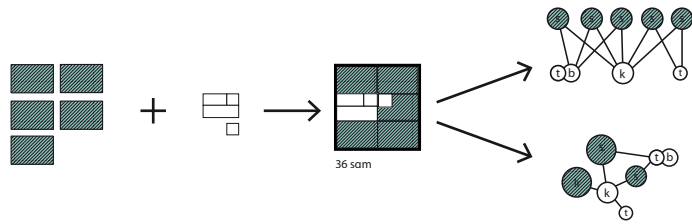
A



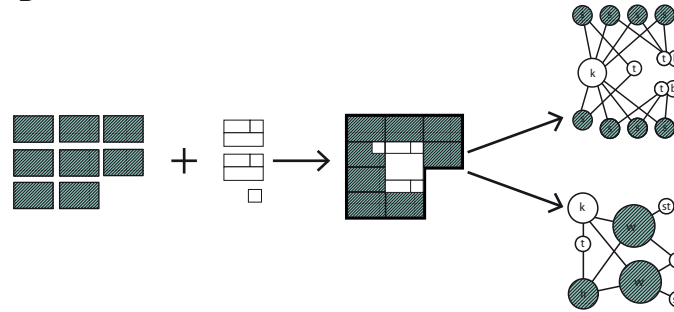
C

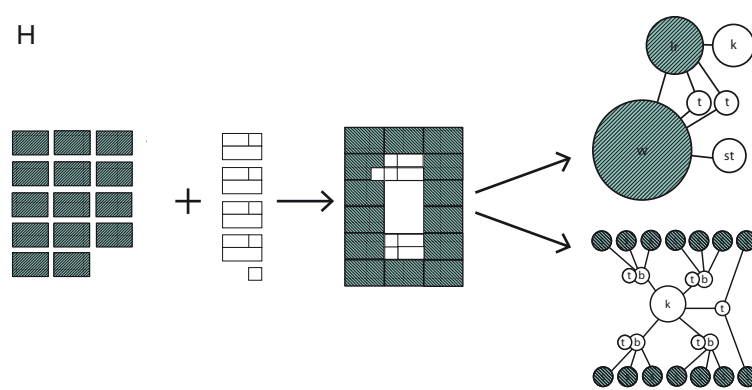
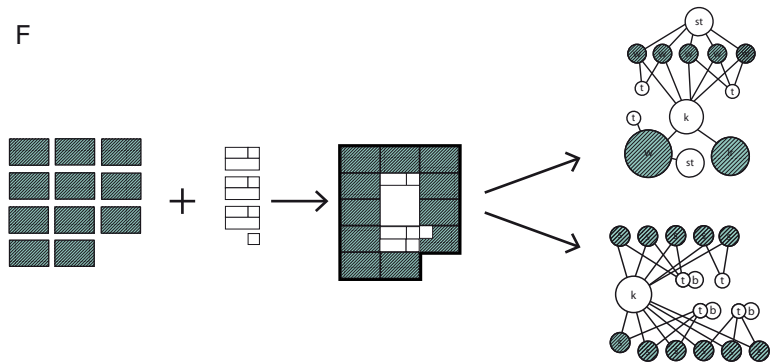
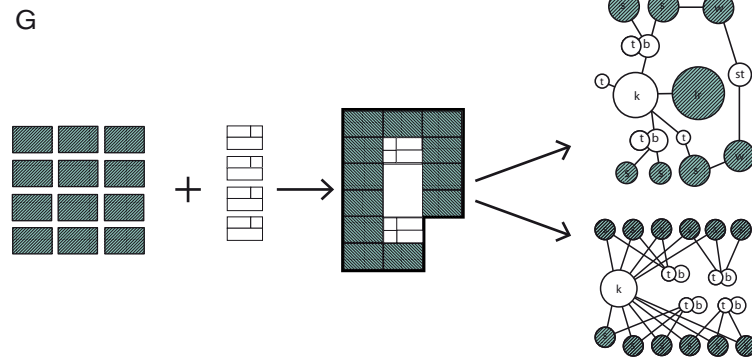
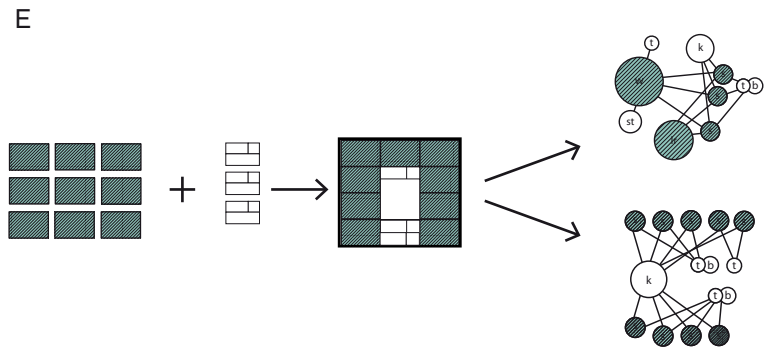


B



D

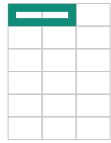
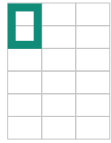




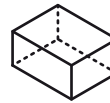
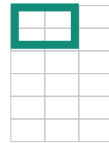
SPATIAL UNITS

CATALOGUE

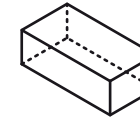
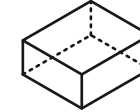
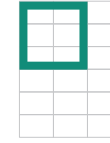
2
12 sqm



A 4
24 sqm



B 6
36 sqm



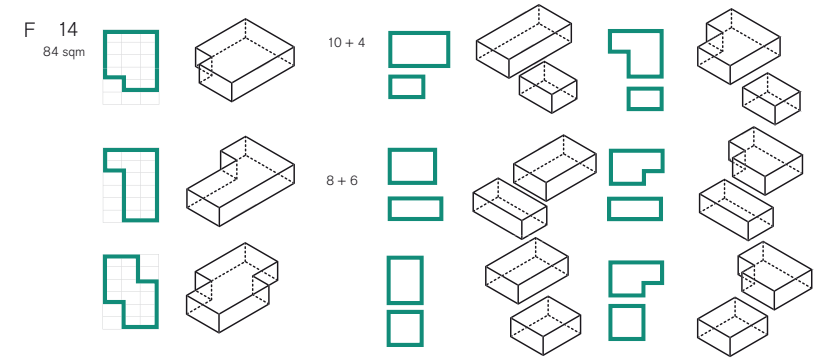
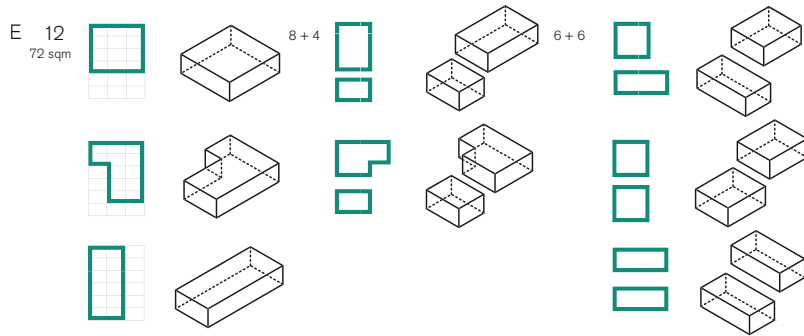
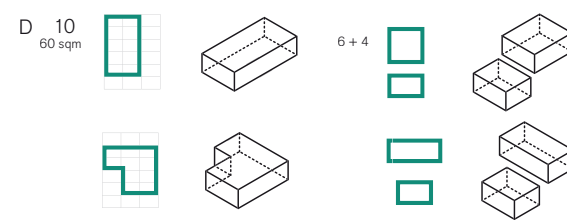
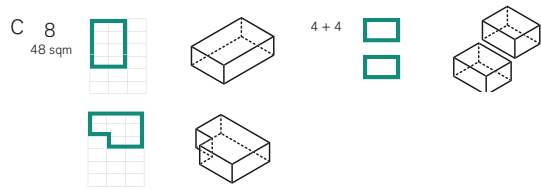
The modular system of functional and ancillary entities forms the base for a great variety of different combination possibilities. But still, these combinations are based on functional relations depending on possible actors. Therefore in a following step all possible spatial variations which are feasible are assembled in a catalogue of spatial units. To downsize the huge number of variations a set of rules is applied. These rules are

developed out of the urban context and the architectural framework of the site. No single standing entity with its floor area of 6 sqm is allowed. This also includes single entities which could be connected to a bigger unit. According to this no single entity can be used as shared space entity. The shared space has to be at least combined by two entities. Out of the predetermining grid and the idea of collective & shared spaces, the maxi-

imum sized unit was set with 108 sqm. In addition, it is only possible to expand a unit over a maximum of two stories.

»Robustness: Tough spaces are better able to stand social interactions«

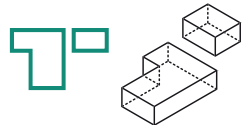
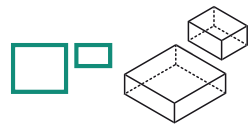
Fezer/Ifau - 2001



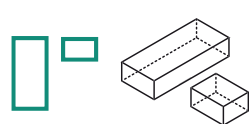
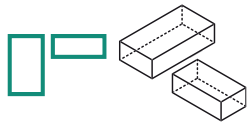
G 16
96 sqm



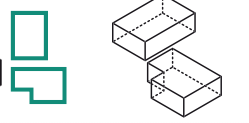
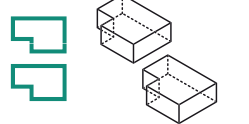
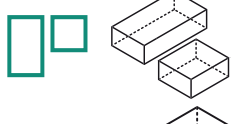
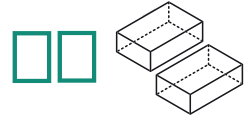
12 + 4



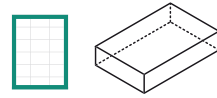
10 + 6



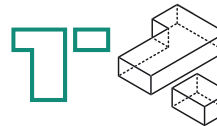
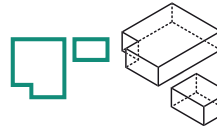
8 + 8



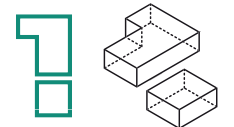
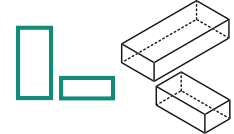
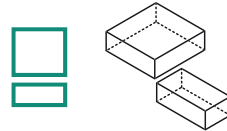
H 18
108 sqm



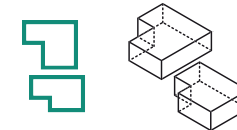
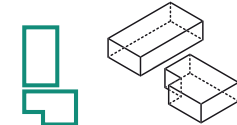
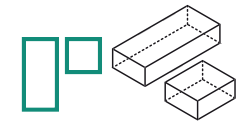
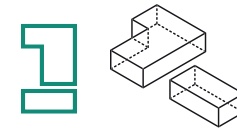
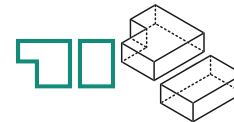
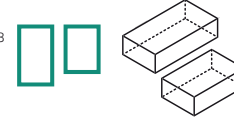
14 + 4



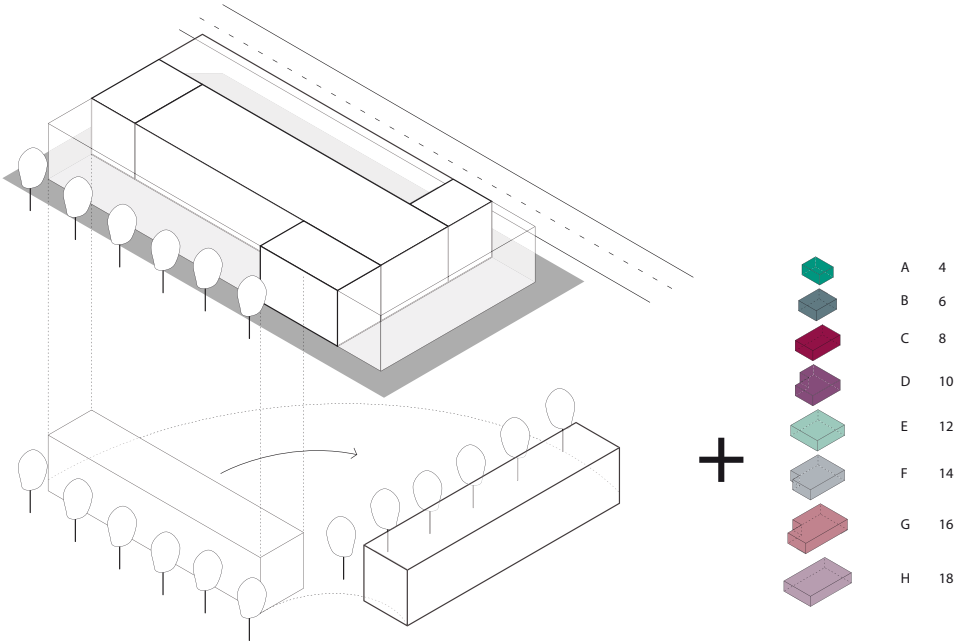
12 + 6



10 + 8

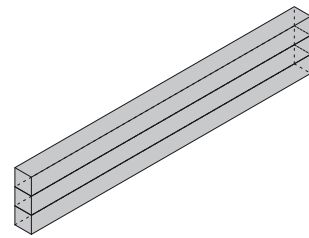
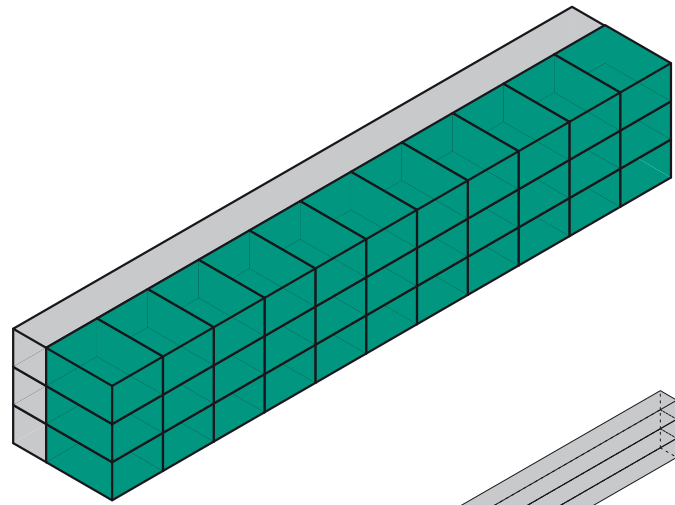


COMBINATIONS / VARIATIONS

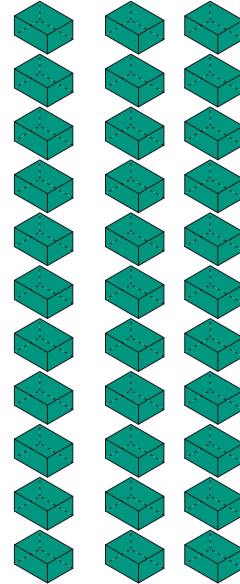


In order to test how the defined spatial units can be combined and fitted into the building, four different combination scenarios are enacted.

MINIMAL UNITS



shared entities

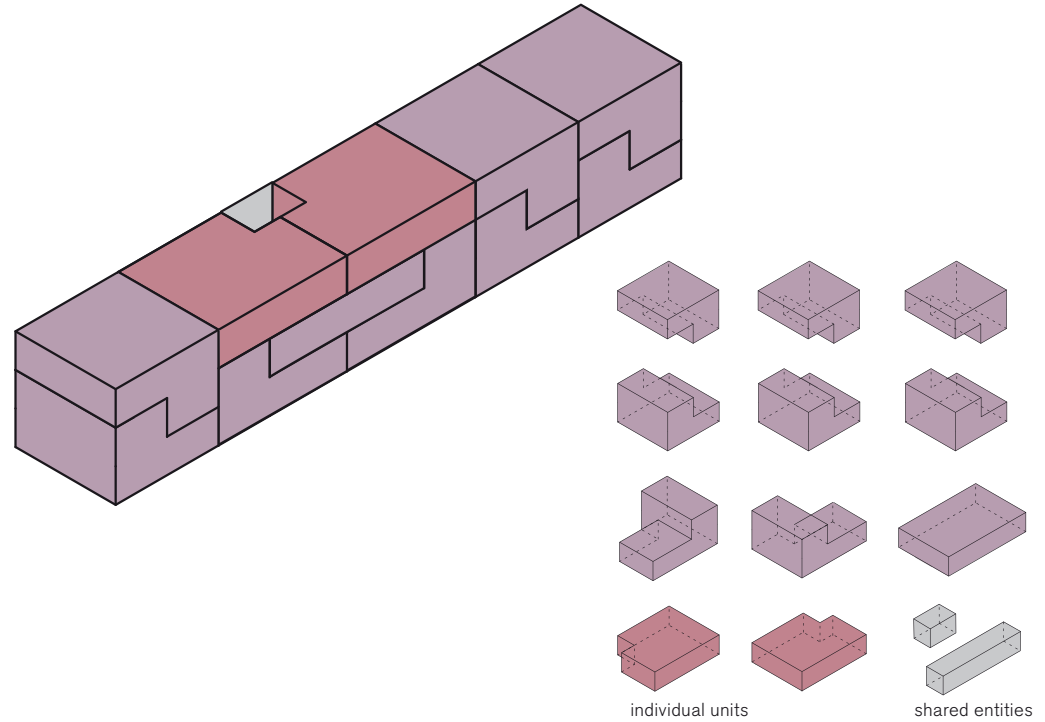


individual units

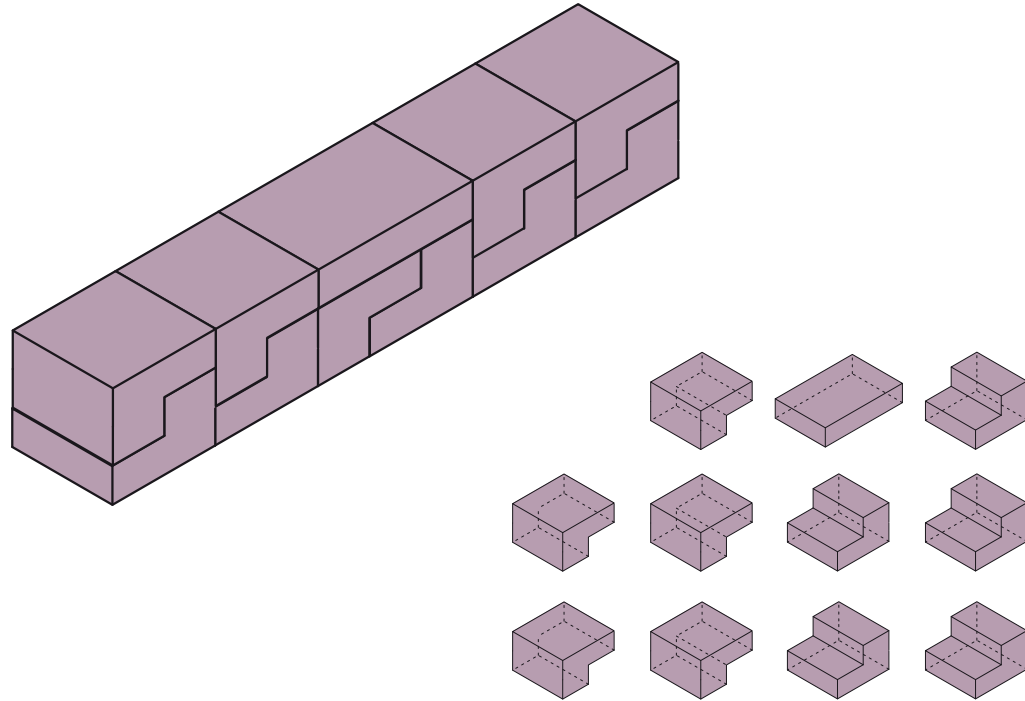
The first variation of potential unit in-fills follows the idea of a high density of the smallest unit typology TYPE A, which results in an equal space distribution and a rhythmical entrances position on the access gallery. Following this scenario, 11 units can be implemented on each floor making an overall number of 33 in block 1. Due to the minimal unit size, the winter garden zone facing the park is not integrated into each unit, but forms a long collective gallery.

MAXIMAL UNITS

The second variation displays a combination of maximum size units (TYPE H, 108 sqm), implemented in block one, facing the park. However, due to their size, it is impossible to spread over three levels and an uneven number of bays (allowing eleven minimal units as seen before), two smaller units (TYPE E, 72 sqm) had to be implemented. This scenario allows 11 units in total, 9 H and 2 D units. Moreover, the leftover space facing park is used as space shared between the adjacent units. However, the amount of shared space in this scenario is much smaller than in the previous one. Furthermore, there are fewer entrances, which implies a possibility of access gallery variations.

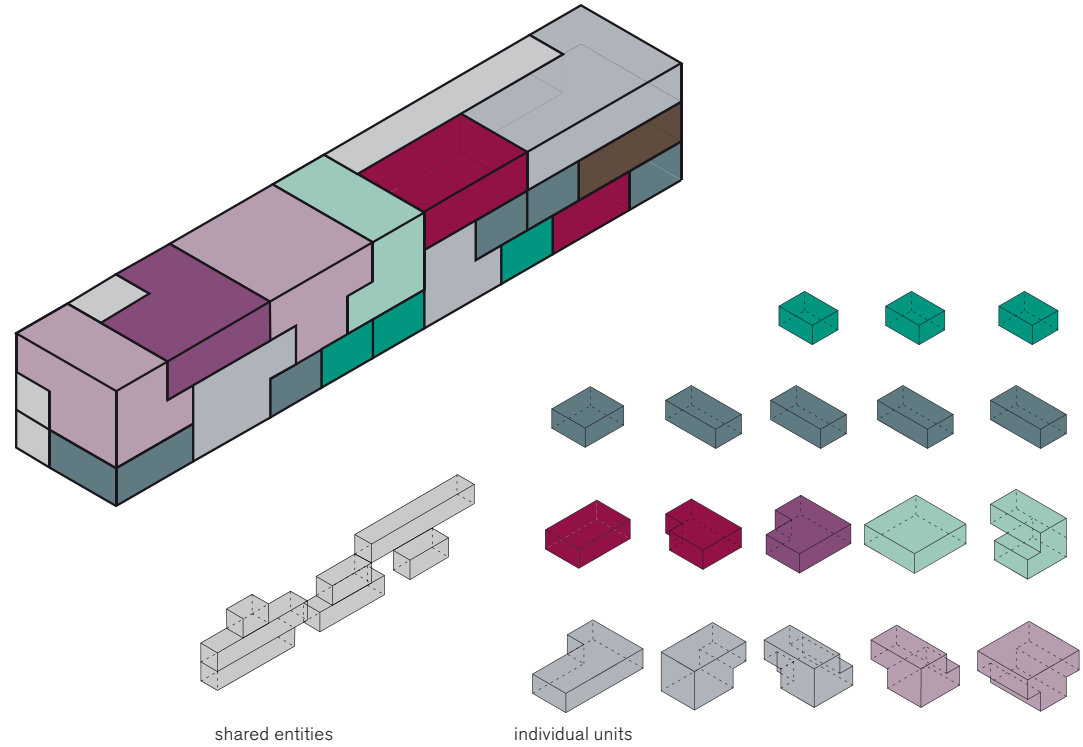


MAISONETTE UNITS



This variation shows a possible scenario of implementing maisonette units. To reduce the complexity at this point the biggest basic typology is used. In this way eleven units can be placed within block 2. All of these units are H-type units of which one remains as a loft apartment in the centre of the block. In this dense combination no additional shared rooms are implemented. Double height offers a possibility of having two entrances for a greater variety of possible uses. In this combination, one part of the unit could be used as a separated office unit following a living & working model. Furthermore, one part of the unit allows another family member to act more independently for a growing teenager or in the case of multi-generation living, for the grandparents. For a bigger flat share the level difference can be used to separate the "louder" collective uses from the more private functions such as sleeping. Nevertheless, only one entrance allows the gallery to be narrower in the parts where no access space is needed which would allow more light for the lower levels.

DIVERS UNITS



The last variation combines most diverse units- both in terms of size and shape. The total number of implemented units is 19, varying from the smallest to the biggest, and integrating both single storey and double storey units. The result is a big variety of spaces available to host shared entities. Moreover, the entrances are distributed in an irregular way, implying a possibility of differentiation of the access gallery parts.

CONCLUSION

Although the enacted spatial variations scenarios were only four, they illustrate the complexity and heterogeneity of unit combinations. They unveil a great variety of possible configurations only within their limits (each of them follows certain rules).

Therefore, given the extensive flexibility of the individual units, it is important to define their structural and infrastructural layout. Furthermore, out of this study of units configuration, the following conclusions can be drawn: A unit can host any programme as its physical size defines only quantity and not quality. However, other parameters, such as location within

the building can determine a level of its suitability for a specific programme.

Units adjacent to common spaces for example are more suitable for hosting special programmes, in particular consumer-orientated activities. The common spaces on the ground floor and the collective winter garden allow a direct and easy access. Furthermore the units located on the ground are characterised by a higher rate of passers-by. These specific qualities give the opportunity to use the unit as production area and outsource the consumption area within the common space. The size and layout of the unit as well as the application of

attributes such as a glass front and second entrance towards the common space can enhance the implementation of a non-dwelling programme.

The qualities of a unit depend on its size, spatial configuration, but also location and accessibility. Hence, the principle of equity should be taken into account in order to make sure that any compromised quality is compensated by another one. For instance, smaller units should be located close to collective zones or shared entities.

As the ground floor allows either a direct access to the park or the possibility of a private parking place, a maximum

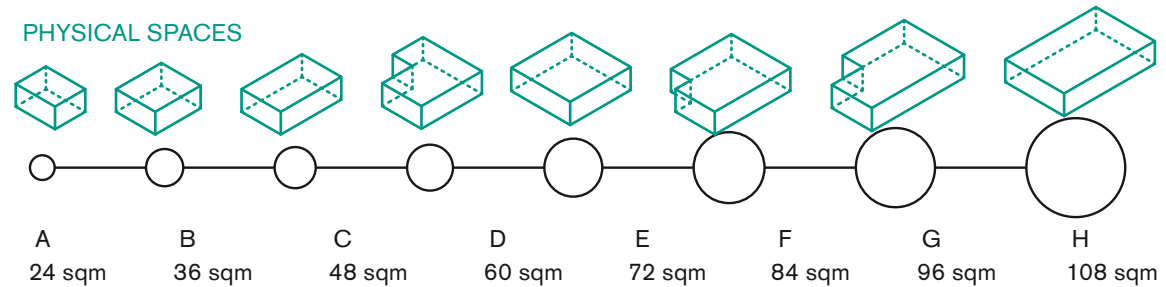
of units should be provided with these qualities. Furthermore units with less direct sunlight should gain additional qualities, such as a wider access area on the gallery with possibility for appropriation or a private storage availability, etc.

Double storey units offer additional qualities, such as double height spaces or the possibility of a secondary entrance which allows combined programmes (living & working) or multi-generational living.

ACTOR QUANTITIES AND PROGRAMME RELATIONS

»Minimise design activities to enable programmatic interventions«

Fezer/Ifau - 2001



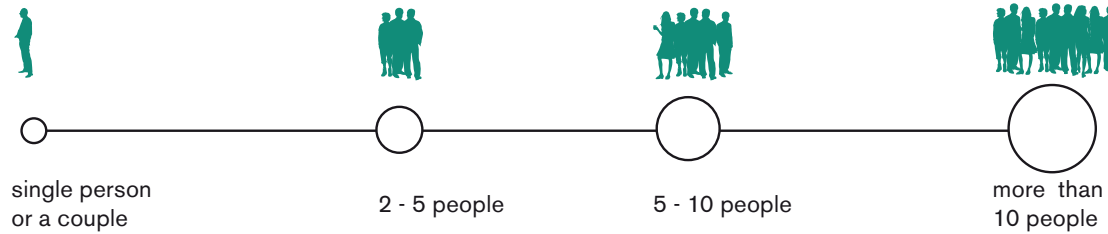
After defining individual units in spatial terms (sizes, possible forms and combination possibilities), the next step is analysing them in terms of the quantity of actors and programmes. This study inquires the relation between a maximum of users and related activities taking place in a unit.

In terms of programmes, a unit can accommodate dwelling, work and leisure

at the same time. With a rising number of users only two programmes are possible in one unit while the third one needs to be excluded. The highest density of users per unit. Although the units are designed to function for any programme, the focus lies on residential users due to the overall focus on dwelling.

The quantities of actors include a range from a single actor or a couple (that in terms of space usage functions in the same way as a single person) to a group of more than ten people. The following catalogue is intended to understand the maximum capacity of units according to the amount of programmes. It shows the maximal number of residents a certain typology can accommodate in relation

ACTORS



to the variety of included programmes. This approach derives from the previous research regarding the minimal space per person. Therefore, it is not said that the actual units would always have to accommodate as many people as possible. The rationale is that if the space of a unit can function with a maximal number of people, it will also function with less.

The resulting catalogue shows the spatial units (from smallest to the biggest) by combining quantity of programmes and actors. The quantity of actors is always reversely proportional to the number of programmes (e.g. a minimal unit can accommodate one actor with dwelling, work and leisure entities or three people only dwelling). Therefore, for each unit size three typologies are developed

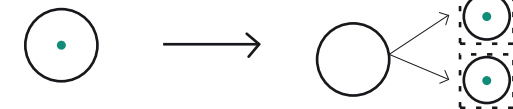
(containing one, two or three programmes) with consequently different quantities of actors. Functional diagrams illustrate how each typology could function.

This analysis helps to better grasp the relation between space, programme and actor within a unit and is intended to facilitate the choice of units to implement.

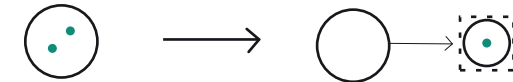
PROGRAMMES



one complete programme within the unit



two complete programme within the unit

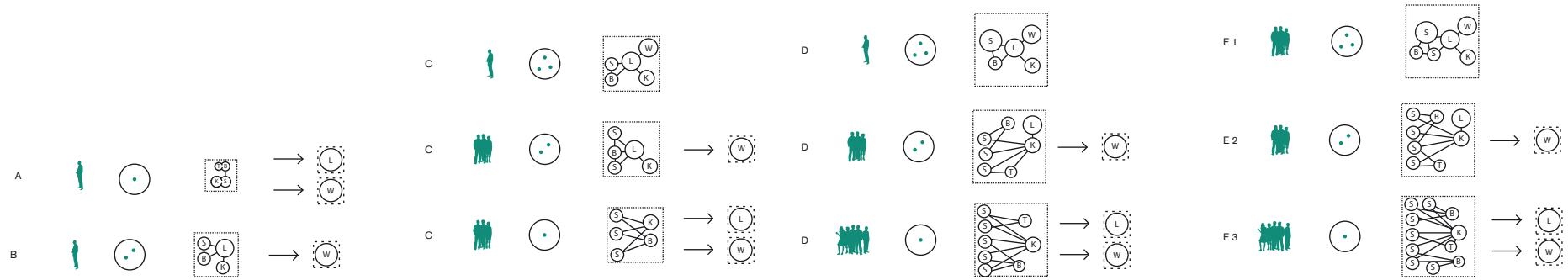


all three programmes within the unit



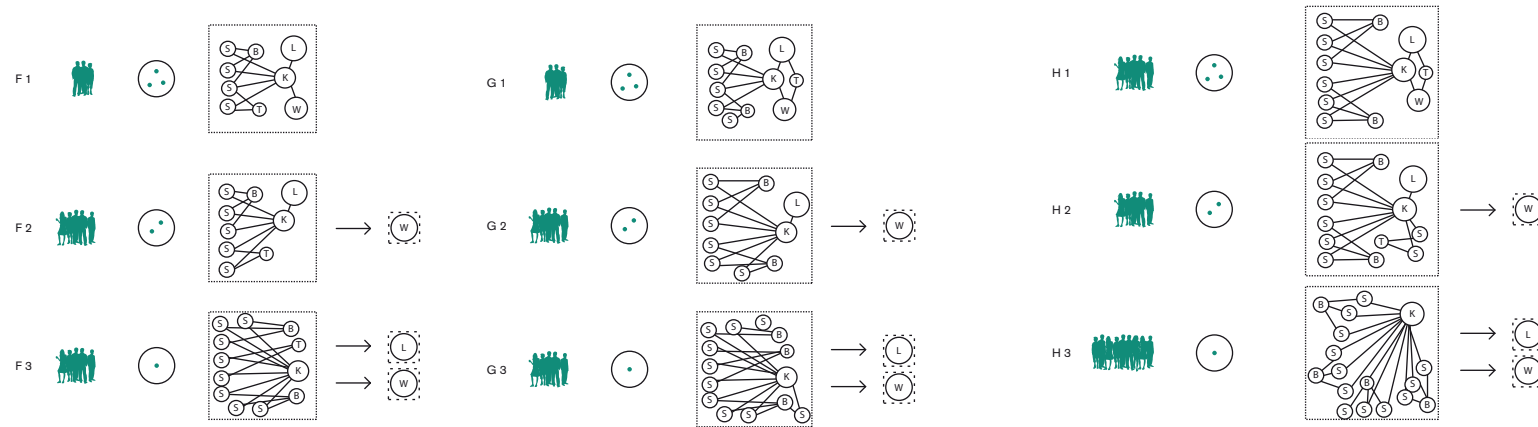
»Profitable housing is not about the claimed aesthetics, but about the design possibilities which are open for the user «

Burckhardt / Förderer – 1972



»Structure is a 'system of transformations' that is about ever-shifting relations between individual elements, not about their fixation in a hierarchically ordered system.«

Gleiter - 2011

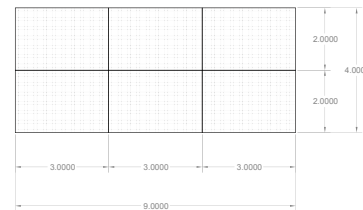
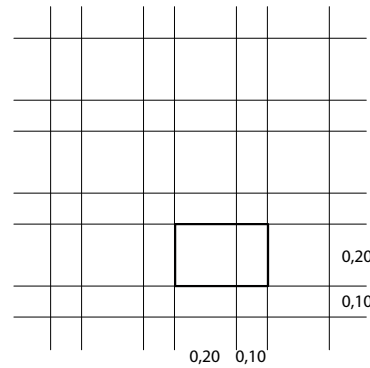


FILL-INS & FIT-OUTS

OPEN BUILDING APPROACH

»A good base building is one that can accommodate a number of possible layout alternatives at the fit-out level according to agreed upon criteria for the evaluation of the fit-out arrangements. Through capacity analysis, alternative layout solutions are explored and compared to evaluate the value of a base building design proposal.«

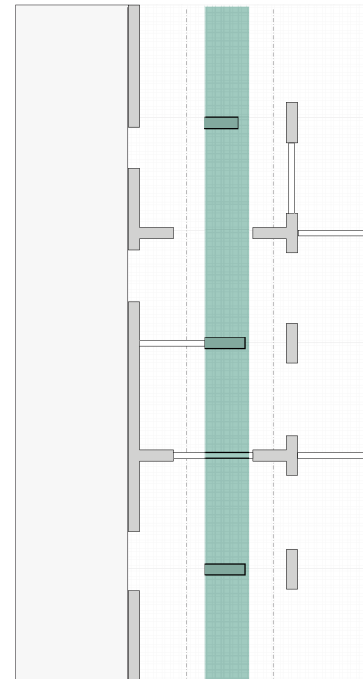
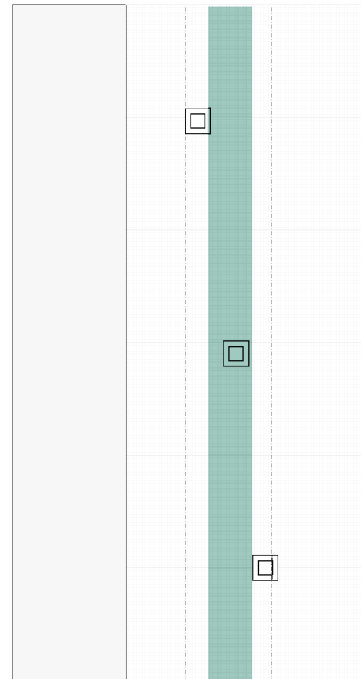
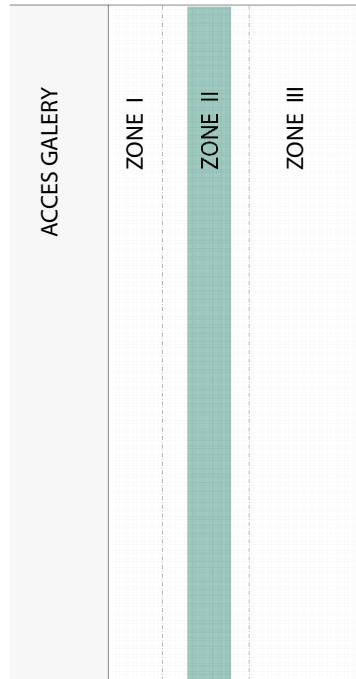
Habraken/Boekholt – 1976



As it is not possible to design a participation strategy without the future residents, it is important that the building structure is flexible enough, but at the same time robust and defined. Hence, it should consist of two separate levels: the primary structure is the predetermined part in which individual in-fills can be integrated by the users. Regarding this necessity the research on Open Buildings by the Dutch S.A.R. (Stichting Architecten Research) shows a design strategy which can be adapted, in particular regarding the programme of dwelling.

Open building could be conceived as a continuous design process through different environmental levels, from city level to the building structure and fit-out parts, where decisions are made by different parties at different levels.

In order to provide a flexible layout that can accommodate different configurations within the building, a grid structure was introduced. The basic grid consists of modules 20 cm per 30 cm, which work both for structural elements, and inner zones and spaces. These are then applied in the whole building, forming repeating patterns. A rectangle 10x10 module has an area of 6 square meters and represents a minimal spatial entity. All the unit sizes are obtained by multiplication of this minimal spatial entity. This system enables easy and flexible configuration of diverse spaces. However, some ground rules had to be established in order to structure the more permanent part of the building. This includes allocating bearing walls and stacks, which determine the maximum and minimum length and width of units, as well as the zone where ancil-



lary entities (bathroom and kitchen) can be placed. Nonetheless, these rules limit the configuration possibilities only to a certain extent - the system is still flexible enough to generate a variety of alternative spatial solutions which enable different programmes and functions.

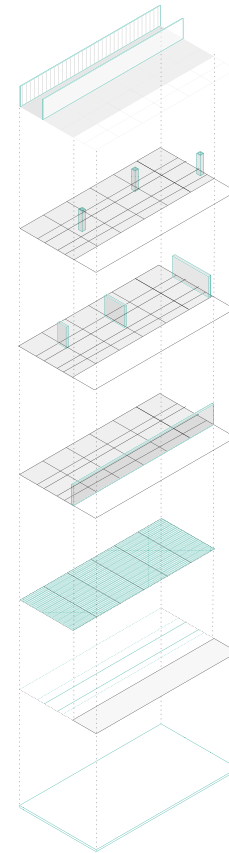
Therefore, according to the open building theory, the base building is the holistic framework - the shared infrastructure: structure, enclosure, public circulation spaces and the main mechanical systems and installation pathways. The individual occupants are free to configure and transform their own unit, thanks to the grid flexibility and modifiability of the fit-out parts (e.g. inner non-load bearing walls).

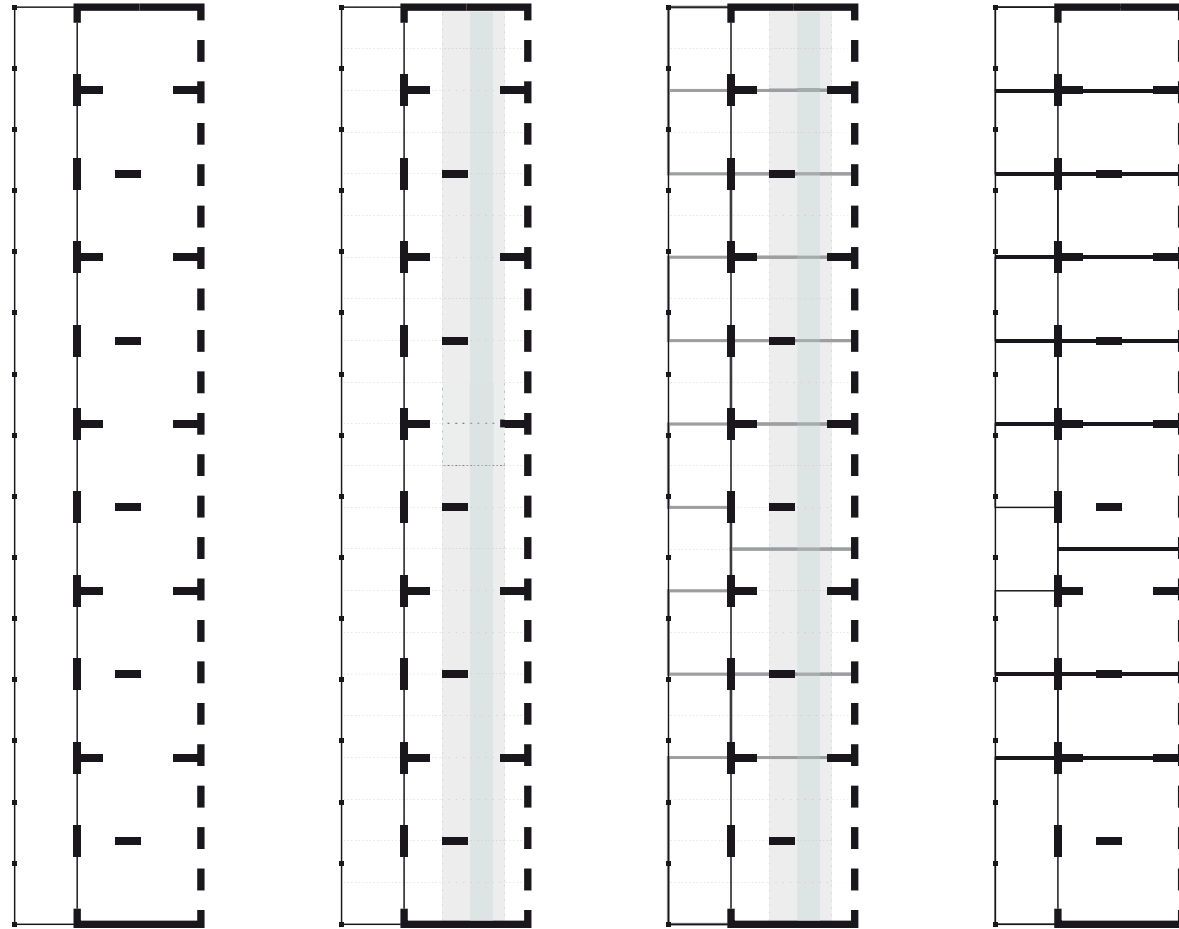
Hence, the base building is at the highest position of the dependency hierarchy, whereas the fit-out parts are on a low

»Secondary architecture (made by the resident) is a happening which evolves out of a specific situation, an idea, makes the most of a condition or a coincidence for all senses (sound, smell, temperature, humidity create a situation as a factor of orientation)«

Burckhardt / Förderer – 1972

level, as they have to adjust to changes on the building level. Another layer of dependency are zones, that condition location of different entities within a unit. Zones outline different qualities along the building's width which make them more suitable for accommodation of certain functions. An example of this is prediction to locate a living room in a zone adjacent to the facade because of the natural light source. Analogously, bathrooms are allocated in zones where stacks are positioned.

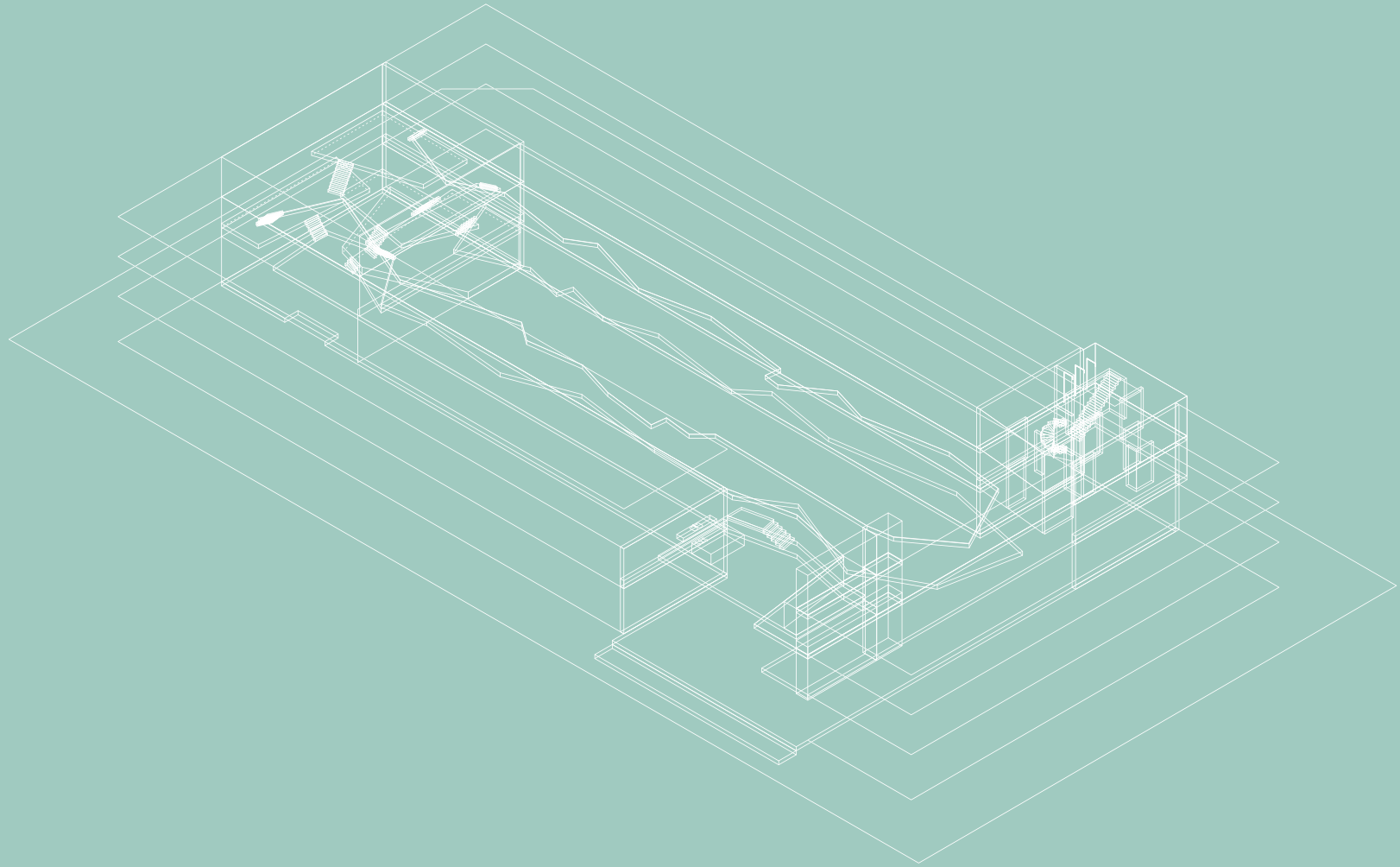


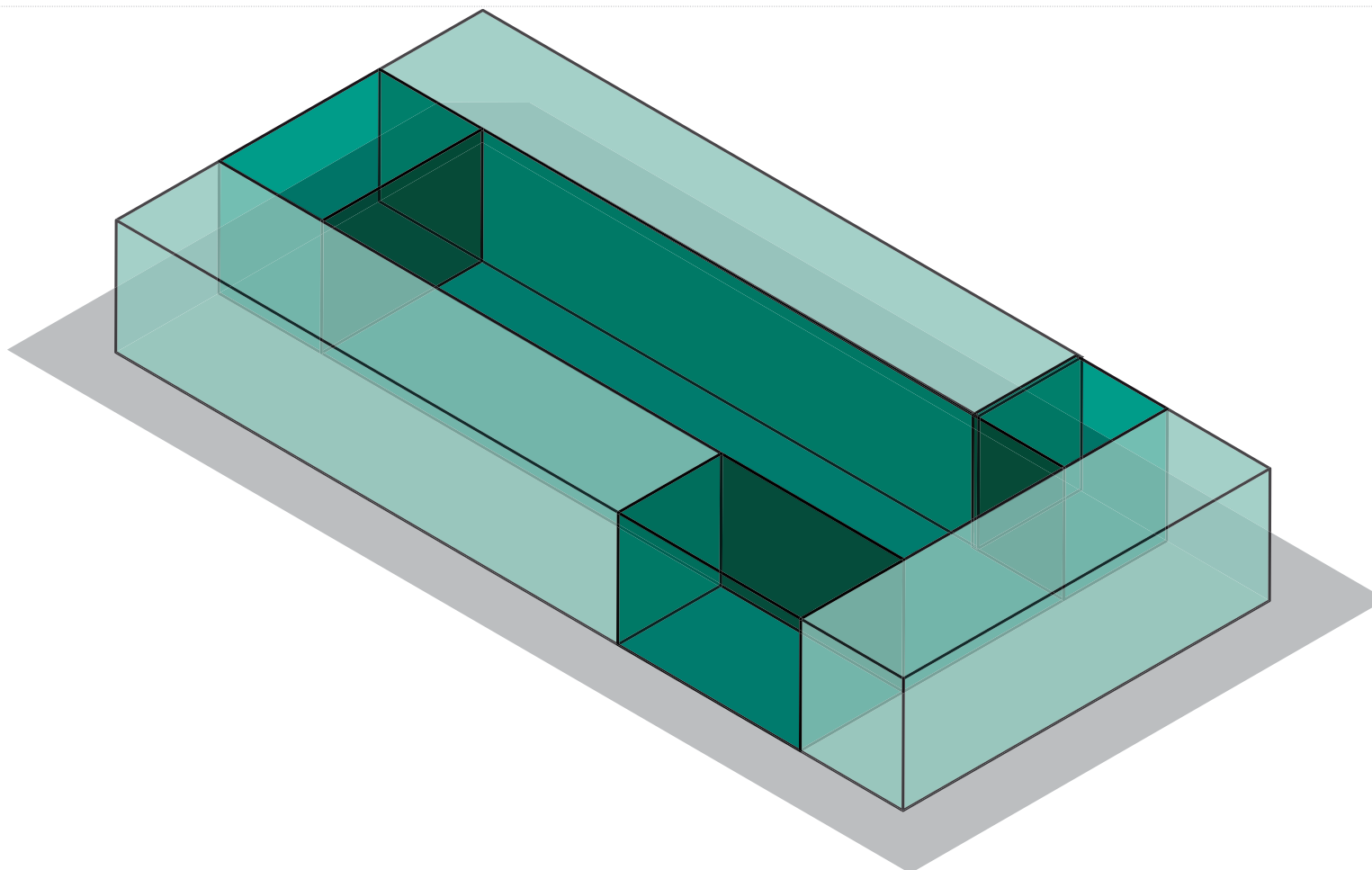


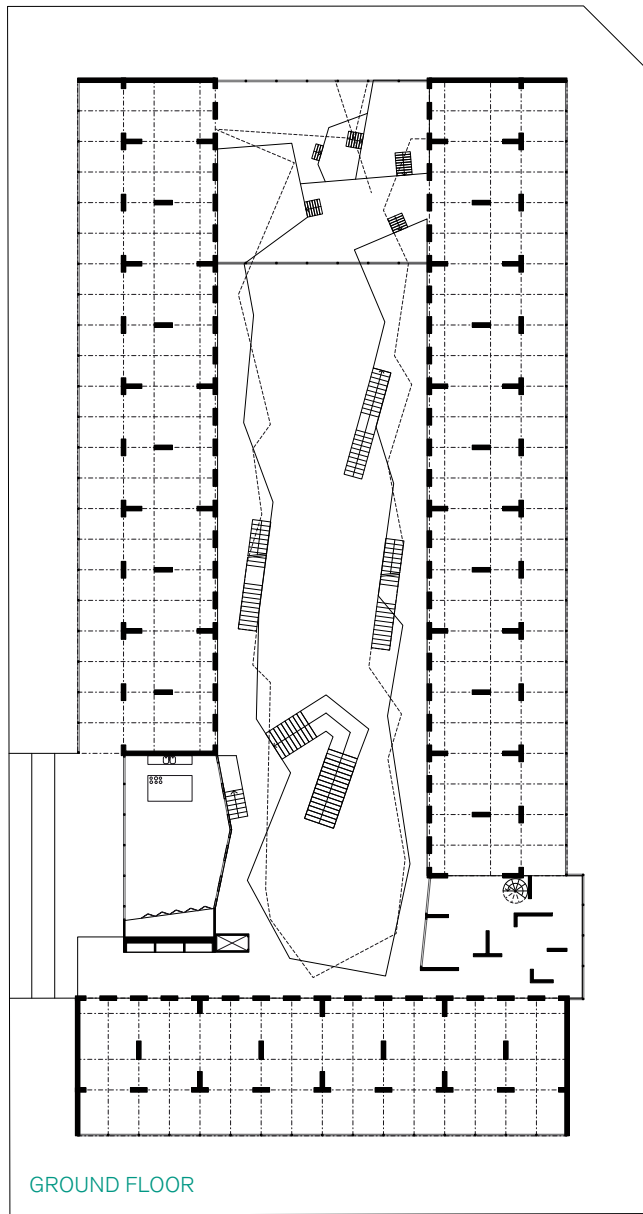
Out of the spatial unit catalogue and with the idea of the open building system, a base construction is developed. At this point the building is still suitable to host any unit combination. Within this constructive framework a specific zone allows the placing of stacks according to the chosen unit types which allows a variety of fit out possibilities.

The lowest level of the dependency hierarchy consists of the fit-out components, placed and configured by the residents. They add attributes, enclose, open, invite, repel and hence define relations between different functions within a unit.

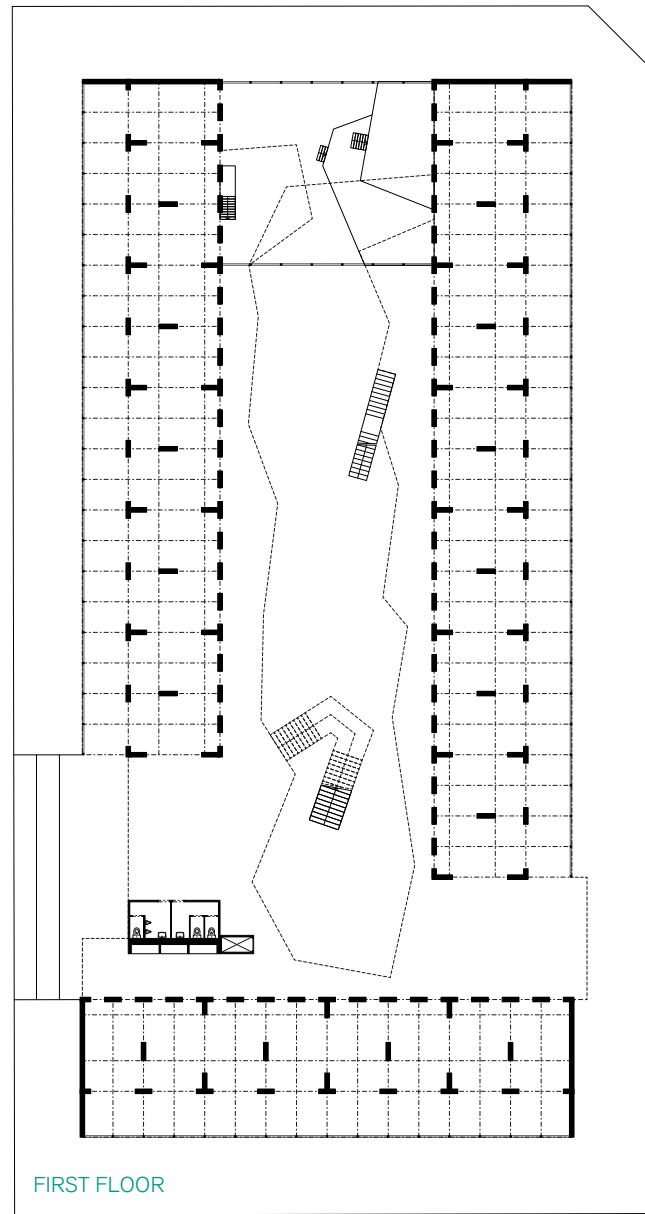
ROTENHÄUSER DAMM 30







GROUND FLOOR



FIRST FLOOR

