

Future-proof

A new model of flexibility

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Master Thesis

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Table of contents

INTRODUCTION.....	9
Abstract	10
Purpose of the thesis	11
<i>Status quo critique</i>	11
<i>Reasons for reaching to history</i>	12
<i>New flexibility</i>	14
<i>Adaptive reuse</i>	16
<i>Longevity and sustainability</i>	17
TYPOLOGY RESEARCH.....	19
Strategy	20
<i>Spatial patterns and spatial units</i>	20
Research	24
<i>Choice of the buildings</i>	24
<i>Tempietto di San Pietro in Montorio</i>	26
<i>Church of the Nativity</i>	36
<i>Stoa of Attalos</i>	50
<i>Mosque–Cathedral of Córdoba</i>	56
<i>San Michele Maggiore</i>	66
<i>Typical Jutish house</i>	72
Results and evaluation	78
<i>Spatial patterns</i>	78
<i>Spatial units</i>	80
<i>Implementation example: Mosque–Cathedral of Córdoba</i>	83
DESIGN PHASE	89
Theoretical background	90
<i>“Archetypes in architecture”, Thomas Thiis-Evensen</i>	91

<i>"The timeless way of building", Christopher Alexander</i>	92
<i>"The buildings must die", Jane M. Jacobs and Stephen Cairns</i>	93
Design strategy	96
<i>Adaptation</i>	96
Existing structure	97
<i>Choice of the existing building</i>	97
<i>Site visit</i>	100
<i>Construction and technical information</i>	106
<i>Delimitation</i>	114
Project	118
<i>General objectives</i>	118
<i>Respect for existing structure</i>	119
<i>First floor</i>	124
<i>Evaluation</i>	130
<i>Second floor</i>	132
<i>Evaluation</i>	138
<i>Third floor</i>	140
<i>Evaluation</i>	146
<i>Fourth and fifth floor</i>	148
<i>Evaluation</i>	154
Conclusion	156
References	158
APPENDIX	163
<i>Design process - sketches</i>	164
<i>Boards</i>	166
<i>Model photos</i>	174

INTRODUCTION

Abstract

My thesis proposes a new understanding of flexibility in architecture. It investigates reasons for a generic and dull spatial expression of the majority of contemporary buildings.

Nowadays, technology and lifestyle are changing so fast that buildings need to accommodate shifting functions. Unfortunately, in pursuit of flexibility, architects design featureless “boxes” which lack intentionality. Contemporary architects have completely cut themselves off from the rich legacy of pre-modern architecture. As a result, a shallow interpretation of modernism sets a standard of flexibility. My point is to prove that in order to be flexible a building doesn't have to be a free-plan, post-and-beam construction.

I want to demonstrate that flexible architecture can have excellent quality and be inhabited by a language of familiar forms. I'm proving it by investigating spatial patterns and form languages in historical buildings. Selected historical examples are analyzed in terms of spatial qualities and materiality. The richness of collected archetypes can be translated into flexible, yet specific designs.

The design phase in an implementation of my research. I chose to adapt a pre-existing building, located in the center of Lund. It is a rather dull example of office design from the 50s and 60s. Structures from these times are now facing demolition or a complete remodeling, which, after a couple of decades at the most, will need to be fully remodeled again.

My design goal is to prevent a vicious cycle of thoughtless and unprofitable adaptations. I create a variety of spaces, expressions and scales which, through their geometry and materiality, affect the behavior and experience of the users. This influence dictates the program, which will change over time, much like the interpretation of space and the culture itself.

Purpose of the thesis

Status quo critique

Nowadays, flexibility is an obligatory feature of design. Constant shifts in lifestyle and rapid developments of technology call for architecture which can easily adapt and accommodate change. Radical functionalism has become irrelevant as the building's program is no longer a definitive factor in the creative process. A structure designed only to contain functions it was initially supposed to, might face a halt during the construction phase or a complete cease of use once the need for different functions arises. In such cases, the spatial quality is dependent on the function it was originally created for. It is immediately taken away once a new program takes over.

So far, architects have approached this problem with a rather narrow set of solutions. The most commonly used one is the open plan, more often than not in a reinforced concrete post-and-beam construction system, where one could freely insert and erase partition walls within the load-bearing grid. Hypothetically, this post-and-beam structure could be reused *ad infinitum*, while various insertions would be placed in the grid. However..

The other approach to flexibility includes high-tech solutions and geometrically elaborate designs. Movable walls containing sets of transformable furniture, for instance, are quite a success when it comes to limited square footage, especially in housing projects. Yet these ideas adhere solely to ergonomics and convenience, disregarding an overall spatial character of the architecture they help to create.

The purpose of this thesis is to prove that current understanding of flexibility in architecture is often confused with the creation of generic forms and adaptable gadgetry. This flawed comprehension has in turn led to a bland architectural language and a pacing life-cycle of technology-based architecture. I intend to prove that this is not the only direction and propose a new model for flexibility.

Reasons for reaching to history

Architecture is probably the only fine art discipline which managed to almost completely cut itself off from its historical heritage. Architects seek quality in novelty, and consistently ignore lessons from the past. We create new for the sake of new, and fail to recognize that little value or variety is provided in this attempt.

With every generic building, we are robbing ourselves of the architectural richness. Generic is defined as lacking imagination or individuality, predictable and unoriginal, having no distinctive quality¹. Generic buildings lack intentionality and are purely a result of factors such as market demand or developer's calculations. This brew of socio-political mechanisms produces a deeply flawed breed of architecture.

The fact that functions change a lot nowadays does not mean that every building needs to resemble an open-plan box. There are many solutions ensuring adaptability, other than inserting more and more

There is no reason to assume that a round space with a colonnade is less flexible than a generic box. It is as flexible, if not more, but also much more identifiable, richer in beauty and familiar qualities from historical context. Through a specific language of forms it becomes more valid and evocative, regardless of the culture it originates from. Such spaces are definitely more likely to be reused in the future than a series of boxlike buildings. Their survival is ensured by the embedded quality, and they will most likely avoid demolition for the benefit of minor changes and remodeling.

I want to prove that through a careful study of historical buildings I can create a new model of flexibility, which provides relatable spatial quality and a rich form language. The beauty and familiarity will guarantee that this flexible design will be used and improved over the years, as opposed to being torn down and replaced by yet another example of misunderstood flexibility. I want to discover the spatial aspects of historical buildings which made them valid to this day, and try to implement them in my design.

It is not my purpose to thoughtlessly and literally copy forms and spatial solutions from the historical examples. I intend to carefully study what makes these spaces relevant and adaptable up to this day. Churches and palaces are turned into libraries, concert halls or even households and offices. It is not because they were designed to be adaptable and host various programs. On the contrary, they were made for a specific purpose, but in a way which emphasizes tectonic aspects and general ambiance, rather than the program itself. Thus their quality and relevance stems from their embedded qualities and intentions on the architect, not the functional disposition.

The architectural qualities which exist regardless of the program, are the ones which endure once that program is changed. Architects should learn from that in aspiring to create flexible spaces which will stand the test of time, despite the changing ways of life.

New flexibility

The new approach towards flexibility which I propose is based on the understanding of historical legacy in architecture. In the research I have conducted, and which is presented further in this thesis, I invent a method of extracting the historical qualities in forms of spatial patterns and spatial units. Spatial patterns derive from human behavior, brought about by the geometry and layout of the analyzed space. Spatial units are basic building blocks of spatial patterns, and relate to substance, tectonics and materials. Both definitions will be clarified further on.

I am therefore observing and learning from the historical pattern language. I notice how the assemblage of units makes individuals behave, and how their responses are further strengthened by the material aspects of a given building. My interpretation can be easily verified, as the examined buildings exist in reality, and have been described and studied for decades. Thus my analysis is objective. Knowledge gained from my research is then used to establish certain typologies for my new design. As opposed to copying solutions from the past, I take inspiration from the ways in which they influence the users.

New flexibility advocates the creation of certain spatial types, varying in scale, geometry and materials. In practice, future-proof means that, for instance, there is a rectangular space which makes the users gather along its sides, while the middle stays empty and elicits a slower circulation due to a single skylight in the middle. Similarly, there could be small, circular space which makes the users want to stand in the middle, in order to observe a strong rhythm of openings in the outer wall.

As a result, a set of behaviors and responses is generated.

Over the years, as culture and lifestyle changes, the interpretation of the building's geometry will change, and individuals will develop a different set of reactions. This in turn will lead to a shift in function. For example, a room which promotes an even distribution of users and spontaneous gatherings is now regarded as a good example of co-working office spaces. However, in 50 years our conception of work can alter drastically, and this room's embedded behavioral qualities will be perfect for another purpose.

In my method, I don't aspire to universality and absolutism.

A building created within the new rules of flexibility does not need to last for centuries. However, it will introduce a form language and a certain approach to design which can survive for decades. It will be open to further improvements and remodeling according to the same philosophy. Establishing this new method extends the building's life cycle and is open to evolution.

We can't predict which functions humanity may need in the future, but we can provide the public with relatable spatial archetypes with increased chances of be used hereafter.

The spatial recognition of these archetypes comes from our evolution as a species, our collective consciousness and history. Interaction with volumes of certain proportions is very much alike from person to person. Our behavioral responses are based on reading some basic three-dimensional signals. For instance, everyone walks faster in narrow corridor, than in a spacious, brightly lit hall, with a domed roof. Similarly, a low ceiling will always make the room feel less formal.

Furthermore, it is easier to relate to the space if it has some distinctive features. These features allow you to attribute meaning, value, and ultimately a function. A flexible space which is rich in tectonic expression communicates what it wants to be. A flexible space, whose adaptability derives from being generic and featureless will not give any clues, as it is not sending enough readable spatial signals. In some way, if it can become everything it cannot become anything. In the end, how devoid of character and value can a space be to actually accommodate everything?

Adaptive reuse

In the last two decades the phrase 'adaptive reuse' has become increasingly popular. Architects have been striving to revive forgotten and derelict buildings, to re-discover their values and to keep them for the collective architectural archive. Especially industrial buildings from the XIXth century, often being examples of pure engineering, have gained a second life as apartments, art galleries or market halls. However, little has been done with the buildings from the second half of the XXth century, let alone the relatively new structures from the first decade of the XIXst century. There is no discussion over architecture which is too new to be demolished, yet too generic to stand the test of time. This architecture ages fast and dies quietly, and often replaced by yet another generation of identical failures.

This ignorance generates an incredible amount of waste. Its environmental impact is unprecedented and the immeasurable amount of human labor is lost.

The question arises whether the bland, generic buildings which currently function properly, but will most likely cease to function in the nearest future, should be kept or discarded.

I want to prove that it is better to upgrade an existing structure with an embedded carbon footprint and a fair amount of resources already locked within. It is not only a fair thing for an architectural archive of our times, but also a protest against the vicious circle of pacing life cycles of current architecture and costly demolitions.

We should try to avoid the mistakes of the past where our adaptations fail to be adaptable, where we make interventions which is turn don't want to be intervened into. The only way for a building to be durable is through change and continuous remodeling.

Longevity and sustainability

When pondering the question of flexibility in architecture, the issue of building's longevity arises.

It is hard to say if there is a type of architecture destined to last forever. Some claim that it is the ancient buildings, set in stone and gracefully turning into poetic ruins, or else preserved and reused carefully. Others may say that the answer can be found in a high-tech, expensive architecture, where sophisticated machines take care of what the design itself cannot do. Alternatively, a bottom-up approach where local communities build cheap, fast, radically ecological and completely recyclable projects could be a perfect balance between longevity and sustainability.

The truth, as always, lies somewhere in between.

The fact is, one cannot strive for eternity. Architecture celebrates a natalist philosophy and ignores the prospect of its own demise. Designers rarely think of how their buildings will age, how they will be remodeled or when will they be demolished. An awareness of these issues is crucial when the new way of flexibility is considered. If we manage to build less but smarter, we can be more sustainable. We need fewer but better and highly adaptable buildings whose life cycle can be prolonged through the methodology of future-proof architecture.

TYPOLOGY RESEARCH

Strategy

Spatial patterns and spatial units

In my attempt to fully comprehend the spatial features of selected historical examples, I needed to develop a research tool which would allow me to approach every building identically. My inquiry regards space, and since it is a very elusive concept, I created a definition of space, which allowed me to separate its components. In this definition (fig.1), space is a combination of a *spatial pattern* and a *spatial unit*.

Spatial pattern is a set of spatial relationships between the geometry of the built environment and human interaction with this environment.

Spatial unit is the basic building block of a spatial pattern, and it relates to a form language, tectonics and material aspects of a given pattern.

Spatial patterns, understood as behavior within the physical boundaries, and spatial units, understood as a collection of forms, constitute a full spatial experience. Space is neither the interaction with geometry, nor pure materiality. It is the combination of the two and the understanding of this fusion is the basis of adaptive design.

I believe that in spite of the existence of countless buildings and the fact that from each of them at least one spatial pattern can be extracted, ultimately there are only several patterns. Vast majority of spatial patterns one can extract from any building is a variation of a basic original pattern. In my research I tried to gather the fullest possible collection of patterns which repeat throughout history.

Spatial units, on the contrary, are unique for every building. They not only provide valuable inspiration for enriching the architectural vocabulary, but can also be re-assembled into other spatial patterns.

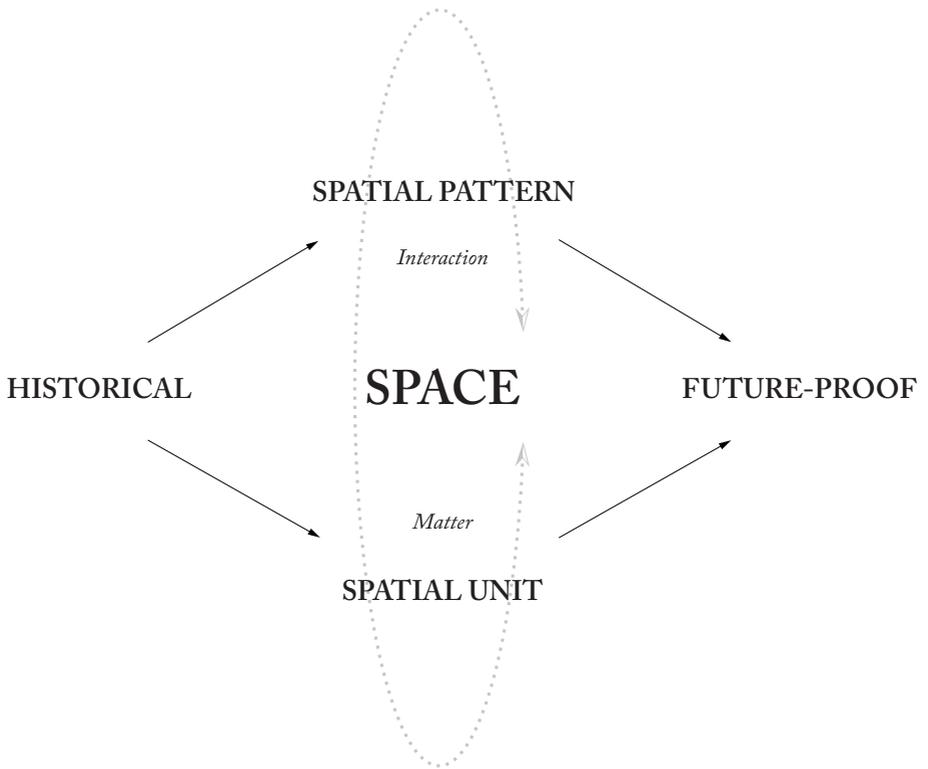


Fig.1

Spatial pattern affects our movement through a given space. It directs us towards a certain point and sets our path from one place to another. It can have impact on our pace and how we position ourselves within the space. It provides stoppages on which our sight can linger. It can make us feel comfortable, grand, intimidated or at peace.

Spatial unit contributes to the effect the spatial pattern has on the users. It strengthens it through openings, details, textures and colors, to name a few. Our perception of form changes greatly depending on the materiality, for instance whether we perceive it as heavy or light, open or close, etc. The units dictate the character of a space in a more literal way than spatial patterns. Through their form language, they bring about associations - personal, social or cultural. A unit in itself cannot create a spatial experience. However, units coming from a certain pattern can be rearranged into a completely new pattern. As any other building block of space they have embedded rules which indicate the way of assembling them into other spatial patterns.

As much as the spatial unit can be easily drawn out from the spatial pattern, the process of identifying a pattern within a building can be less clear. Theoretically, one spatial patterns could be divided into smaller patterns or it could be a combination of overlapping patterns. The extraction process needs to be conducted carefully, in order to separate a spatial experience which is one entity in itself, and is perceived as a whole.

In my research, the patterns and units are identified in selected historical buildings, and thoroughly analyzed. One or more pattern is extracted from one structure. The pattern can relate to a whole building, a sequence of rooms or a single room.

Each of the spatial patterns is evaluated in four different categories which constitute a set of eight qualities.

1. Closed/open:

It concerns the extent of physical or visual connections to adjacent spaces - real or notional.

2. Directional/non-directional

It concerns the extent of directions indicated by the geometry of space or its articulation.

3. Defined/fluent

It concerns the existence of clear spatial borders which indicate entry and exit points and relate circulation

4. Inward/outward

It concerns the degree to which a space directs the users towards its own center or a periphery

Assignment of these features allows for a comprehensive evaluation of the pattern, and is used as an initial categorizing tool. The full analysis can be a difficult process, so it is crucial to identify which of these features define the pattern most accurately.

At the end, all the patterns are juxtaposed in one diagram, which shows the distribution of the characteristics among them (fig. 14).

It is a way of checking whether the chosen examples represent an even and full spectrum of spatial patterns.

In case of the spatial units, several elements of the tectonic expression are analyzed: the floor, the roof, the walls and the openings. For each of these archetypes characteristics such as rhythm, proportion, and materials are described. Every element which influences the user experience needs to be duly noted.

Research

Choice of the buildings

In order for the research to be comprehensive and objective, the selection of historical examples had to be wide and varied. Through my choice I tried to represent the widest variety of spatial patterns. My selection of buildings aims at presenting the majority of existing archetypes. Each building comes from a different period and is a valued example of the architectural approach of its era. They are monuments of their own times, representing the highest spatial quality which is admired to this day. These examples are widely studied during the architectural education and are considered to be an important teaching material. I chose the buildings which were built for a specific function and which are very particular in their form, yet their spatial patterns allow them to be very flexible and transformable.

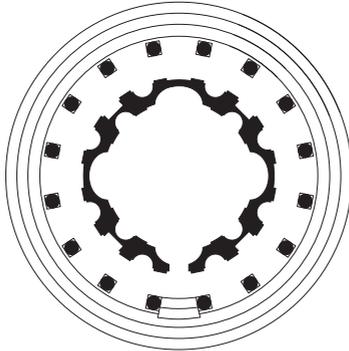
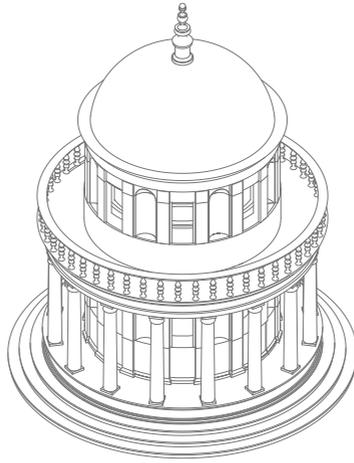
I have considered adding buildings from the modernist movement, however in the end I decided to exclude them from the research for the sake of strengthening my arguments. It did not seem logical to include examples which emerged from the philosophy of rejecting historical references.

In an attempt to find alternatives to generic architecture, I am automatically searching for buildings which contain forgotten or unused spatial patterns. I look for those which are frequently found in the past, but which are currently hard to come across.

The choice of specific buildings is obviously arbitrary, but it bears no consequence on the validity of the research. I am building up a collection of spatial interactions and form languages, but none of the examples taken from the selected buildings will be directly copied into my design. They will rather serve as a catalogue and a base for further examination. The new forms I intend to use in the adaptation will be based on comparative study of the historical forms.

Historical buildings provide the best base for the research. In theory I could simply try to conjure up as many spatial patterns as I can, based on my personal knowledge. Even though it could be rich in examples, it would still be a very subjective selection. There would be no proof of whether my perception of these conceived patterns is correct. The interpretation of human behavior resulting from those patterns could produce wrong results.

Historical buildings are solid and objective evidences of how people interact with the built environment. Even if I decided to come up with spatial patterns instead of extracting them, I would still be subconsciously influenced by historical examples from my personal knowledge. Instead, I decided to choose my spatial patterns consciously.



Tempietto di San Pietro in Montorio

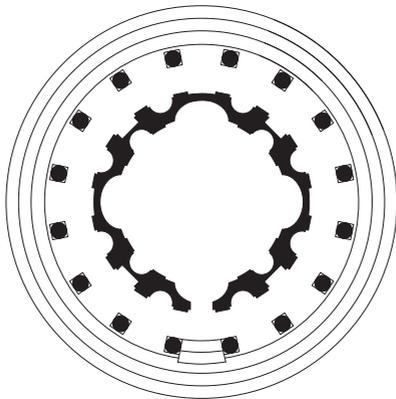
year: 1502-1506
location: Rome



Fig.2



Fig.3

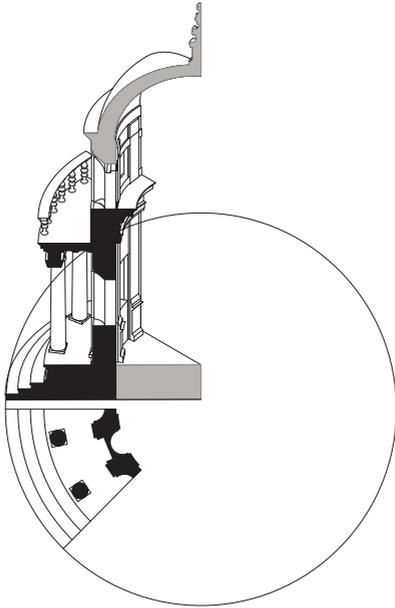


Spatial Pattern

CLOSED/OPEN
DIRECTIONAL/NON-DIRECTIONAL
DEFINED/FLUENT
INWARD/OUTWARD

This pattern is open, as it is fully accessible from the outdoors. It is non-directional on account of being a cylindrical space which does not point towards any specific direction. It is fluent, because you can approach it from every angle. It is inward, as it enhances the importance of its center.

The circular outdoor approach makes the interior seemingly accessible from any angle. The only entrance in the thick wall stands somewhat in contrast to the colonnade, which would normally constitute an open, outward gesture. In this case though, on account of its proximity to the wall, it makes it impossible - or rather uninviting - to stroll in between. In this case the stairs and the columns constitute a boundary, and one would only go up the stairs and through the colonnade once in front of the entrance. This space clearly leads the users around and inwards, into the middle of its circular outline.



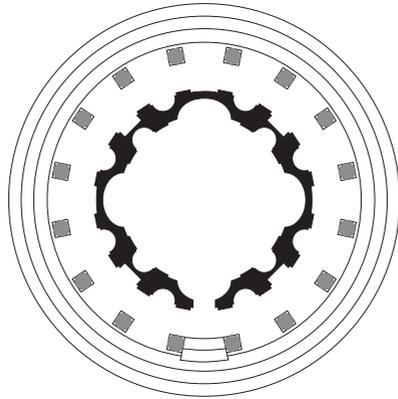
Spatial Unit

Floor is divided into two parts, one being a run of shallow stairs, the other - a narrow, raised plateau, which is implicitly perceived as our goal. Another run of stairs is the only approach to the plateau, rendering the rest of the stairs devoid of function.

Roof spans only over the plateau, making the stairs merely a transition space. It is visually thickened by the entablature and the balustrade, and thus emphasized.

Walls are thick and modestly articulated, adding on to the atmosphere of austerity. The colonnade serves as a spatial barrier, separating the plateau from the stairs. The colonnade is so close to the wall that it does not allow for the movement in-between.

Openings are evenly distributed and there is only one door. The simplicity of the frames and apparent verticality highlight the official expression of this space.

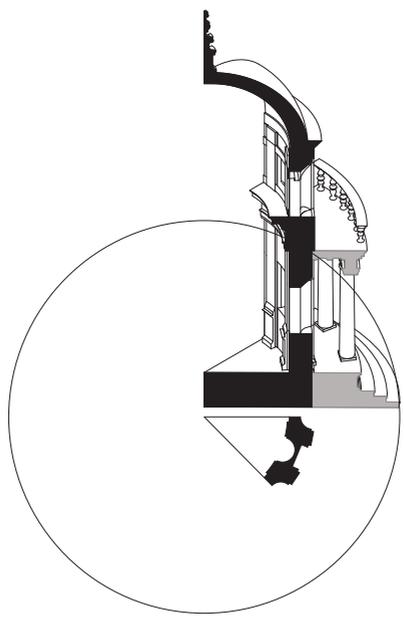


Spatial Pattern

**CLOSED/OPEN
DIRECTIONAL/NON-DIRECTIONAL
DEFINED/FLUENT
INWARD/OUTWARD**

This pattern is considered closed because it has very little connection to the outdoors. It is non-directional on account of being a cylindrical space which does not point in any specific direction. It is defined due to its singular entry point, and having only one entrance. It is inward due to its circular plan and small size, as it keeps visitors in its center.

The double-height interior has a very strong central expression. At the point of entering, one is naturally drawn to the center, from where one can look around or stroll around. Between the entry and exit, one could imagine walking a loop. The geometry of the space drags us inwards, while the openings and niches in the walls accentuate the strong periphery. The proportions of this interior combined with a dome and a recession of the second level make it seem to rise and spiral upwards along the circular outline.



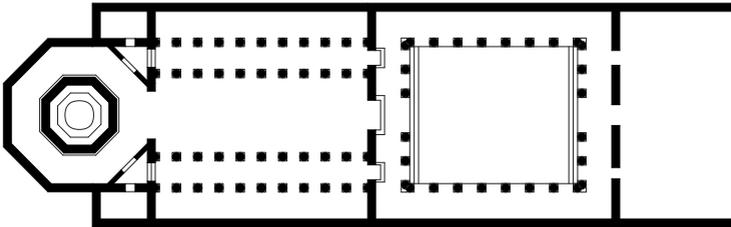
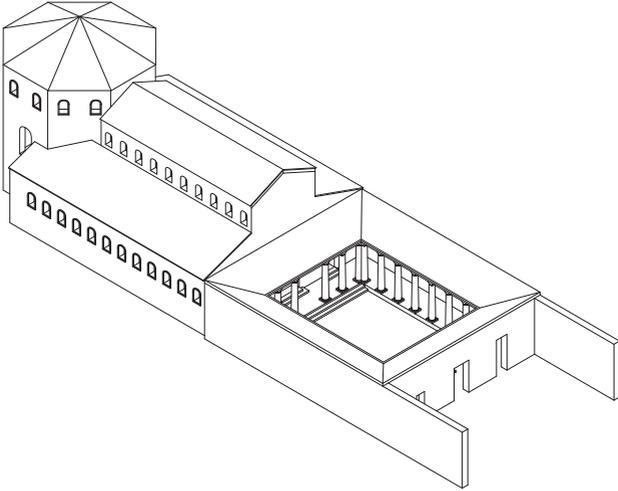
Spatial Unit

Floor comprises of a rectangular grid of colorful mosaic which establishes certain zones, accentuating the entrance and the central altar. The grid itself is in contrast to the round form of the floor. The detachment contributes to the rising effect of the interior.

Roof consists of two parts, the first being a receded strip of the wall, the second - a dome, painted light-blue. The strip serves as a tambour for the dome. The dome's sky-like color renders it a part of exterior, giving an effect of an open ceiling.

Walls are heavily articulated with numerous niches, pilasters and statues. The fact that all these elements are made of the same material makes them readable as one interior rather than separate components.

Openings are framed with pilasters and crowned by half-domed niches with statues.



Church of the Nativity

year: 327, 529/556
location: Bethlehem



Fig.4

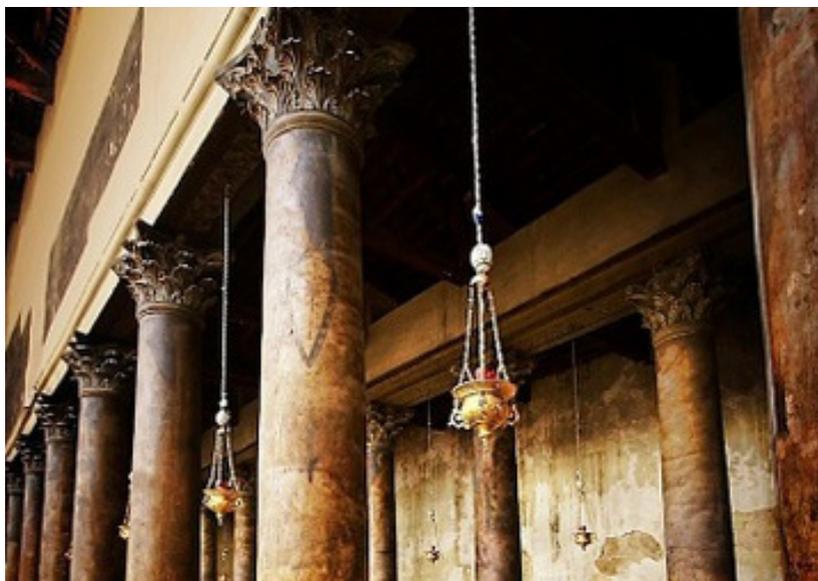
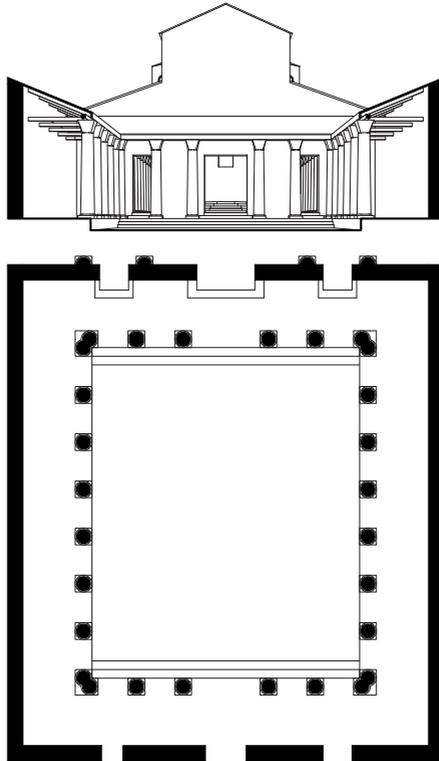


Fig.5

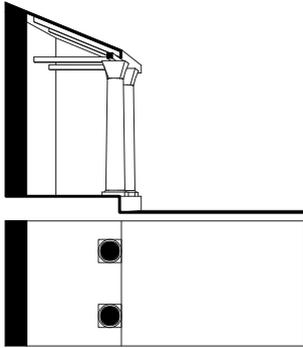


Spatial Pattern

CLOSED/OPEN DIRECTIONAL/NON-DIRECTIONAL DEFINED/FLUENT INWARD/OUTWARD

This pattern is closed on account of being disconnected from the other spaces adjacent to it. It is non-directional because of its almost symmetrical shape, where each side is equal. It is defined as it has very few entry points and an arranged way of approaching. It is outward, as the periphery is the most accentuated one and that is where the users are naturally drawn.

The space between the columns and the walls is covered, and therefore that is where the people are directed to. The level drop and the lack of roof make the inner courtyard both isolated and intimidating, as if it had a different status. The overall directionality of the church is somewhat broken up in this pattern. The rectangular courtyard distorts the linear approach and makes the users move towards the sides. The colonnade, though it is not a solid barrier, does not encourage stepping into the courtyard. Openings appear only in the form of doors. There are two sets of three doors, among which the middle ones are widest. Located on the axis, they are also considered the main entrance and exit points.



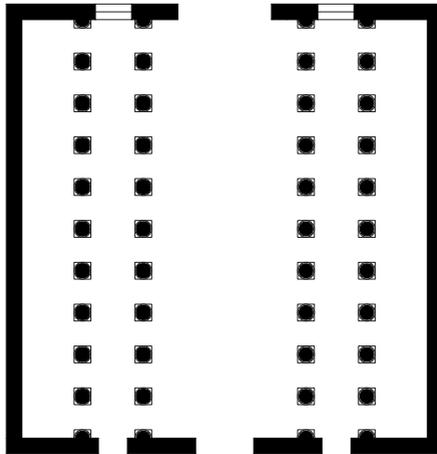
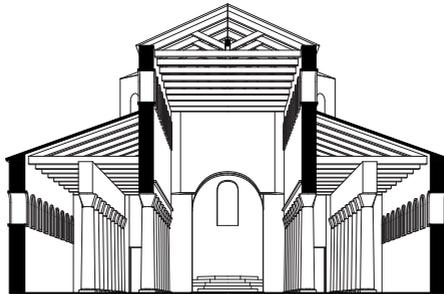
Spatial Unit

Floor, made of dark reddish stone, gives the impression that similarly colored columns are 'growing' straight out of it. As a result, the floor and the columns have the expression of the same substance.

Roof spans only in between the walls and the colonnade, and slopes towards the open courtyard. The wooden construction is visible and it seems to descend towards the edge of the courtyard, making the space along the wall more inhabitable and inviting.

Walls aren't articulated. Lack of openings and articulation makes them serve as a simple background. The attention is directed towards the columns.

Openings between the columns could serve as the connection from the lowered courtyard to the adjacent roofed corridor, but the level difference prevents that.



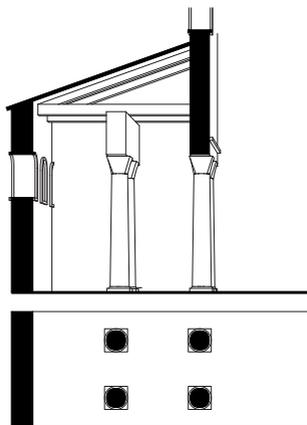
Spatial Pattern

CLOSED/OPEN DIRECTIONAL/NON-DIRECTIONAL DEFINED/FLUENT INWARD/OUTWARD

This pattern is closed on account of a poor connection to surrounding spaces. It is directional because of clear spatial indications of an axial direction. It is defined because it has very few entry and exit points. It is outward as it directs the users towards its edges and though the middle part is strongly articulated, it is also the least inhabited.

This pattern has a very distinct directional character, and every spatial element seems to support and enhance it. Five different passages can be distinguished. Though all on them lead in one direction, there is a significant change of pace connected with each type.

The height difference makes the inner passage more ceremonial and slow, separated from the others by the dense row of columns. The passages on the sides have lower ceilings and walking along them is not only less noble, but also faster. However, one might view the side naves as more inviting and resulting in gatherings, while the middle part is clearly reserved for a ceremonial passage.



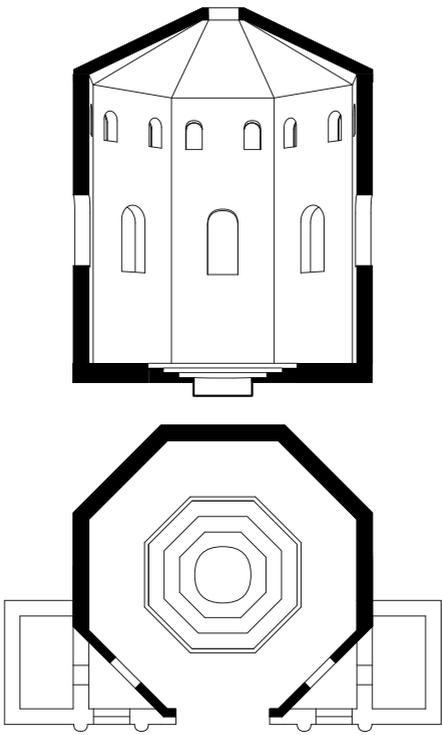
Spatial Unit

Floor, made of dark reddish stone, gives the impression that similarly colored columns are 'growing' straight out of it. As a result, the floor and the columns have the expression of the same substance, in contrast to the white plaster wall which the inner colonnade is supporting.

Roof spans between the outer wall and the innermost colonnade. The middle passage is roofed much higher and therefore has a different proportion. The wooden construction is visible and it slopes towards the outer wall, making the space along it less noble and grand.

Walls aren't articulated. A row of plain windows balances a strong pull towards the middle nave by directing the users to the outside.

Openings are simply framed and deep. They follow the rhythm of columns as they are inserted in between.

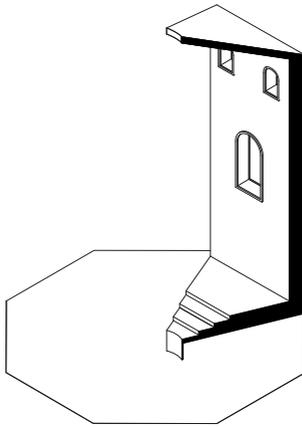


Spatial Pattern

**CLOSED/OPEN
DIRECTIONAL/NON-DIRECTIONAL
DEFINED/FLUENT
INWARD/OUTWARD**

This pattern is closed as it has limited connections to adjacent spaces. It is non-directional because of its octagonal shape and it does not emphasize any clear direction. It is defined on account of having a single entry point. It is inward as it emphasizes its center.

The octagonal room directs the user's attention towards the center, where the baptism basin is located. Contrary to a circular room where one is bound to circulate along the circumference, here the user's gaze bounces off every wall straight into the middle of the spatial composition. The pyramidal roof strengthens that effect, and makes the whole space seem to rise. The oculus in the middle lets the interior out. The rising effect is further highlighted by the windows which get gradually smaller towards the top of the room.



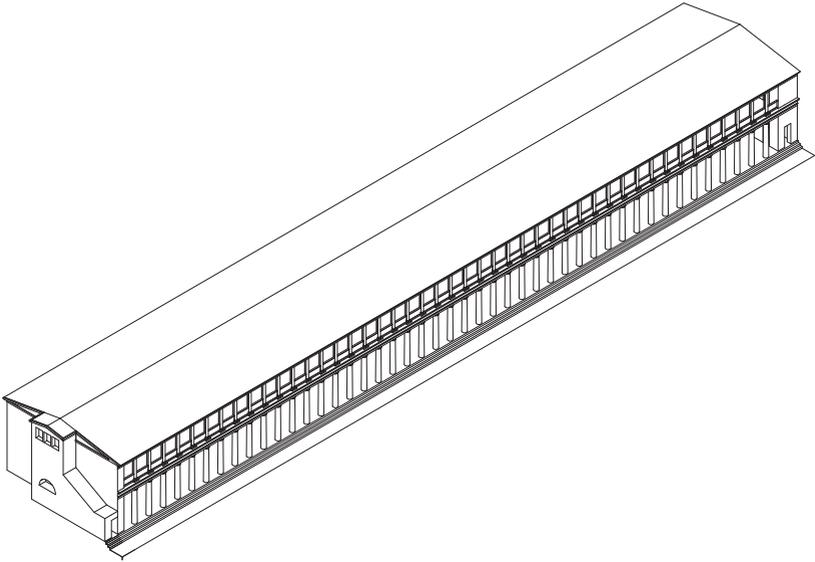
Spatial Unit

Floor is flat along the walls, but it forms a low run of stairs towards the central basin.

Roof accentuates the center of the space. The oculus in the middle corresponds with the opening in the baptism basin.

Walls are thick and simple. They lack ornamentation and do not attract any attention.

Openings become gradually smaller towards the top of the room. They also have a simple expression.



Stoa of Attalos

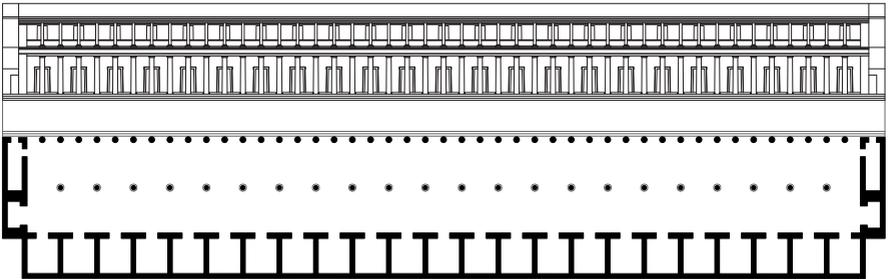
year: ~150 BC
location: Athens



Fig.6



Fig.7



Spatial Pattern

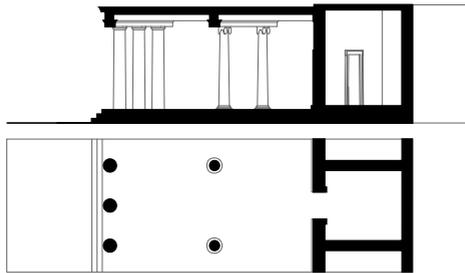
CLOSED/OPEN DIRECTIONAL/NON-DIRECTIONAL DEFINED/FLUENT INWARD/OUTWARD

This pattern is open as it is well connected to adjacent outdoor space. It is directional because of its elongated shape, which is followed by all the articulation lines and spatial gestures. It is fluent because of its multiple entry points, none of which is emphasized. It is outward as it does not have any center.

The middle row of columns divides the interior into two zones: the inner entrance zone, open and public, and the middle zone, connected with the trading chambers. The strong directional composition makes the users stroll back and forth along the building within different zones.

The first row of columns is dense enough to make the building seem more closed than it really is. Paradoxically, this colonnade does not encourage a free-flowing movement as much as it could.

From the inside though, it is open and filled with light. The middle row is twice less dense and enables a freer circulation, once you find yourself inside.



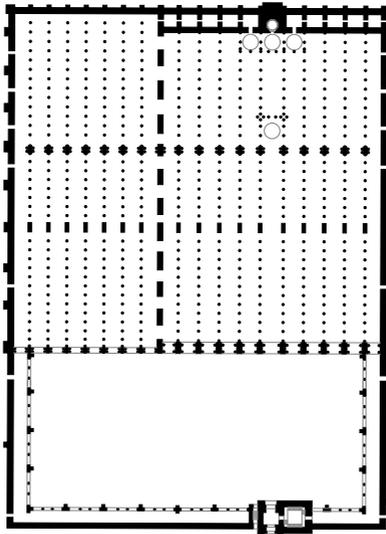
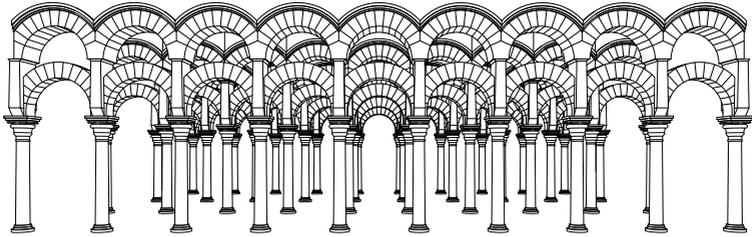
Spatial Unit

Floor is made of light-colored stone tiles. The same material encompasses all three strips of space within this unit.

Roof has a strong horizontal rhythm. Dark, wooden beam lays on the middle row of columns. Together with the inner wall and the stone beam in the front row, it supports a set of secondary wooden beams. The roof stands in high contrast to the light floors and columns, having a somewhat overwhelming effect on the interior.

Wall is made of beige stone blocks. Simple white frames mark the regular openings leading to the trade rooms.

Openings in-between the columns dictate the pace of movement through the zones. There is a regular rhythm of openings leading to the trade rooms. This rhythm is coherent with the colonnades' axes, so that the trading room door is aligned with the opening in the middle colonnade and the axis of the column in the outermost colonnade.



Mosque-Cathedral of Córdoba

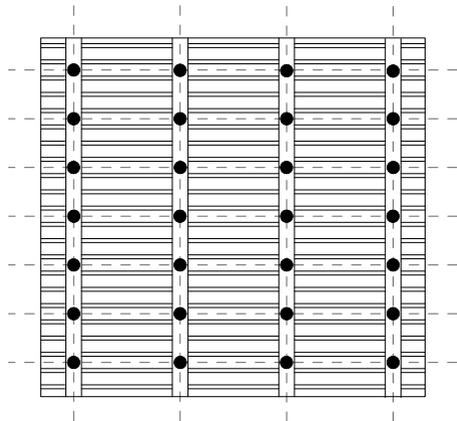
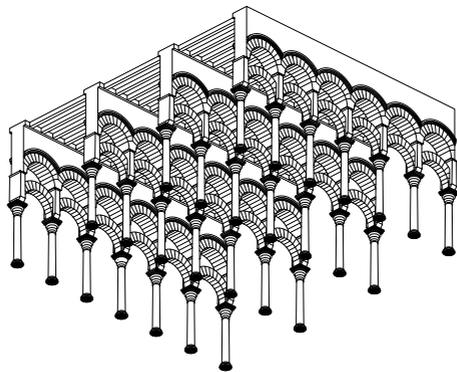
year: 784-967,
location: Córdoba



Fig.8



Fig.9

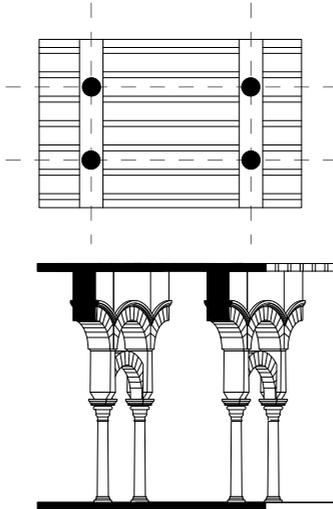


Spatial Pattern

CLOSED/OPEN DIRECTIONAL/NON-DIRECTIONAL DEFINED/FLUENT INWARD/OUTWARD

This pattern is open because of its multiple connections to adjacent spaces. It is non-directional as it highlights two contradictory directions, which result in a lack of an overall directionality. It is fluent as you can approach it from any side. It is outward as it does not have a center and it seems to expand.

The dense grid of columns spreads in every direction, distorting the perception of space and making the users disoriented. Repetition brings about feelings of equality, but also humbleness and lowliness, as if one was only a part of a bigger whole. The grid is not exactly symmetrical, so a movement along the arched colonnades is somewhat encouraged. A contrary movement is accommodated in narrow passages which are accentuated by a double arch and make the users cross through the arched "gate". The conflict of these two directional patterns is deepened by a lack of walls which delimit the space. This spatial pattern is therefore viewed as a fragment of wall-less canopy, where the roof presses downwards onto a seemingly free space, making expand in every direction under the "pressure" from above.



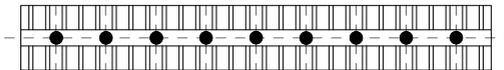
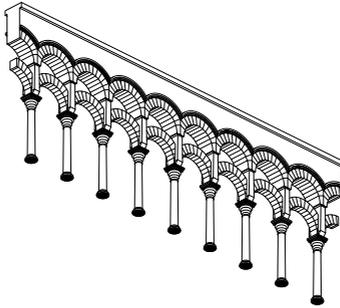
Spatial Unit

Floor is made of dark, reflective stone tiles. The pattern is completely unrelated to the grid of columns, which makes the floor seem detached. The roof and column grid seem to be rising from the ground in spite of their massive appearance.

Roof comprises of dark wooden beams supported by arched colonnades. The direction of the secondary wooden beams contradicts the direction of the colonnades, but due to the dark material it is a weak opposition.

Walls are absent, and therefore the colonnades are read as such. They constitute barriers, when read along the archways. When one passes through the archways, they are read as gates. They are strongly articulated, with two brick colors and textured stone elements.

Openings along the arches are narrower than the openings between each row of columns. The cornice above the doubled archway highlights the directionality of the colonnade.

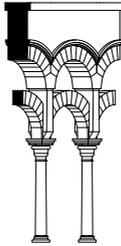
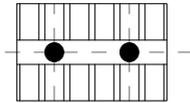


Spatial Pattern

CLOSED/OPEN DIRECTIONAL/NON-DIRECTIONAL DEFINED/FLUENT INWARD/OUTWARD

This pattern is open as it fully opens towards the adjacent spaces. It is directional because of its linear composition. It is fluent as it has multiple entry points and allows for a free circulation. It is outward because it has no center and leads the users away from itself.

The colonnade is an extremely directional pattern where repetition of spatial gestures along one axis encourages a parallel movement. It is a clear barrier, though one can walk freely around each and every column. The arches create gate-like passages so heavily accentuated that, paradoxically, the users can be more inclined to walk through below the arches, than walk along the colonnade. However, the linear repetition of columns is the most influential and striking spatial composition in this pattern.



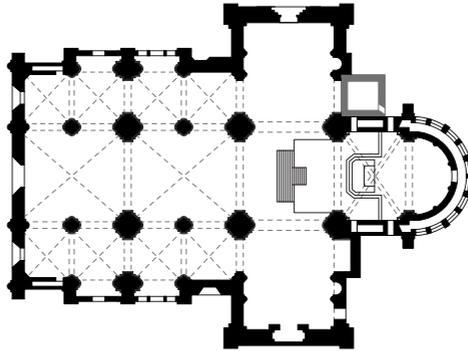
Spatial Unit

Floor is made of dark, reflective stone tiles. The pattern is completely unrelated to the grid of columns, which makes the floor seem detached. The roof and column row seem to be rising from the ground in spite of their massive appearance.

Roof in this spatial unit consists of double archways, where the bottom one forms a narrow gate, while the top one is read as an equivalent of a window.

Walls as such run above the arches and come down to the floor in form of the columns, made of multicolor marble. It is plain and simple, covered in plaster, which matches the color of the stone elements in the arches. Ultimately, the whole colonnade is perceived as a singular wall with different levels of perforation.

Openings are evenly repeating and come in forms of "gates" and "windows". They arched openings are divided into brick elements of varying colors - red and beige.



San Michele Maggiore

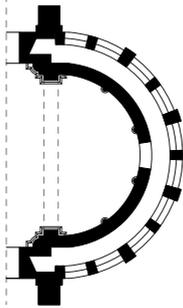
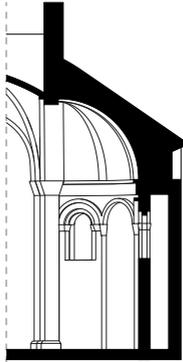
year: 1155
location: Pavia



Fig.10



Fig.11

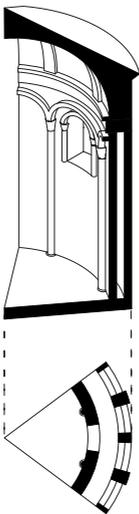


Spatial Pattern

CLOSED/OPEN DIRECTIONAL/NON-DIRECTIONAL DEFINED/FLUENT INWARD/OUTWARD

This pattern is open as it is well connected to the adjacent space. It is non-directional as it does not lead the users towards any specific direction. It is defined, because there is only one way to approach and enter it. It is an inward spatial pattern, as it puts emphasis on its own center.

The apse is a culmination of a sequence of spaces, and constitutes an end to the user's axial movement in the church. The user's gaze bounces off the curved wall and lands in the center of the half-circle. The middle is further accentuated by highest point of the sloping roof, where all the visual lines of geometrical articulation lead. Though curved walls usually encourage circular movement, in this case the walls are simply making us face the center. A single opening and two side niches highlight the symmetry of this pattern.



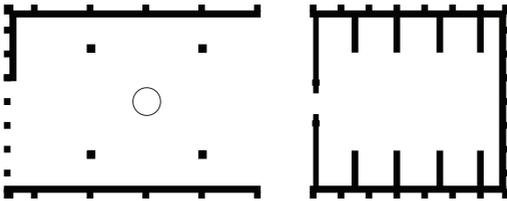
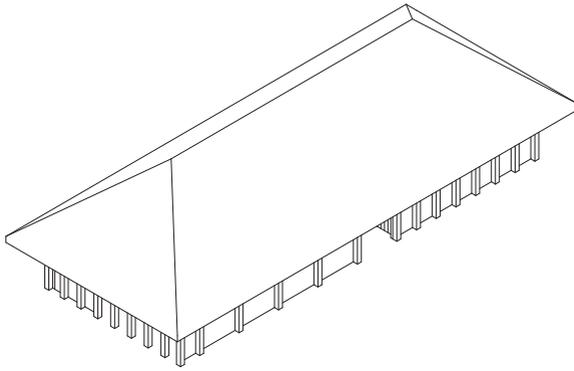
Spatial Unit

Floor is made of stone tiles.

Roof is a heavily decorated half-dome with an accentuated but low tambour. It seems to push the apse downwards with its heaviness, and therefore prevents the general feeling of ascension.

Walls are made of red brick with white stone decorations. They are thick and massive, but the series of thin, delicate pilasters connected with arches gives it a rather subtle appearance. It also defies the downward, gravitational pull of the domed roof.

Openings are vertical and deep, decorated with pilasters. They contribute to the vertical articulation of the wall. There is only one window, while other openings are merely niches



Typical Jutish house

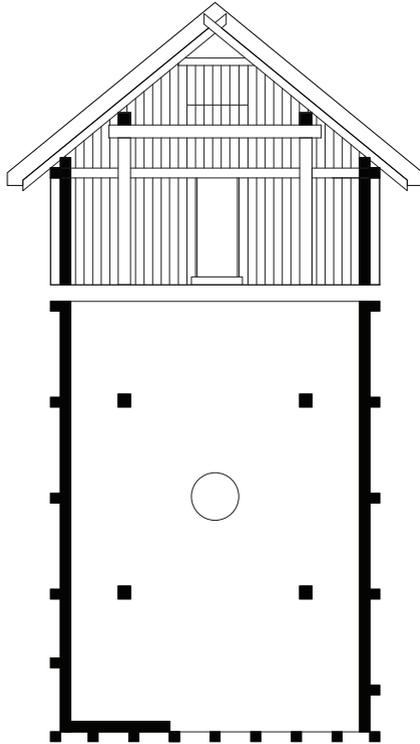
year: ~400 BC
location: Denmark



Fig.12



Fig.13



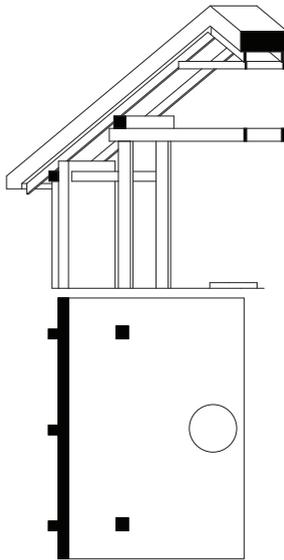
Spatial Pattern

**CLOSED/OPEN
DIRECTIONAL/NON-DIRECTIONAL
DEFINED/FLUENT
INWARD/OUTWARD**

This pattern is open, because it has multiple connections with the surroundings. It is non-directional as no direction is especially highlighted. It is fluent because the users can access it from multiple angles. It is inward, as its composition points towards the center of the space.

Circular fireplace is the heart of this spatial pattern. Four pillars delimit an immediate, sacred zone around it. The surrounding walls mark a circulation space around the central part. While one is encouraged to walk freely along the walls, the space around the fireplace is still and motionless. One cannot cross through it but is meant to pause, once within its boundaries.

The pitched roof underlines centrality of this pattern, yet it also adds a direction, which is already embedded in the rectangular shape. However, the strong presence of the central part makes the users disregard these directions. It has a 'roof' of its own, being covered by a frame of wooden beams.



Spatial Unit

Floor is made of compacted earth, and so it is rather an element of nature than the building itself. It lacks features such as directionality, and is formally detached from the construction.

Roof construction comprises of main and secondary wooden beams, covered in a thick layer of straw.

Walls are made of wooded pillars, with an infill of wooden planks or clay. They lack openings other than doors, and delimit the space very strongly.

Openings, understood as windows, are absent. Openings within the walls are generous equivalents of doors.

Results and evaluation

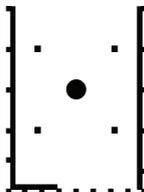
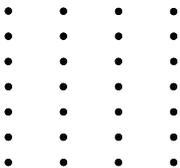
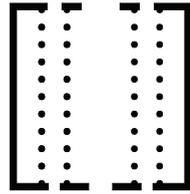
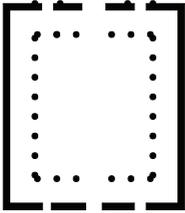
Spatial patterns

The complication of all extracted patterns is presented in a simplified way, which highlights their most important features and omits the details. It is not a part of the evaluation process, but it shows the richness and variety of motifs.

There is a limited number of spatial patterns and though these are probably not all of them, it is as close to a full spectrum as possible. Each of these patterns can be boiled down to an even simpler icon, to represent a wider spectrum of buildings. I did not go through with that step as it was not the aim of the research and I did not want to lose out on the complexity of my spatial patterns.

The observations relating to human interactions with the built environment in each of the patterns are used in the design process. If the design requires a type of space which elicits certain behavioral responses, a spatial pattern which produces the same responses can be of help in terms of choosing the volume and geometry of the designed space. The rhythms, proportions and distances in the spatial pattern can be translated into a new architecture, which will be certain to send desired spatial signals and direct the users in a chosen way.

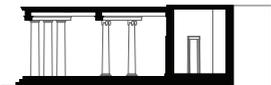
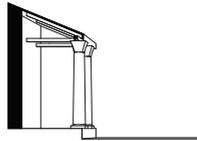
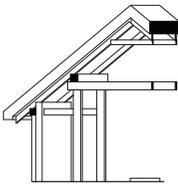
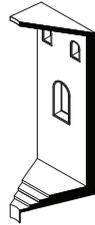
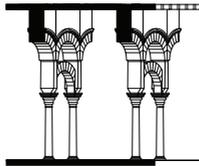
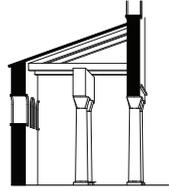
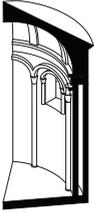
The diagram of juxtaposed categories of the spatial patterns (fig. 14) shows a quite even distribution of features in the chosen examples. There is a slight dominance of four features: non-directional, inward, closed and defined. However, this tendency does not effect the outcomes of the research, and merely shows a preference of this spatial composition in many historical buildings.



Spatial units

The collection of spatial units shows the biggest possible variety in the language of form and the use of materials. From this diverse set lots of inspiration can be taken.

All of these units have some rules according to which they are assembled into an existing pattern. However, these same rules could dictate other variations of possible assemblies. Each unit has a potential to build up a new space and, with small adjustments, can produce countless new patterns. This fact proves that the full potential of spatial units is not completely contained within the spatial patterns they originate from. It justifies the initial decision to divide the concept of space and conduct the research in two parallel categories.



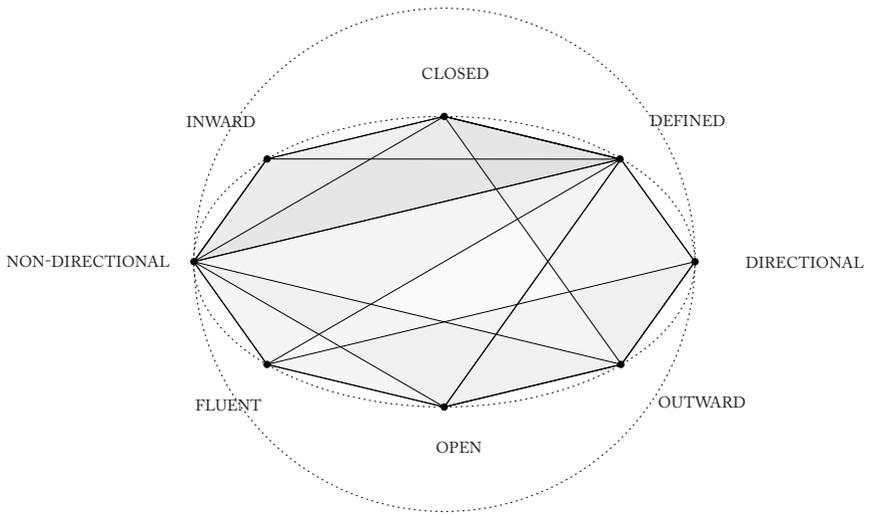


Fig.14

Implementation example: Mosque–Cathedral of Córdoba

In order to explain how to make the transition from the research results to the design phase, I created a schematic explanation based on the first spatial pattern found in the Mosque–Cathedral of Córdoba.

This spatial pattern is an even grid of columns, without borders, which could be multiplied infinitely. It makes the users feel equal and free to roam in-between the pillars, without a specific path. There is no center, no beginning and no end, and the space seems to be expanding. The repetitive rhythm makes people feel humble and lowers their pace. Every possible user path is presented in the diagrams.

In order to construct a pure spatial pattern experience I created a de-contextualized vision of the Córdoba temple (fig. 15).

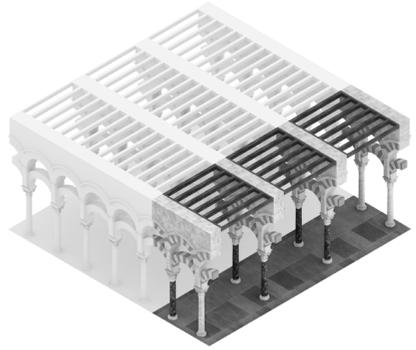
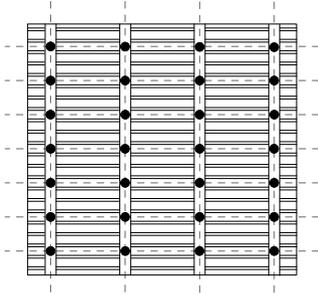
The aim was to illustrate that without the programmatic attributes, such as furniture, lighting fixtures and decoration, we stop perceiving the Córdoba temple as a temple. It becomes a combination of spatial patterns and spatial units, a pure experience of space. In that stadium, many different functions other than a church can easily be imagined. In spite of its specific form, ornaments and vivid colors, the universality of this space is clearly visible.

The spatial unit provides a set of archetypes, which are then simplified and adjusted to the desired form. Together with the spatial pattern, they will elicit the same user behavior as in the original historical example. A new, future-proof space is created.

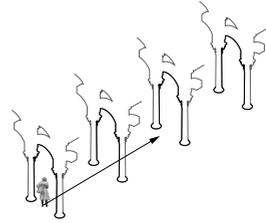
SPATIAL PATTERN

Interaction

Geometry



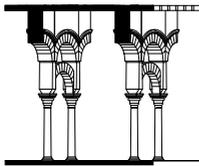
Behavior



SPATIAL UNIT

Matter

Form
language



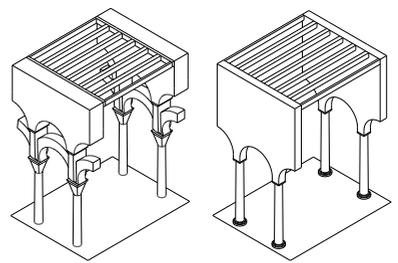
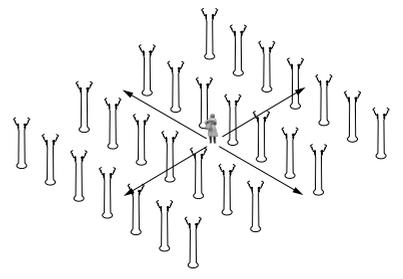
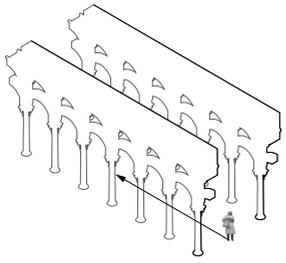
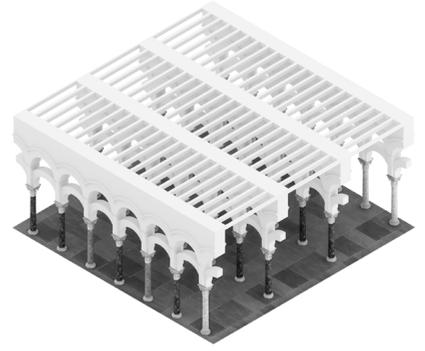
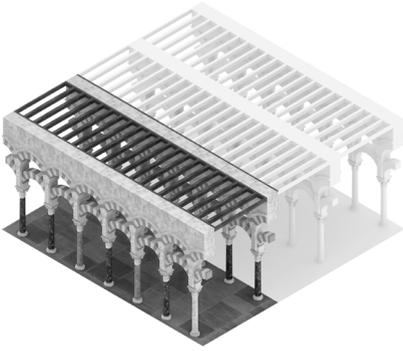




Fig.15 De-contextualized space



Fig.16 Future-proof space

DESIGN PHASE

Theoretical background

Certain books and theories have been very helpful in building up my methodology and taking important project decisions. The following pages are dedicated to a brief introduction of the ideas presented by various authors.

“Archetypes in architecture”, Thomas Thiis-Evensen

Thiis-Evensen presents a very comprehensive selection of spatial archetypes. The whole book is dedicated to a collection of archetypes divided in three categories: the floor, the wall and the roof. He underlines their impact on the expression of the building and how they elicit the user's immediate reaction.

He divides society's perceptions into social and private². The former are based on bodily experience, gained from the interactions with the surrounding nature. This tactile knowledge of the environment is embedded in our evolution, and stems from very early experiences. The private perception is based on cultural associations, personal memories and tastes. Both perceptions combined form a complex reference system³ which creates an image to which we react in different ways. He points out that: "Additionally, we wish to be what a volume does. Therefore, we walk swiftly in a corridor and slowly and ceremoniously in a broad space"⁴. This reaction is not based on the function or program⁵.

Thiis-Evensen describes the functionalist axiom: the architect does not freely select the form of the building, rather he creates it for the specific function⁶. He then points out that this is no longer the case, and that recently the design process relies more on the perception of basic geometrical forms.

Among other concepts, he ponders the difference between the symbolic and existential expression of the building⁷. He explains that the former is what society thinks a building is, and the latter is what the building actually becomes. The society's perception has its source in collective knowledge, and is interpreted in the built form with the use of weight, motion and substance.

"The timeless way of building", Christopher Alexander

In his text, Alexander argues that the quality and character of the space stems from the pattern of events that keep on happening there. It could be both human activities and natural events, for example a beam of sunlight shining on the wall⁸. He claims that the user's understanding of the form and its pattern of use is embedded in his mind by means of culture and collective memory.

A pattern of events cannot be separated from the space where it occurs. Patterns of events are always interlocked with the geometry of the space as the structure naturally supports these patterns⁹. For example, a church aisle is only an aisle if it shares the nave's columns and runs parallel to it. Devoid of these features, it would merely be a rectangle of space. Thus the precondition of a certain event is achieved through these connections¹⁰.

The author says that: "[Structure] is made up of certain concrete elements, with every element associated with a certain pattern of events."¹¹. And further: "Each pattern is a rule which describes what you have to do to generate the entity which it defines"¹².

A language is a combination of symbols and the rules for putting them together. The spatial patterns, interestingly, are both the elements and the rules. "And each pattern is also a rule, which describes the possible arrangements of the elements - themselves (...)"¹³. Thus the set of rules encoded in the specific pattern is giving it its shape and vice-versa, in a constant bilateral exchange.

Ultimately, the author states that: "[Experts] can only deal with general forces, which are common to all men, and never with the particular forces that make one particular man unique and human"¹⁴.

“The buildings must die”, Jane M. Jacobs and Stephen Cairns

In their book, the authors claim that for contemporary architecture there is no dignity in becoming a ruin. Buildings are either disposed of or linger somewhere between life and death. Demolition and renewal are integral and necessary processes in architecture, however, demolition could be perceived as an attack on the collective archive of architectural forms.

The authors define obsolescence in architecture as a loss of value through deterioration or through the advent of a better alternative¹⁵. They point out that instant or premature obsolescence in buildings arises from changing economical circumstances which cause the material deterioration.

A statement of Frank Duffy is cited: “A building (...) is several layers of longevity of built components”. And further: “Because of the different rates of change of its components, a building is always tearing itself apart”¹⁶. In a similar manner, the authors bring up the theories of the “Adaptable futures” group, which regard flexibility, movability, convertibility and scalability. According to the group, acknowledging obsolescence is a key to creating architecture based on a resistance to it¹⁷. A building which stands the test of time is a building which changes over time, as it prevails through change.

The chapter about demolition included observations useful for the choice to adapt an existing building. According to the authors, demolition is a direct antagonism to architect's natural strive for permanence. Demolition “[is] subtraction as space-marking tool”¹⁸ and it gives access to plots which stand occupied. It causes a constant loop of subsequent construction and destruction. Something has to be demolished for something to be erected, so that the space for new architecture is always available. It allows for evolution, improvement and development¹⁹.

The chapter about demolition is especially interesting. According to the authors, demolition is a direct antagonism to architect's natural strive for permanence. Demolition “[is] subtraction as space-marking tool”²⁰ and it gives access to plots which stand occupied and it causes a constant loop of subsequent construction and destruction. Something has to be demolished for something to be erected, so that the space for new architecture is always available. It allows for evolution, improvement and development²¹.

There are many reasons for demolition. Frustration with a certain kind of architectural style may lead to demolition of a specific building, to which all the disadvantages of this genre of architecture are then attributed²². Architecture often becomes a scapegoat. The overall nonacceptance of a certain structure which may be a result of, for example, insufficient funding and changing tastes is attributed to the built form. Once the building is eradicated, a new generation of different architectural forms can take over.

Demolition is the least environmentally friendly solution²³. The loss of energy input, both from materials and human labor, is unmatched. It is only justified if the building is a waste of space and poses some danger to the users.

The authors dedicate a lot of thought to remodeling of existing architecture. They point out that innovation should be planned for already on the drawing boards, what is currently designed must already take into account that it will be re-designed sooner or later, and that initial design should make the latter as good as possible, as sustainable as possible, etc²⁴.

A concept of DFD - the design for deconstruction is introduced²⁵. While a building is designed, the best process of its deconstruction is thought of simultaneously to prevent an unorganized and costly procedure later on. The logistic guidelines are embedded in the design from the start. The principles of DFD include modular prefabricated elements, standardized and easy detailing and separation of structure and services. As much as it is a highly efficient process, the outcome is often dull and generic.

Adaptation

In order to oppose the generic tendencies in architecture, I could either create a new building, or choose to give an example of new approach to renovation.

Buildings from the second half of the XXth century are now facing imminent adaptation, as most of them fall behind current environmental and aesthetic standards. So far, there has been a tendency of transforming them beyond recognition. The facade is often removed to improve the overall climatic performance. In the end it becomes a bland sheet of glass. If the structure is kept, it is disregarded and hidden under the new layers of interior finishes. The original spatial intention is completely unreadable and new bold space is created. Often sculptural and particular, it is rarely flexible, and its relevance is dependent on the new program.

After a while, as this renovation becomes irrelevant, there comes a point where another intervention is no longer feasible. It stops paying off to “dress up” the building in another facade and completely transform the interior yet again. The cost of demolition and erecting another building is, in the long run, a lot lower. That is, among other reasons, because each new intervention contradicts the previous one. Each renovation is focusing on the present and cannot see past its own lifetime. It also fails to predict another renovation, or at least its possible direction.

Instead, I regard it as important to save buildings which still have an embedded value. I chose to prevent another building from the 60s to fall victim to the current adaptation trend. It should be done in a way which allows for further remodeling continuously.

Existing structure

Choice of the existing building

The ideal building for my intervention is one that fails at being flexible precisely because of being generic. Its blandness and lack of formal expression could be due to having been built for short term demand. I considered several building types, from the ones build in the 60s or 70s, and facing imminent remodeling, to newer ones, from the last two decades, whose remodeling has not yet been thought of.

Ultimately, I decided to tackle a building located in the center of Lund, on the corner of Stora Södergatan and Kattesund. The former is one on the main streets and the latter is a lively walking passage. Multiple shops and restaurants are located in the area.

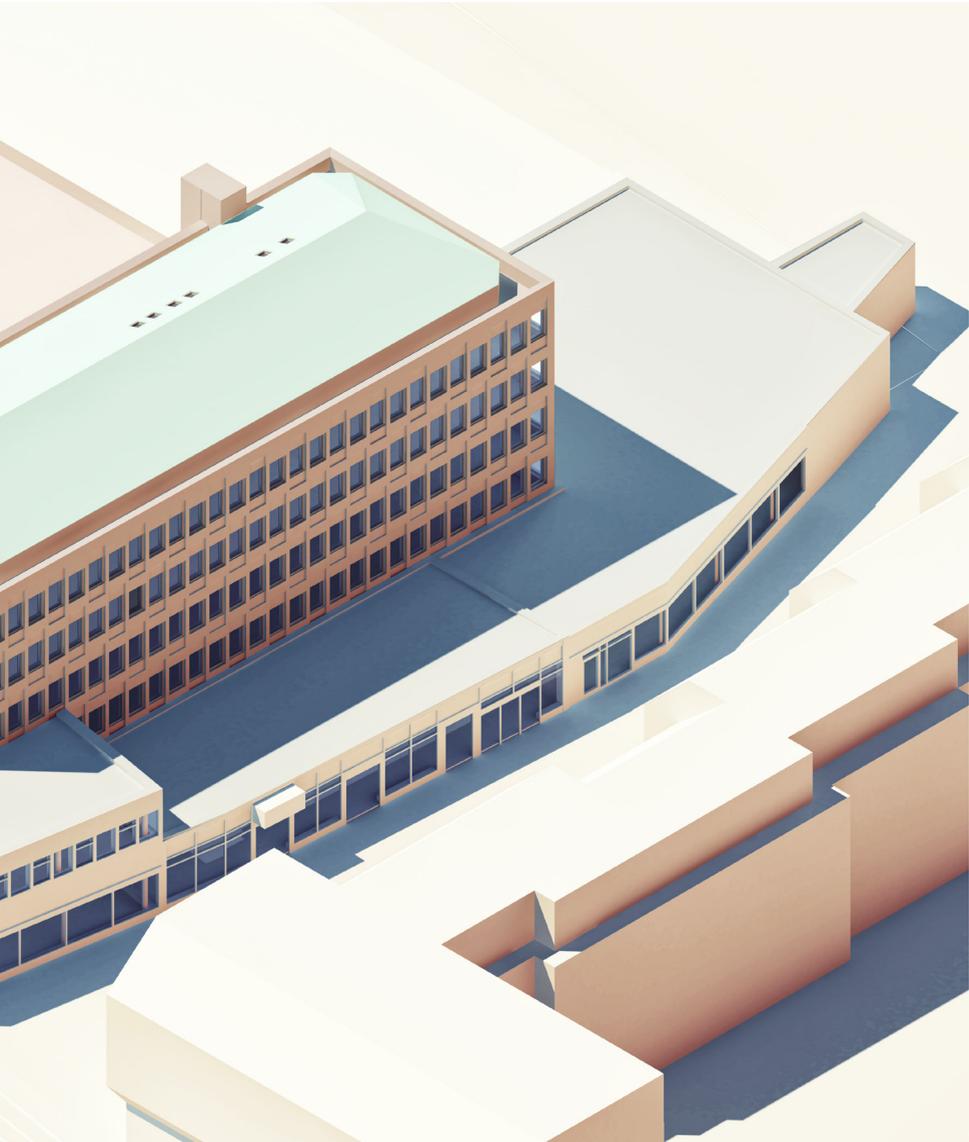
The chosen building is a part of a bigger cluster, which includes a former Åhléns, store. Most of the site is covered with 1 or 2 story pavilions, however, the brick part is significantly taller, and protrudes from the cluster. The whole quarter has been built at the turn of the 50s and 60s, and various add-ons and renovations have been carried out over the years.

Despite a prestigious location, the brick part consists of offices and health clinics. Inconspicuous access points from both streets and a large offset of the facades from the street line makes it almost invisible in the urban fabric. It is an embodiment of humble, invisible office architecture, without any intention to provoke an emotional response.

The technical drawings of the building are incomplete and unorganized. Vast majority of them illustrates how a huge part of the first floor was adapted for a gym. The lack of consistency and gaps in documentation make it impossible to say which of the presented changes were merely planned and which were actually executed.



Aerial view of the site



Site visit

Thanks to a brief site visit, I gained a lot of information which was lacking in the drawings.

After entering from Stora Södergatan into the elliptical staircase, one is taken up to the upper floors. Almost all of them were unavailable for visiting due to their function - health clinics operating full time. One of the floors which was partly abandoned served as a good source of knowledge about the building's construction. One could see how the structure was treated in terms of interior finishes. The other entrance point from Kattesund was not accessible.

The building's overall lack of expression is absent in the entrance zone. There is an intricate mosaic located on the wall opposite the elliptical core. The staircase itself has quite a lot of character, with painted frames, black tiled steps and a wooden railing.

The plot has recently been purchased by a developer company Midroc. Since it became their property in December 2016, they did not clarify their intentions regarding the future of the plot. As of now, the demolition is still being taken into account, but it's not the only solution considered by the developer.

The representative of Midroc who was the guide during the site visit claims that the company has also experienced difficulties with organizing the drawings. They are uncertain of the structural setup in some parts of the building, thus they cannot build up a perfectly comprehensive picture of it. Peter Syrén, the vice president of Midroc Properties suggested that they intend to improve the spaces for current residents and also provide new housing, offices and commerce spaces²⁶. He also stated that the property had great potential.



Fig.17 Basement



Fig.18 Abandoned floor



Fig.19 Mosaic



Fig.20 Mosaic

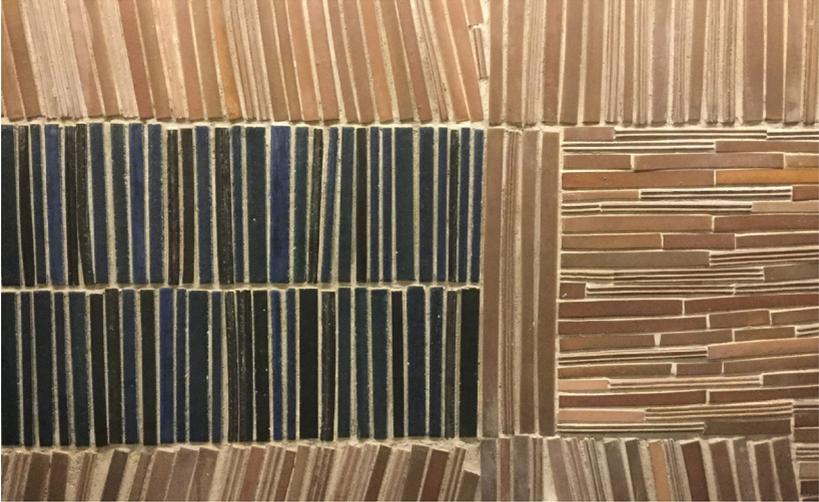


Fig.21 Mosaic



Fig.22 Mosaic



Fig.23 Staircase details



Fig.24 Kattesund entrance



Fig.25 Meeting room



Fig.26 View from the balcony on the third floor

Construction and technical information

The architectural documentation of the building is scarce and incomplete, but based on the drawings and site visit some conclusions can be drawn.

The building is a simple reinforced concrete construction, with thick pillars and monolithic slabs. The slabs are 30cm thick, and there is no suspended ceiling. The density of the slab reinforcement is unknown.

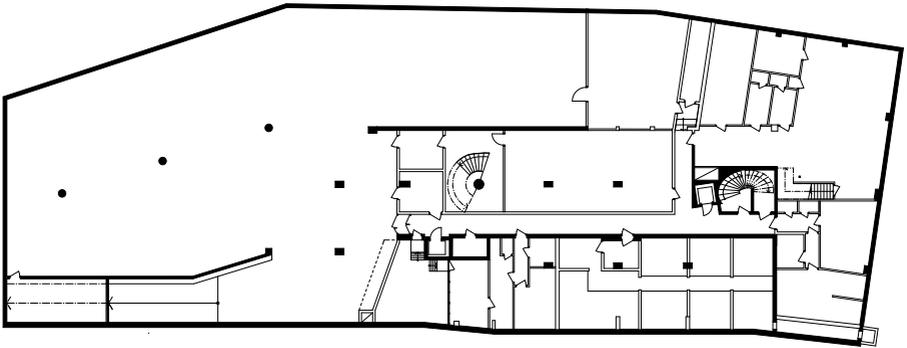
There are two rows of pillars of 70x41 cm and 72x45 cm. The number and shape of the pillars varies from level to level, but on most of them there are eight pillars - five 72x45 cm ones on the northern side and three 70x41cm ones on the southern side.

There are two circulation cores. Both include elevators and technical shafts. The elliptical core is considered as the primary staircase. The other one, due to it's closed and rigid expression, is most likely a fire escape route.

The footprint of the protruding brick part is 16mx41m, 666 m² in total. The area of the basement, ground floor and the first floor are 1714,5m², 1742m² and 968m² respectively.

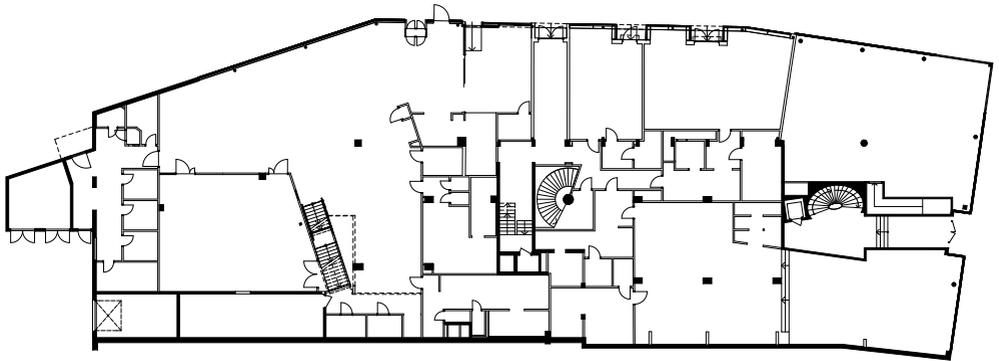
The facades are uniform and consist of pillars with brick infill in between. It can't be estimated whether the pillars are made of brick or concrete, but I concluded that the consistency of the material is of the highest probability. There pillars are repeated on the lower levels, so they are most likely bearing. There is a rhythm of recesses in the facade which has no effect on the interior expression.

The windows are quite large and end only 20cm below the ceiling level. They are white and their sizes do not vary. The interior finish varies between levels due to huge differences in functions.



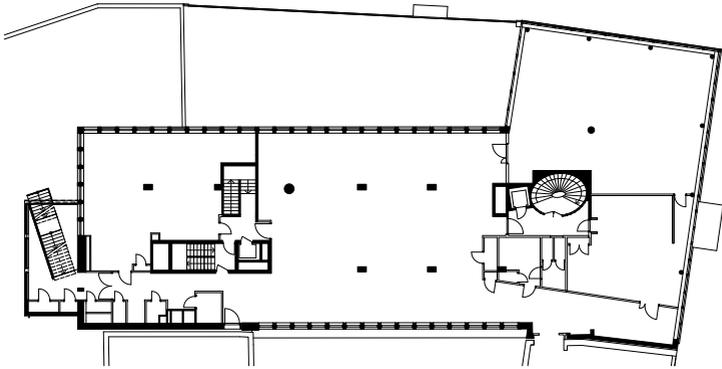
Plan -1

The basement includes a parking garage and some technical facilities.



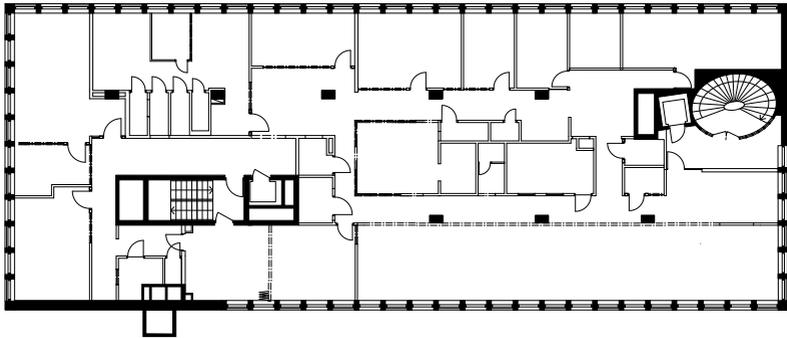
Plan 0

The ground floor is occupied by a gym, a media store and a grocery store on Kattesund, and a clothing store and shoe store on Stora Södergatan.



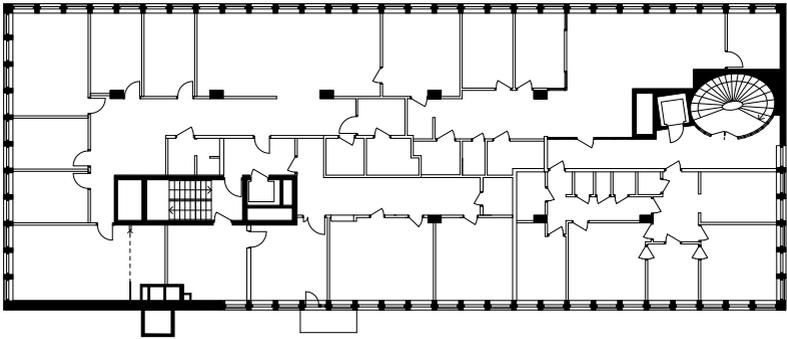
Plan +1

The whole first floor belongs to a gym.



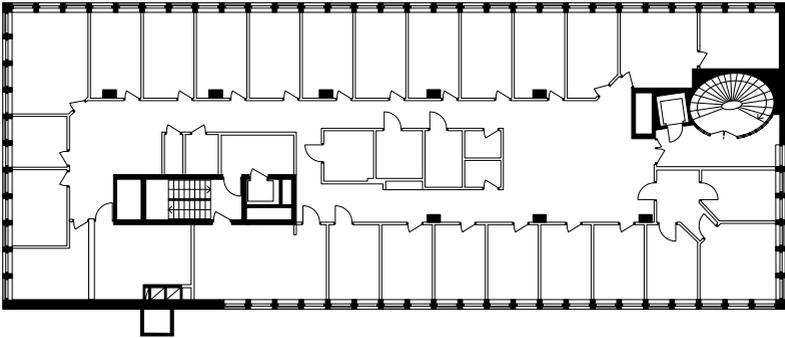
Plan +2

This floor is divided into small rooms. The corridors form a circulation loop for accessing secondary spaces.



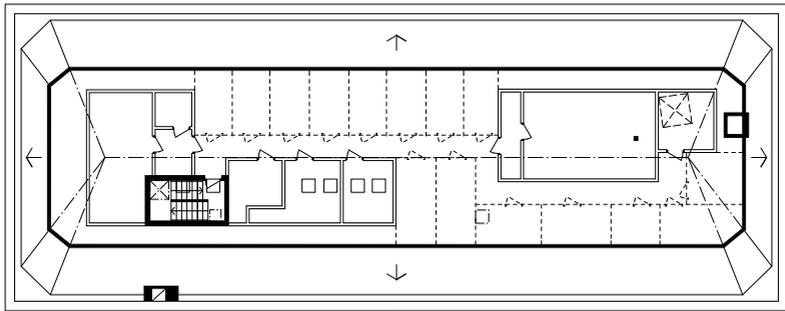
Plan +3

This floor is as much divided as the previous one. Clusters of rooms form hierarchic structures, with complex access patterns. A small balcony is a random add-on to the facade



Plan +4

This floor plan has the clearest layout among the repetitive ones. The corridor forms a circulation loop which connects both staircases.



Plan +5

The last level includes technical rooms - such as fan rooms, machine rooms and general storage.

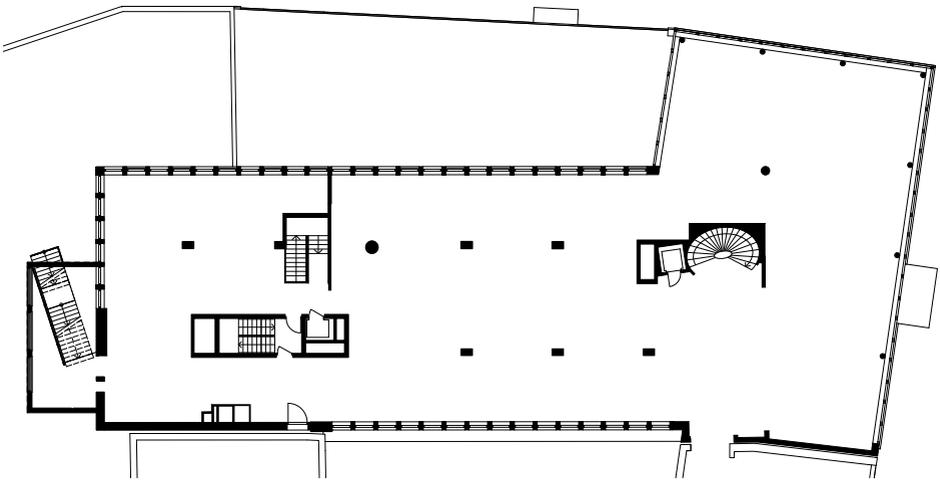
Delimitation

The existing building is a very complex structure, with quite a chaotic system of connections between the occupying institutions and companies. Over the years, various add-ons have been constructed. I have decided to limit my scope of interest to levels 1 to 5. These levels are a representation of the repetitive floor plan within the structure. I discarded the basement and the ground floor in order to get a more uniform design foundation, onto which I could apply varying spatial solutions. Thus I could prove that starting with similar floor plans can in the end produce very rich and varied architecture.

The ground floor and basement are functioning correctly, in their own rhythm. The functions include a gym and several shops on the ground floor and a parking garage and technical rooms below. I decided to leave these two levels out of my adaptation for several reasons. Firstly, it would be a very complicated task to grasp such a complex structure in its full extent. There are multiple and confusing circulation nodes between the basement and the ground floor, and the borders of the building extend, substantially increasing the square footage. Secondly, my main objective is to prove that the existing repetitive floor plan, with minor iterations, can be transformed into multiple spatial experiences without a drastic invasion into the structure. Moreover, the existing functions work rather well, and I did not see the need to disturb that for now.

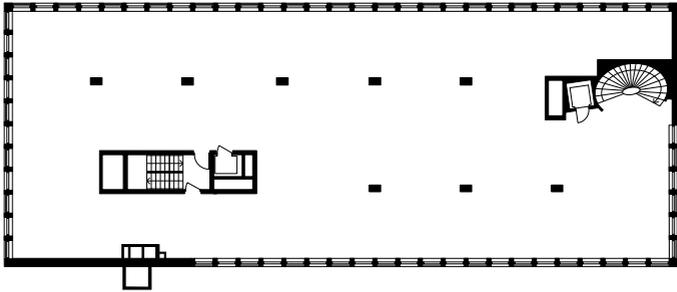
The entrances on the ground floor are cut off from the surrounding functions and can easily serve my building in their present form. Any change to these areas would implicate serious changes to an existing pattern of functions.

All partition walls have been discarded to provide an equal starting point for the design of every level. The construction and circulation cores are left untouched.



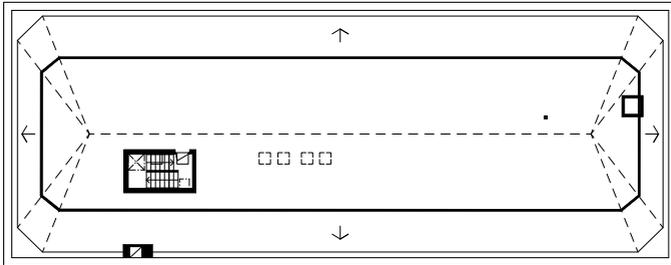
Plan +1, construction only

This plan includes three circulation cores. Apart from two main cores which repeat on every floor, there is another one which only leads to the ground floor. The rhythm created by the pillars is a dominant spatial gesture. The extension of the repetitive plan visually belongs to another part of the building, with a separate construction, form and materials



Plan +2 to +4 - repetitive floor; construction only

Levels 2 to 4 have an almost identical layout. Here, they are represented by a repetitive floor plan. The facade is uniform, with windows of one size. Two cores provide the access to all floor, with the exception of the main elliptical core which does not continue to the attic.



Plan +5 only construction

With just one core and a rather low ceiling, this floor can only show its full potential with reference to another level. In its current form it is rather misused. It has just one access point and has poor lighting conditions with only several skylights.

Project

General objectives

My aim was to produce a variety of scales - from small rooms to spacious halls. It was important to prove that a repetitive floor plan can be transformed into a collection of many different atmospheres. I tried to include a rich spectrum of spatial patterns to ensure that the building can be used in many ways and host various programs.

The interventions form a new layer which makes it possible to envisage a variety of functions in the building. Every level ends up having a unique spatial pattern which causes different behavioral responses. On the first visit, the users are influenced to circulate in a specific way. They are directed towards certain places, as if the building was telling them what to do. Once the users become aware of their own behavior and their own way of using the building, they begin to understand what can become of it. They start to associate the spaces with potential functions, based on their personal experiences. This is because other buildings they used made them behave in a certain way. The users can make a mental connection from that spatial experience. The functions of those buildings, by analogy, will be the ones which will get attached to the new structure.

My building will take on new functions over the year, as people grow the need for new program and the lifestyle changes even further. The behavioral pattern generated by the built form will not change. The behavior it generates stems from basic evolutionary experiences and collective societal memory. What will change is the program that people connect with this behavior, on account of the lifestyle changes. The same forms could create endless opportunities, accommodating the changing pace of life.

From familiarity and a specific appearance the appreciation will emerge. People will identify with the new building and will be willing to continue the thought of future-proof architecture.

Respect for existing structure

In the design phase, I tried to focus on the qualities of the existing building and to emphasize some of the current spatial gestures through minimalistic but concrete interventions. I did not want to undermine the principles behind my building and rearrange it completely. Too many adaptations nowadays are executed in an ignorant and careless way, as they completely disregard any potential in the existing structure.

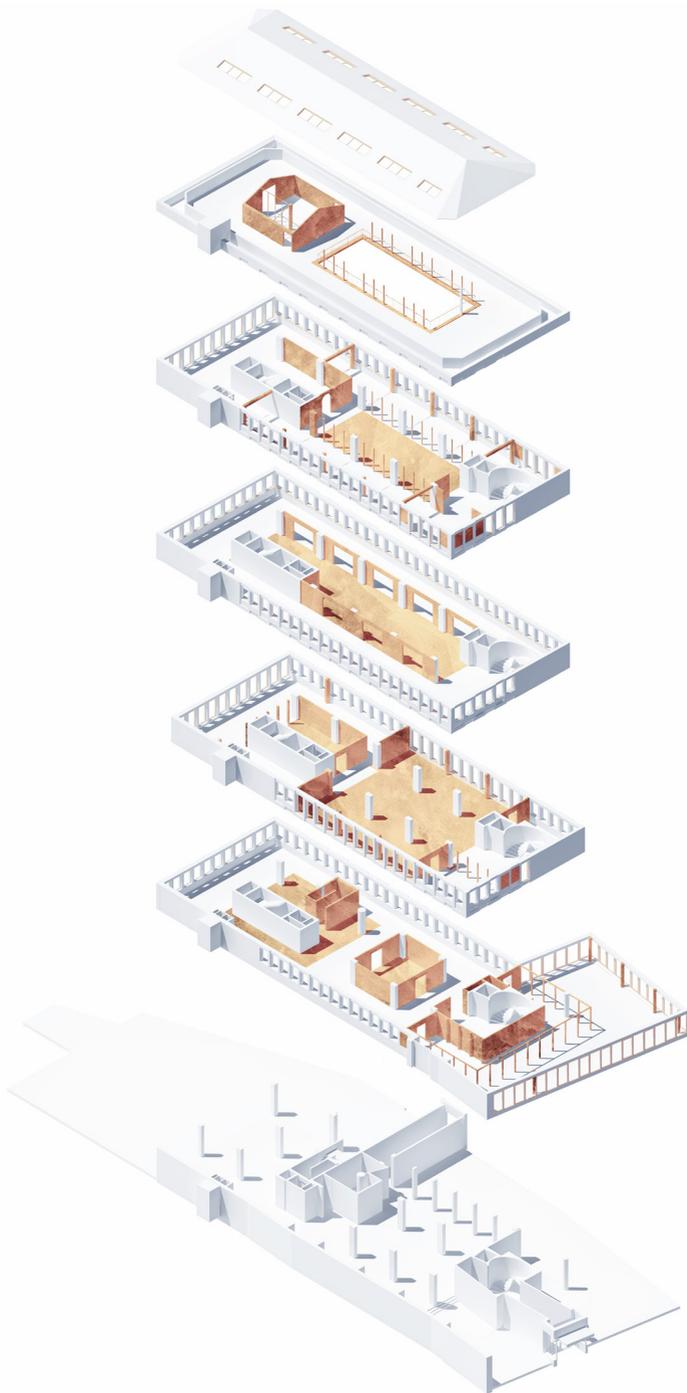
The geometry of the reinforced concrete structure and circulation cores remained unchanged. My approach to the facade was to alter it only in the necessary cases. These alterations include either enlarging the windows or closing them off.

My project envisages a full renovation of the remaining elements. All window frames, door frames and interior finishes, such as floors, cladding and paint are either changed or cleaned and refreshed. The staircases are fully renovated as well.

Partition walls and structural elements which were discarded provide material for recycling. The brick walls are made of re-purposed bricks from both inner walls and parts of discarded facade. Terrazzo contains chips of bricks, concrete and crushed floor tiles.

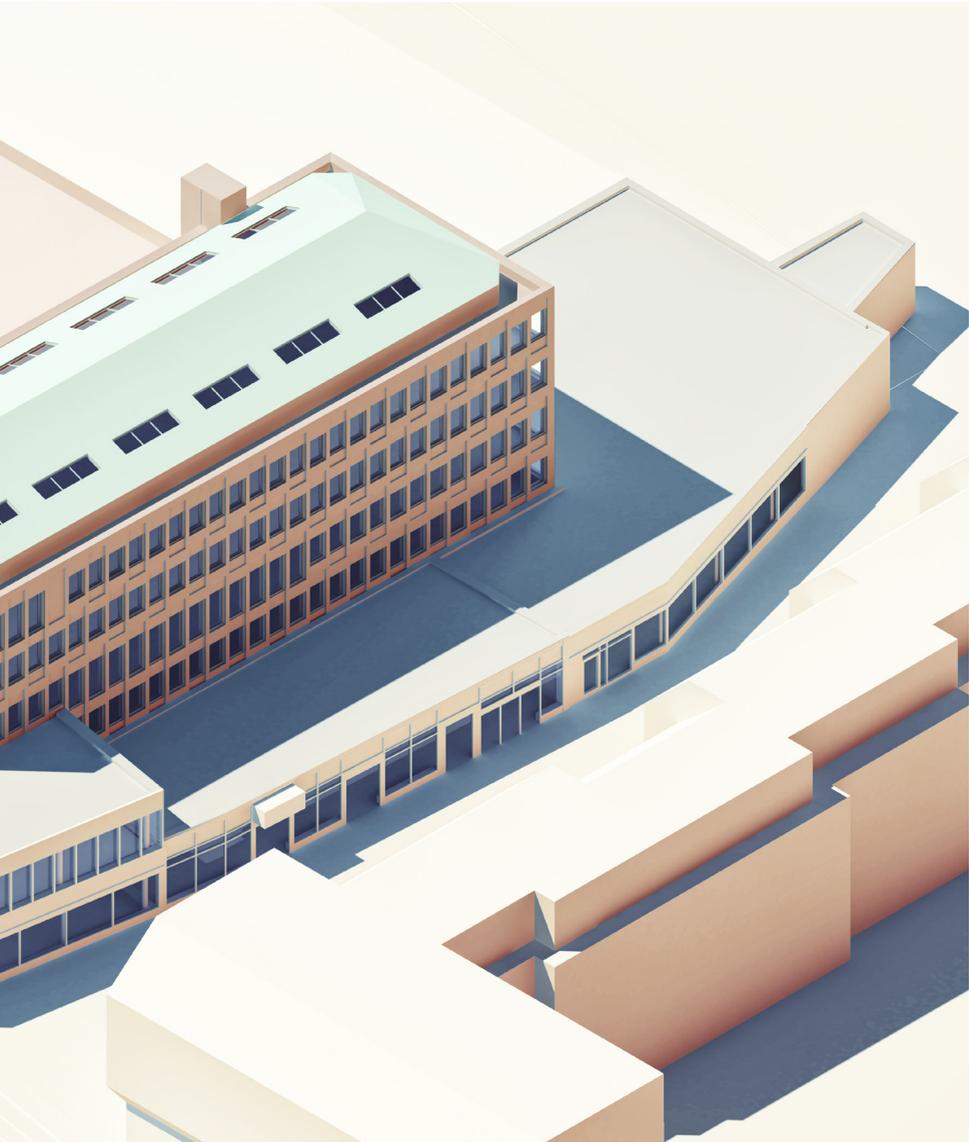
Overall, I stayed true to original materials, respecting the existing structure as much as I could. My interventions are very specific and rich in materials and textures, but they harmonize with the existing ones.

The scale of interventions. Add-ons are presented in color.





Aerial view after the interventions



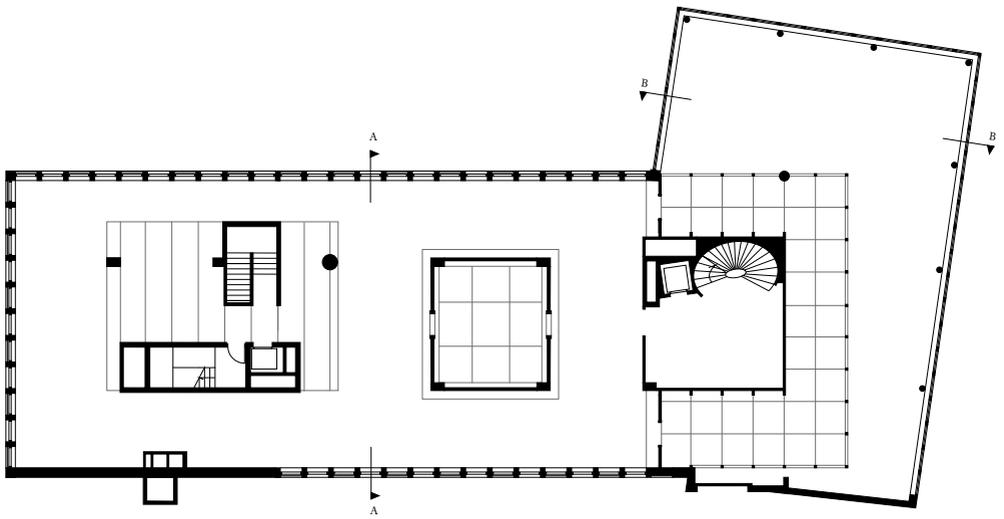
First floor

The first floor is a combination of a repetitive floor plan and a diagonal extension. The potential resulting from this unique layout was used to inquire into the concepts of inside and outside, and create layers of space. The existing cores and their surroundings are treated as explicit, free-standing objects in a uniform space.

The interventions present three different ways of approaching the phenomenon of spatial enclosure, or rooms within rooms. The first one consists of a rectangular, repetitive staircase core, a staircase leading only to the ground floor and several nearby structural members. They form a loose cluster of seemingly detached objects, brought together by the use of materials and divisions in the floor.

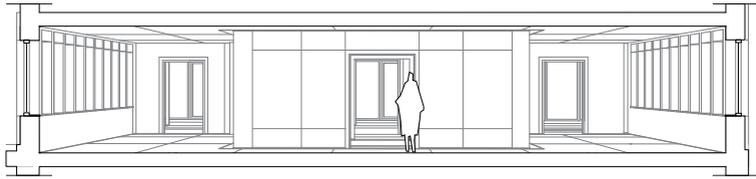
The second object is formed around four centrally located concrete pillars. This closed off cube creates a separate space in itself, but a pair of axially positioned doors gives it the qualities of a passage.

In the third case, the walls built up around the elliptical core transform it into a larger room. It is the heart of a three-layer space, where the outline of the repetitive floor meets the diagonal extension. This space forms a gradient from the innermost "indoor" room, through the "semi-outdoor" space adjacent to it, to the "outdoor" space. This hierarchy is created by adding spatial dividers, such as a colonnade, in places already accentuated by an existing structure. All three clusters create a sequence of spaces.

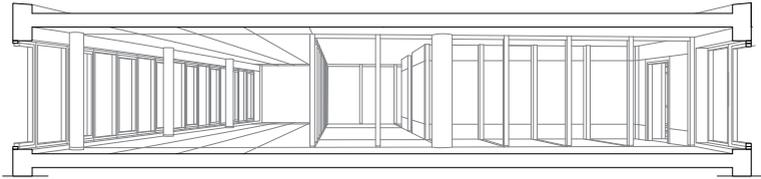






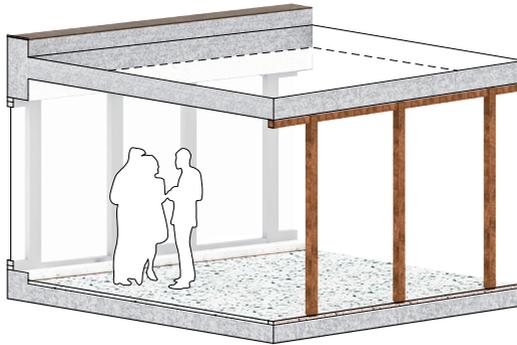


Section A



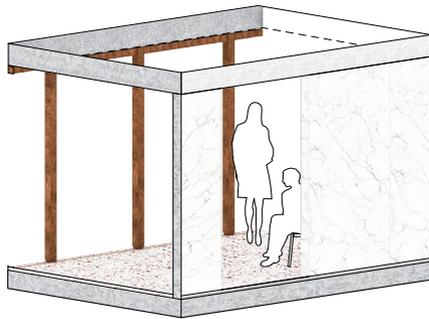
Section B

Evaluation



Spatial unit 1

The outermost layer of space is an open room which encourages free circulation, spontaneous meetings and focuses the users on the view of the outside.



Spatial unit 2

The middle layer of space can serve as both a corridor and a sheltering space for lingering. Towards the wall, the users are anchored in more permanent activities. Near the colonnade they circulate.

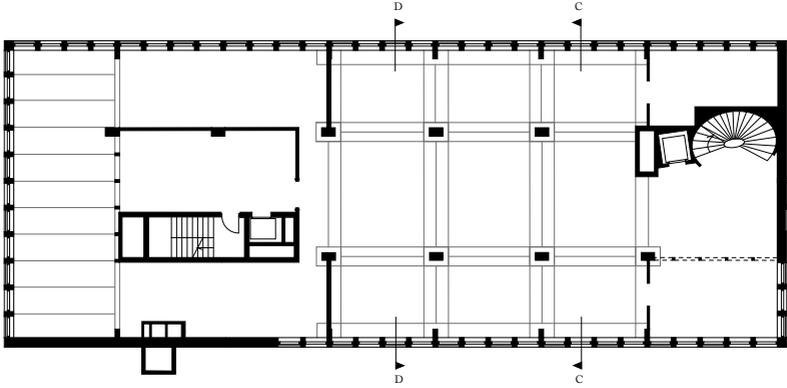
Second floor

The interventions on the second and third floor serve as an example of how identical stories can be treated differently, and how the inherent potential of the space can be driven into two equally valid but distinctive directions.

On the second floor, a clear sequence of rooms has been formed using the existing volumetric division. Different spaces are read as separate and create universes of their own. The connections between the rooms vary in terms of openness.

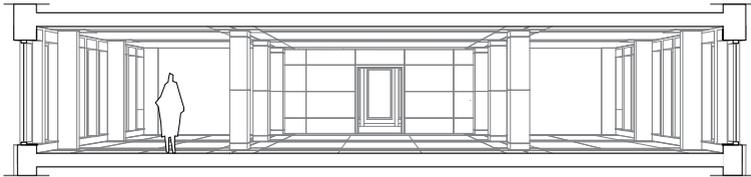
The landing of the elliptical staircase forms an entrance zone, generously open towards the main hall. Two previously existing windows have been closed off, in order to encourage stepping into the main hall. Another option is to enter an adjacent, light-filled room, just opposite the landing. This one, together with a twin room on the other side of the staircase, symmetrically flanks the entrance zone. In the main hall, the spatial impact of existing pillars is enhanced. However, their dominant directional expression is balanced by a set of added columns, which extend and enhance the existing facade pillars. Together, they create a generous and uniform grid, where people can circulate freely. Its open character is highlighted by two rows of enlarged windows, spanning down to the floor and filling the room with light. They allow the main hall to stay open and naturally lit at the same time.

The axial character of this level is emphasized by a copper-clad wall with a generous doorway in the middle. In front of it, a thin stripe of transitional space reveals two side entrances to an adjacent, U-shaped room. Thus the secondary staircase core avoids being so dominant. From three sides it is a closed-off room, however, it opens up towards a wall of full-height windows, which are a focal point of the U-shaped space. This area encourages a slower pace and the users are inclined to stay.

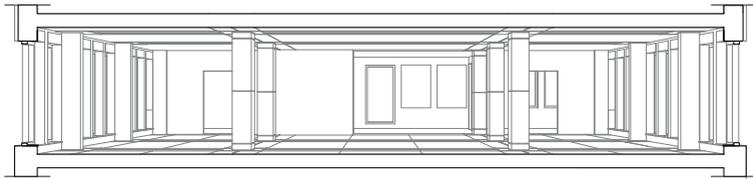






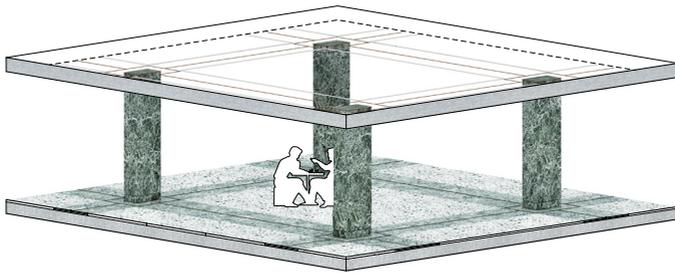


Section C



Section D

Evaluation



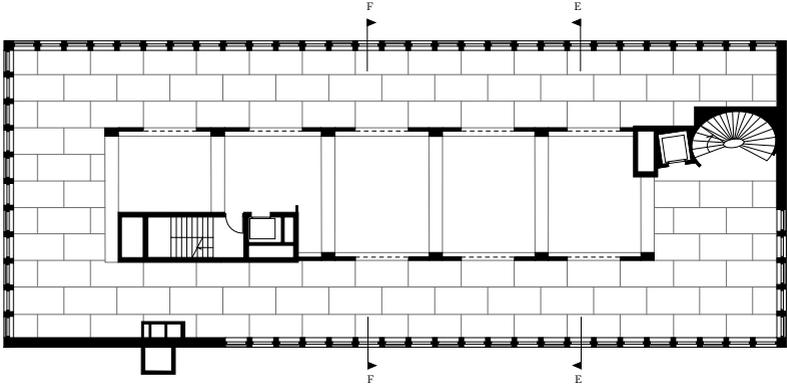
Spatial unit

The pillars create a uniform grid. Here, the users are encouraged to circulate freely. Floor design visually ties the pillars to each other. It also delimits equal zones, where similar activities can take place.

Third floor

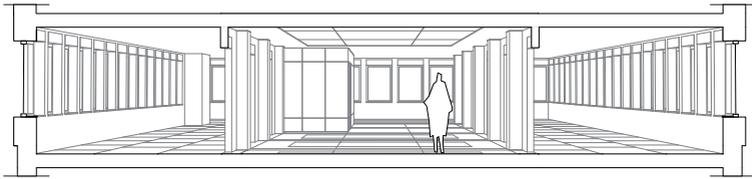
The overwhelming directionality of the pre-existing construction is maintained and highlighted by a set of brick walls with generous openings. This minimalistic intervention divides this level into a main space and a circulation space. From the arrival point through the elliptical staircase, the users are led into a circulation loop. The uniform expression of this space communicates equality and harmony. It is bright and unpretentious, and it encourages circular flow. All windows are identical on this level. There is no spatial culmination and no focus point. From this side, the brick walls inserted between the concrete pillars are covered in plaster and flush with the pillars, contributing to uniformity.

All division lines lead parallel to the general direction embedded in the geometry of this story. While in the circulation loop the pace is faster, the core space encourages the users to linger. The brick walls have a more articulate expression towards this inner space. The terrazzo design visually ties the floor to the walls and establishes connections between the concrete pillars. The secondary staircase is perceived as an object inserted into the this space and it underlines the overall directionality.

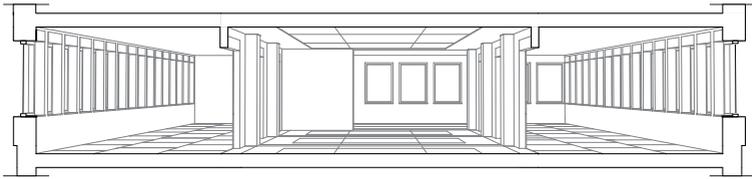






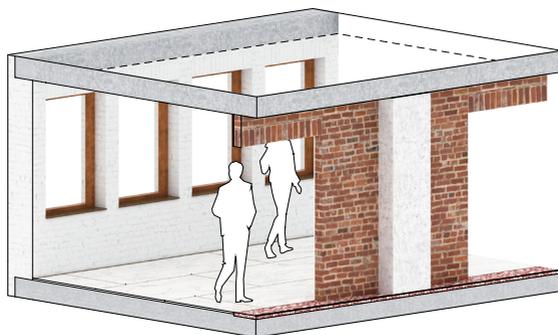


Section E



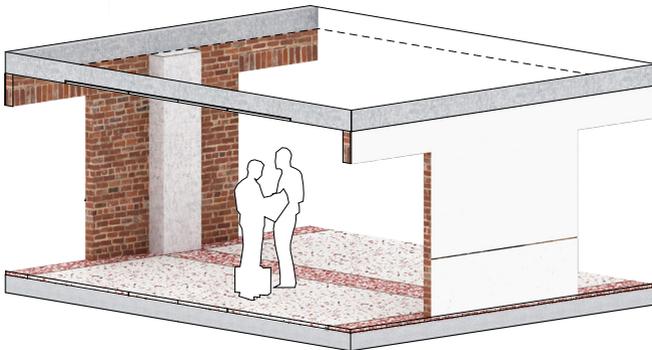
Section F

Evaluation



Spatial unit 1

The circulation loop quickens the pace of the users and encourages a circular flow. The uniform, unpretentious expression of this space evokes equality.



Spatial unit 2

The core space encourages the users to linger and forces a slower pace. The brick walls have a more articulate expression towards this inner space and terrazzo design visually ties the floor to the walls, creating zones.

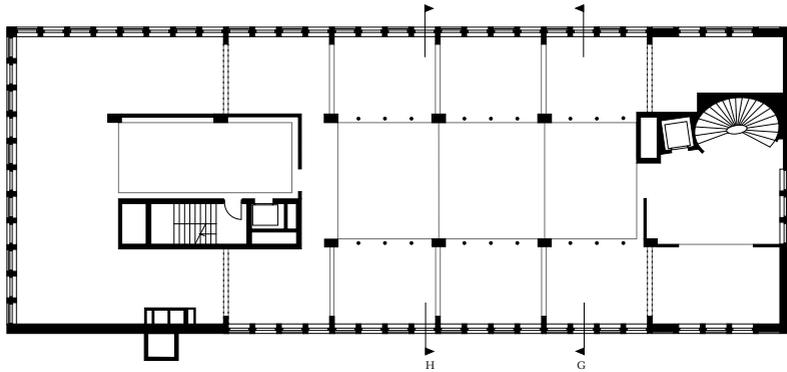
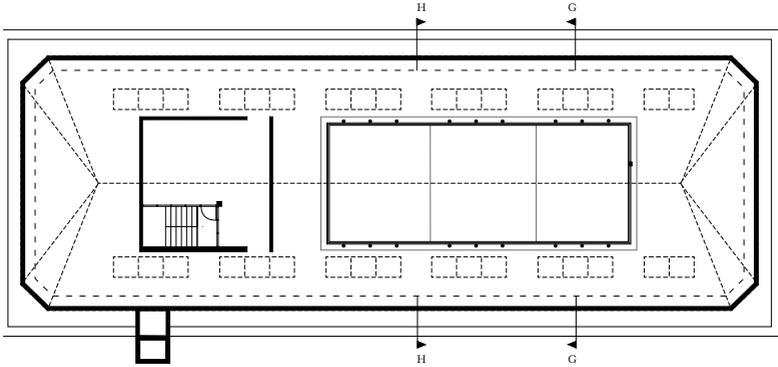
Fourth and fifth floor

In order to create a departure from an extremely horizontal expression of all the levels below, the fourth and fifth floors were combined into one double-height space. Low ceilings and significant width of the building made it challenging to create a strong vertical expression, without dividing the levels into narrow corridors. In this case it was clearly not an intention. Instead, the two uppermost levels were merged to create a unique spatial experience by means of a simple architectural gesture.

A hole was cut in the concrete, creating an indoor atrium and letting in the light from two rows of new skylights. A new set of columns following the rhythm of facade pillars bears the load from the structural loss within the slab. The gable wall and added pillars enhance the overall verticality. The double-height space is flanked by two elongated open spaces. The extended facade pillars and divisions on the floor make them perceived as having potential to become separate rooms.

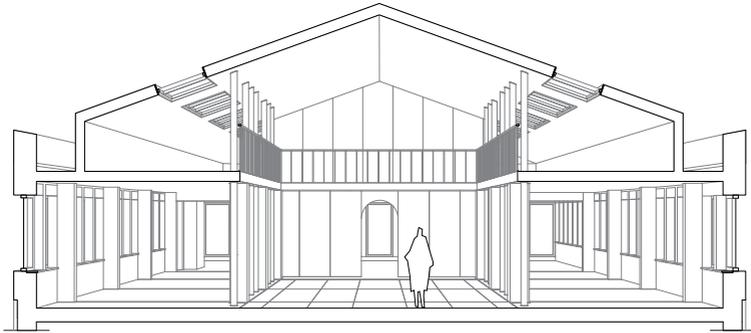
Here, the elliptical staircase is enclosed within a room, where axially positioned door and windows guide the users into the main hall. The entrance zone has two flanking rooms, which open of to the "naves" of this level. At the end, the secondary staircase core creates an enclosed room.

Previously, the fifth floor was dedicated to storage and technical rooms. Thanks to a new spatial arrangement, the full potential of the space under a sloping roof is revealed. The only staircase leading to this level is amply enclosed, with two side opening letting in the abundant daylight from the skylights. In front of the marble-clad wall, a generous key space is located. It attracts focus from both levels, and is a great presentation spot.

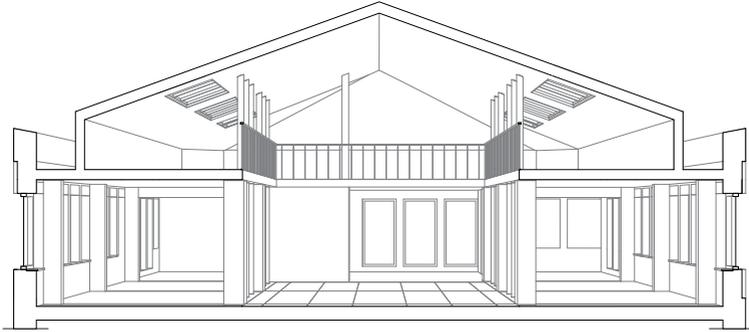








Section G



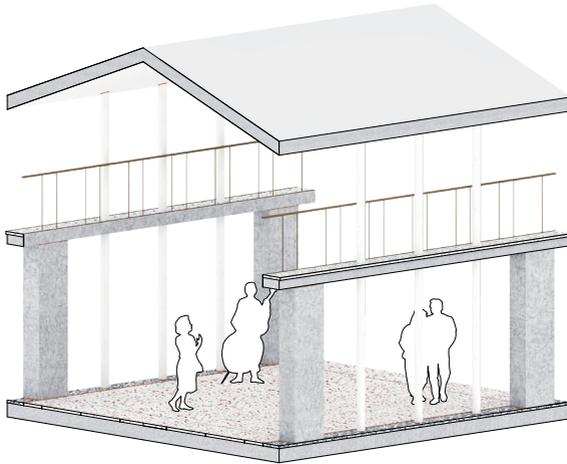
Section H

Evaluation



Spatial unit 1

The naves flanking the double-height hall create a less formal atmosphere, where different activities can be held. Each span between the columns can be used as a different room, for which the main hall provides access points.



Spatial unit 2

The double-height space is a main circulation area, where one can access different rooms on both sides. It encourages a back and forth movement pattern and a free flow of the users.

Conclusion

The prevailing consumerism culture has a detrimental impact on architectural quality. We need to realize that architecture with a short life cycle is not the answer to our changing needs. Our awareness of wasted materials and potential needs to rise.

We need to be mindful of the built environment and try to see the hidden and unnoticeable possibilities which lie within it. Soon, all architectural projects might come down to adaptive reuse. We need to be ready to implement solutions less costly and more environmentally friendly than demolition.

I am strongly convinced that if designers reach to the knowledge coming from their own perception and behavioral responses, they can take flexibility in architecture to the next level. If we base our creations on the immense experience coming from reaching to history, we can become better at predicting where our future might lead us.

I am certain that my approach proves that it is possible to achieve a high quality of spatial experience and a huge degree of flexibility. Through observations of human interactions with built form and providing relatable form language, a future-proof architecture can be created.

Special thanks

To my tutor, Thomas Hellquist, for guidance, inspiration and interesting discussions.

To my family and friends, for support and kind words.



References

- Fig.1 21 Research methodology diagram
- Fig.2 27 ©CpaKmoi;
<https://www.flickr.com/photos/25219551@N08/9852064854>
- Fig.3 27 ©Steven Zucker;
<https://www.flickr.com/photos/profzucker/7627143414/>
- Fig.4 37 http://wingsofeaglesct.com/LIFE_OF_JESUS/004_ChurchOfTheNativity.htm
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- Fig.6 51 <https://www.expedia.mx/Stoa-De-Attalos-Atenas.d6062029.Guia-Turistica>
- Fig.7 51 ©DerHexer, Wikimedia Commons; https://cs.wikipedia.org/wiki/Soubor:Stoa_of_Attalos_at_the_Ancient_Agora_of_Athens_3.jpg
- Fig.8 57 <https://mezquita-catedraldecordoba.es/descubre-el-monumento/el-edificio/mezquita-fundacional-de-abderraman-i/>
- Fig.9 57 https://nl.wikipedia.org/wiki/Converso#/media/File:Mezquita_de_Córdoba_-_Techo.jpg
- Fig.10 67 ©Welleschik, Creative Commons; https://commons.wikimedia.org/wiki/File:Pavia_Chiesa_di_San_Michele2.jpg
- Fig.11 67 ©Arturo Defilippi; <http://mapio.net/pic/p-46642616/>
- Fig.12 73 ©Benny Hünersen; <https://www.flickr.com/photos/40584957@N04/5563437141>
<https://www.flickr.com/photos/40584957@N04/5564012458/in/photostream/>
- Fig.13 73 ©Benny Hünersen; <https://www.flickr.com/photos/40584957@N04/5563437141>
<https://www.flickr.com/photos/40584957@N04/5564012458/in/photostream/>
- Fig.14 82 Spatial pattern categories diagram, ©Karolina Pajnowska
- Fig.15 86 De-contextualized space, ©Karolina Pajnowska

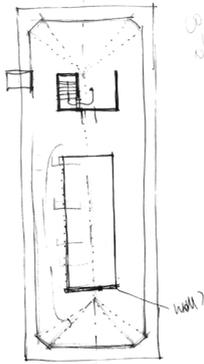
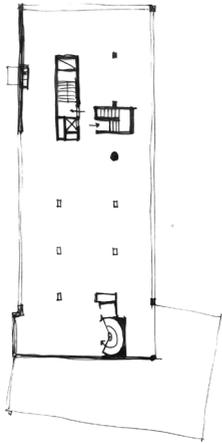
- Fig.16 87 Future-proof space, ©Karolina Pajnowska
- Fig.17 101 Basement - site photos, ©Karolina Pajnowska
- Fig.18 101 Abandoned floor - site photos©Karolina Pajnowska
- Fig.19 102 Mosaic - site photos©Karolina Pajnowska
- Fig.20 102 Mosaic - site photos©Karolina Pajnowska
- Fig.21 103 Mosaic - site photos©Karolina Pajnowska
- Fig.22 103 Mosaic - site photos©Karolina Pajnowska
- Fig.23 104 Staircase details - site photos©Karolina Pajnowska
- Fig.24 104 Kattesund entrance - site photos©Karolina Pajnowska
- Fig.25 105 Meeting room - site photos©Karolina Pajnowska
- Fig.26 105 View from the balcony on the third floor - site photos©Karolina Pajnowska

Citations

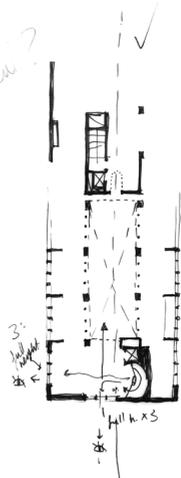
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26. <http://www.midroc.se/om-midroc/nyheter/kategorier/2016/midroc-forvarvar-fastigheten-fargaren-25-i-lund->

APPENDIX



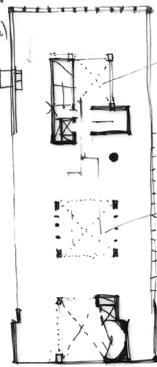
002
classroom?



3:
Hallway
& Stairs

Hallway

is one with
smaller
windows



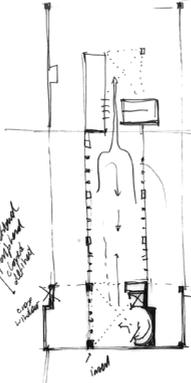
special area 2

special area 3

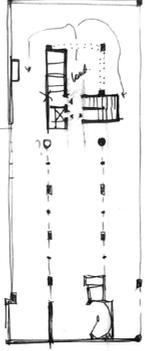
inset

special area 1

1st floor
Floor plan
of the
classroom

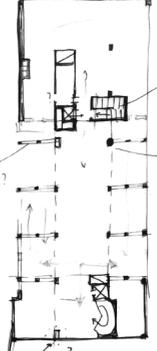


3



a beam
and
bump?

Floor communication
with
classroom

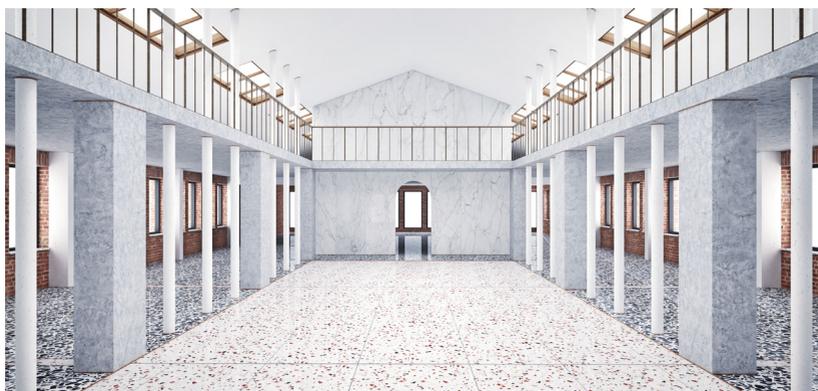


curator!

Walter
& person
→ special

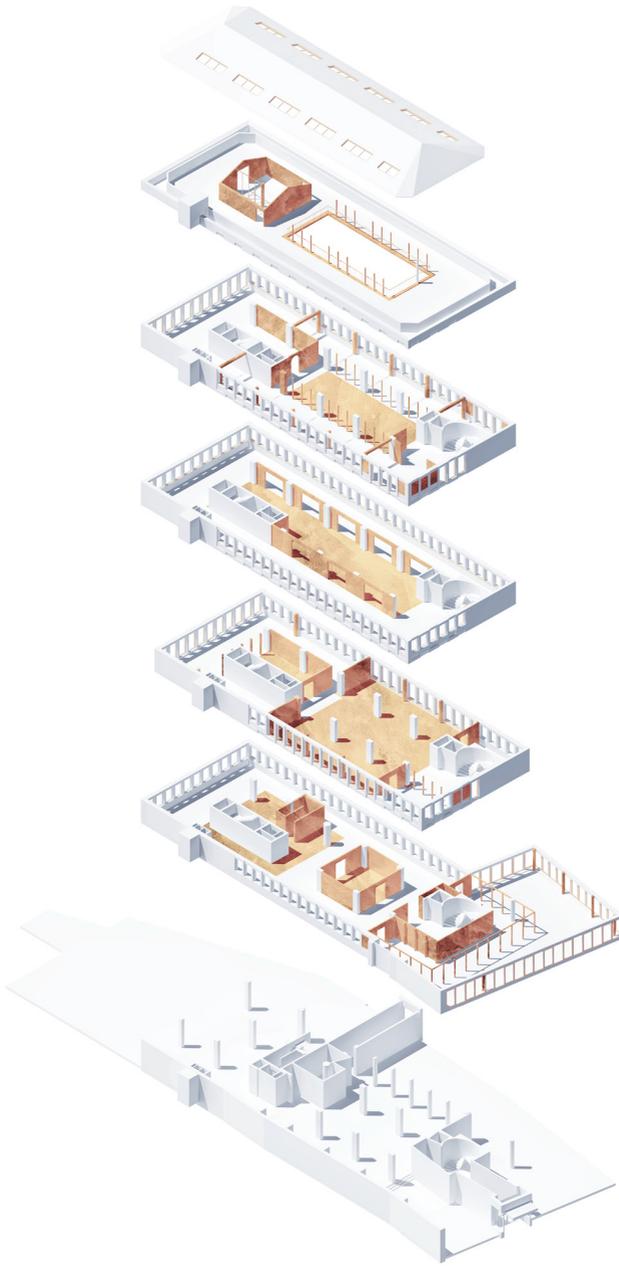
what on?

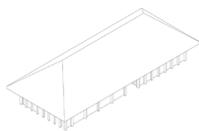
Boards



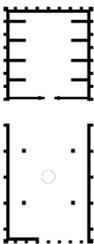




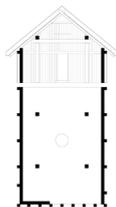




Jerih house, 600 BC



Plan



Spatial pattern



Spatial void



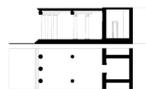
Stone of Aradon, c1500 BC



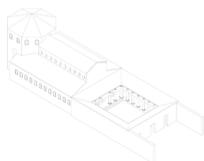
Plan



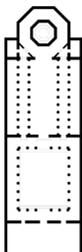
Spatial pattern



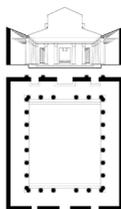
Spatial void



Church of the Nativity, 327, 339/316



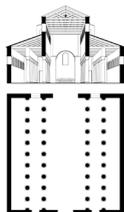
Plan



Spatial pattern 1



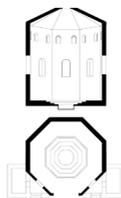
Spatial void 1



Spatial pattern 2



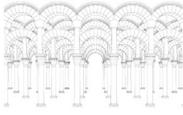
Spatial void 2



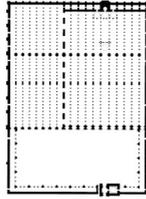
Spatial pattern 3



Spatial void 3



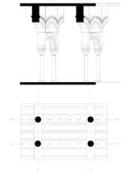
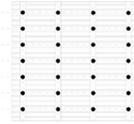
Mosque-Cathedral of Córdoba, 784-967



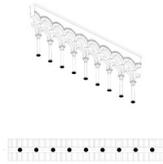
Plan



Spatial pattern 1



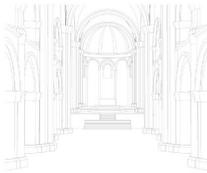
Spatial unit 1



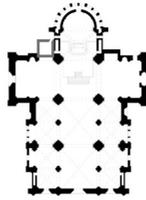
Spatial pattern 2



Spatial unit 2



San Michele Maggiore, 1155



Plan



Spatial pattern



Spatial unit



Temple of San Pietro in Moirans, 1502-1506



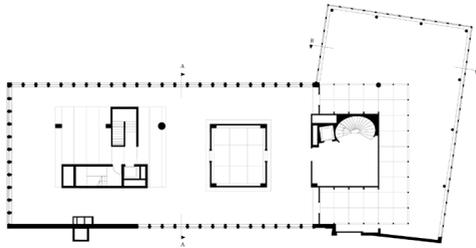
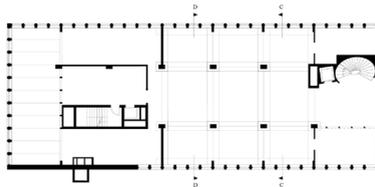
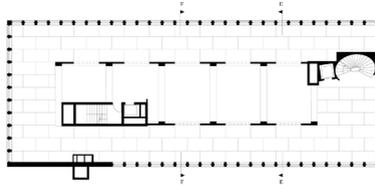
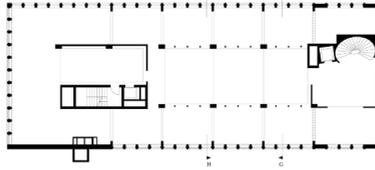
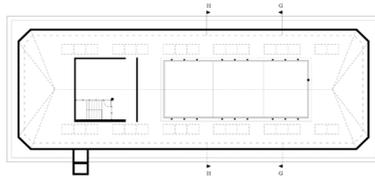
Spatial pattern

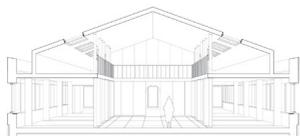


Spatial unit 1

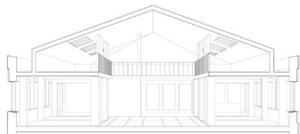


Spatial unit 2





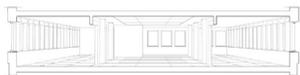
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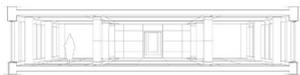
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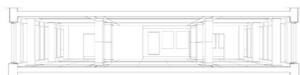
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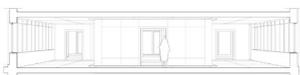
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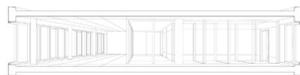
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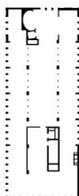
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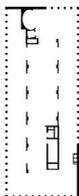
Section A



Section B



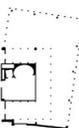
Spatial pattern



Spatial pattern



Spatial pattern



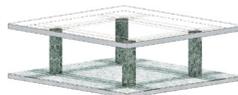
Spatial pattern



Spatial cut



Spatial cut



Spatial cut



Spatial cut

Model photos

