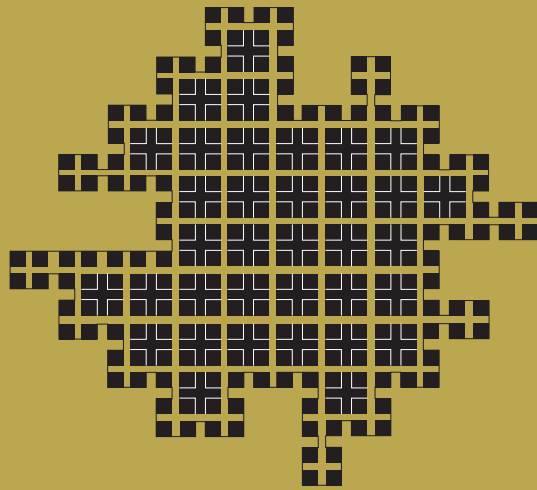


ANALYSIS OF CENTRAAL BEHEER APELDOORN



VOL 3.
SPATIAL

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INTRODUCTION

Unlike other fields of art, architecture creates a 'space' and hands it over to the dwellers of the building. With the relation to this fact, in his book, 'How buildings learn,' Stewart Brand described how architecture could evolve by their dwellers even after they were built. From this point of view, it would be able to regard architecture as a being that is consistently completed by their users even after the first completion by the architect.

Dutch Structuralism architects were one of those who recognized this fact and actively reflected it on their architectural idea. They against Functionalism that excessively focused on 'function' of architecture, and sought the new architecture that could contain 'humanity' that had been missed during Modernism architecture era. From this standpoint, Dutch Structuralism architects attempted to avoid the attitude that architects should decide and complete everything. Instead, they aimed the architecture that allows reaching completion with dwellers and flexibly responses to their needs. Their architectural design methodology was a way to implement these ideas, and the forms and spaces of their projects were the results that realized their architectural ideal.

Herman Hertzberger is one of the most representative architects of Dutch Structuralist architecture. His architectural ideas were toward 'people,' and he started his architectural design with the question of 'how people would dwell in architecture.' In other words, his projects were a reflection of his consideration of how users will interpret their own space, and which kind of architectural design could better accommodate each user's interpretation. His representative architecture projects, such as Centraal Beheer Office and Diagoon Housing, present these architectural thinkings through their form, structure, and space.

Of course, Structuralism architecture had several limitations. It could be presumed from the fact that most of the structuralism architectural projects were built only during the 1960-80s. However, their idea that recognized the importance of 'users' in architecture and pursued architectural space for their interpretation is still valid nowadays. Notably, in these days, when sustainability and the role of users are getting more and more important in architecture, it would be valuable enough for us to look back the thoughts of Structuralism architecture.

For these reasons, this research will investigate the possibilities and limitations of Structuralism architecture. Through this investigation, this study will provide a foundation for further discussion of the new architectural methodology that could complement the weaknesses of Structuralism architecture and improve their possibilities at the same time.

Research Subject and Questions

As 'the possibility and limitation of Structuralism architecture' can be too broad as a topic, I will narrow down the research subject to 'Centraal Beheer Office' of Hermann Hertzberger. This is because Herman Hertzberger was leading architect of Structuralism architecture, and Centraal Beheer Office is his representative masterpiece that clearly presents his Structuralism architectural concepts such as individual interpretation, social interaction, and grid system. Moreover, Centraal Beheer Office shows not only its precious spatial value but also possess several controversies such as excessive repetitive design and isolation from the surroundings. Therefore, it would be able to analyze the building from more various viewpoints.

To be more specific, this study will deeply analyze Centraal Beheer Office from the 'spatial aspect.' This is because, for Herman

Hertzberger and other Structuralism architects, 'space' was not a simple outcome, but an implementation of their architectural ideal. Therefore, investigating the 'Form,' 'Space,' and the 'spatial value' of Centraal Beheer Office would provide the clue to find the meaning and the limitation of the idea of Herman Hertzberger and Structuralism architecture.

With this, the main question of this research is '*What is the spatial possibilities and limitations of the Centraal Beheer building?*' Concerning to this main question, this study will investigate the spatial value of Centraal Beheer Office centering following sub-questions.

1. *What was Herman Hertzberger's initial idea and intention of the design of Centraal beheer Office?*
2. *Was his initial plan and goal actually accomplished in Centraal Beheer Office? Did the users actually behave and use the building as his intention?*
3. *What is the spatial value of Centraal Beheer Office? Which value is achieved and missed?*

Research Process

The research process is as follows. First of all, this research will explore Structuralism architecture and their architectural language. By this exploration, we will adopt the framework for further investigation of Architectural analysis of Centraal Beheer Office. Secondly, by studying historical background and site and surroundings of Centraal Beheer Office, we will examine circumstances that influenced and could influence the design of the building. Thirdly, we will more deeply explore the spatial value of Centraal Beheer Office with the 5S categories: Structure, Space, Surface, Service, and Stuff. Each chapter will be consists of subchapters, 'Architectural analysis' and 'Technical analysis'. The Architectural analysis will more focus on to investigate the spatial value of each part based on our research questions and framework. And the Technical analysis will study about more practical and technical aspect of Centraal Beheer Office.

Ultimately, this research will be concluded with an evaluation of the spatial possibility that should be kept and limitation that should be improved. Furthermore, based on this knowledge, this study will aim to provide more profound discussion subjects for the further design process.

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STRUCTURALISM

Before diving into the analysis of Centraal Beheer Office, it is necessary to investigate what is Structuralism architecture. This is because it is the fundamental idea of Herman Hertzberger's architectural design so that examining Structuralism architecture would provide the clue for 'what was architectural ideal Herman Hertzberger wanted to achieve' and 'how he designed Centraal Beheer Office.' Moreover, this study will provide the framework that would support us to perform more organized analysis of this building.

Structuralism Architecture

With the purpose to establish the firm foundation for the whole research, this chapter will investigate the basic understanding of Structuralism architecture. More precisely, this section will explore 1. *what was the historical and theoretical background that Structuralism architecture arose from*, 2. *how had Structuralism architecture improved their architectural idea*, and 3. *what was the goal they wanted to achieve through architecture*. Through this study, we will examine which aspect do we have to focus on for the deeper understanding of Structuralism architecture and Centraal Beheer Office.

Reaction to CIAM

Structuralism in architecture was a reaction to CIAM Functionalism after 1960. CIAM declared their idea of the new architecture based on Functionalism. They regarded aesthetics in architecture have to be rejected, and the new architecture had to be connected with the scientific analysis instead of art. Making construction faster and cheaper, providing a more hygienic place to people, and separating of functions of a city were the essential principles of them. Their ideology made a strong influence to the worldwide till the 1960s.

However, young generation architects started to indicate the inadequacies of the theories of Functionalist. They asserted that the ideology of CIAM brought the architecture that misses humanity value, such as neighborhood, social interaction, etc. Aldo van Eyck said 'we are confronted with the task of creating inhabitable cities in a country which is already almost uninhabitable. True interiors of the community, so that everybody knows who and where he is so that sheltered spirit can heat the houses, streets, and squares'. (Heuvel, 1992). Based on this idea, young architects, including Aldo van Eyck, attempted to find the new architectural language to restore the mistakes of Modernism Architecture and revitalize the inhabitable city by developing individual and social qualities. They tried to create interaction between people, and between people and place. In this regards, they aimed to remove the gap between people and recreate the social interaction by the new architecture.

The Idea of Structuralism

What brought further development to their idea was 'Structuralism' that had established in several fields such as art, philosophy, and so on. Structuralism was derived from Ferdinand de Saussure's idea, "Langue et Parole." According to Saussure, Langue is a collective pattern that functions as a common principle, and Parole is an individual interpretation that appears in our conversation in a real world.

Based on this language model, Claude Levi-Strauss develop his idea of Structuralism in the perspective of anthropology. According to Levi-Strauss, we should return to the beginnings, "ancient" world, because there is a universal structure in an unconscious dimension of human nature and every culture. Therefore, exploring and investigating this fundamental structure is the way to truly understand the real world and to find the original state of human being.

Concerning this idea, Structuralists thought that structural system consists of several relationships. They thought that, even though elements themselves are interchangeable, the structure system behind them would remain. Therefore, to Structuralists, the relationships between the factors are more important than the elements themselves.

Structuralism Architecture

Dutch Structuralism architecture is based on the idea of Structuralism (Strauven 2017). Like the idea mentioned above, Structuralism Architects also attempted to find the underlying principle that had been continued from the beginning. They found that 'creating a form and space on the earth' had been the fundamental ability for all human beings. They said that even though every culture shows different forms of architecture, that seemingly different architecture, in fact, share same 'arch-forms' on their foundation. With the relation to this idea, Aldo van Eyck considered that there are the permanent principles of human existence, but we had been missed it in modern architecture (Heuvel 1992). They thought that this principle would give a solution for urban and architectural problems revealed after World War 2. In other words, to Structuralism architects, returning to fundamental 'arch-forms' and setting this as the starting point of their architectural idea was the way to regain 'humanity value.'

In this regard, returning to the 'primitive' and 'Archetypical interpretation' had been served as a basis for the form and design methodology of Dutch Structuralism architecture. For example, Aldo van Eyck found that most of the primitive residential areas, such as Kasbah, were naturally evolved in harmony with the way people lived. He also found that the organization of the town, seemingly chaotic at a glance, are actually on the fundamental order indeed. As those cases show, Van Eyck asserted that we need to do urban planning that 'a whole/parts' and 'plan/people's way of life' could organically interact each other. Based on this belief, he developed his idea of Configurative Design such as 'the aesthetic of number' and 'articulation of volume,' etc.

Herman Hertzberger was also the one who was interested in the interpretation of the Archetypical. He investigated old remains from medieval to 19 century and found that those places were successfully accommodating the new needs of dwellers while adequately inserted into the existing urban fabric. In other words, he found that, regardless of its intention, people could interpret those architectural spaces based on their needs or way of living. To explain these phenomena, Hertzberger applied the concept of Langue and Parole: Langue as 'structure' that fundamentally implying permanence, Parole as the individual interpretation. With this findings, as opposing Functionalism idea 'Form follow Function,' Herman Hertzberger asserted 'Function follows Form,' which is strongly related to the idea that people can make their own interpretation toward every architecture space.

According to A. Morgan, architectural principles that were asserted by Dutch Structuralism Architect are as below.

1. *We should pursue organic urban planning that can be found in the primitive residential areas such as Casbah*
2. *We should go beyond the Modernism concept of 'space-time, by being based on the concept 'Place and Occasion'*
3. *We should improve the quality of life through utilizing 'intermediate area' such as square and street*
4. *The shape, form, and identity of the city should be created from 'Architectural Methodology' rather than scientific analysis of Functionalism*
5. *Articulating a building mass could provide the way to avoid large building blocks.*
6. *The city should be developed based on an organic structure and order*
7. *Growth and change of architecture should be done on the basis of order and harmony.*
8. *The architect should create a flexible space to allows individual interpretations and future changes/extension*
9. *Architects can lay the foundations for new architecture through studying cultures of different times and places*
10. *Above all, architects should consider the fundamental nature of humans and their society*

To summarize, Structuralism architecture began from the reaction to Functionalism that brought 'the loss of humanity value.' And the idea of 'Structuralism,' the study of fundamental structure that all human beings are sharing, provided theoretical support to Structuralism architecture. Structuralism architects explored 'primitive' to look back from the origin for a deeper understanding of humanity. And they derived several architectural ideas that were mentioned above.

Based on this knowledge, the most important thing we need to know is that Structuralism architecture ultimately pursued 'humanity value,' and attempted to realize the architecture that could contain 'the quality of life of people.' For these reasons, they avoided the architecture that is following specific function determined by an architect. On the contrary, they pursued architecture that could flexibly respond to the individual's way of life and could transform/grow based on the changing needs of users.

In next chapter, this research will go on to investigate 'what was the design methodology they established to accomplish their architectural ideal?'

Architectural Methodologies of Structuralism Architecture

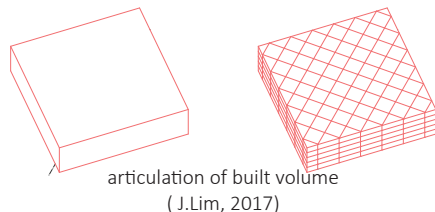
In proceeding a more profound investigation of Dutch Structuralism Architecture, this study aims to more focus on their spatial value. This is because, as most of architects, 'Form' and 'Space' were not simple results but the crucial means to achieve their architectural ideal to Structuralism architects. Therefore, investigating these 'Form,' 'Space,' and the 'spatial value' would provide the clue to the meaning and the limitation of Structuralism architecture.

Concerning to creating 'Form' and 'Space,' Structuralism architects, including Herman Hertzberger, founded several architectural methodologies and applied them to their projects. In this regard, this research will investigate these architectural methodologies as they are strongly linked to the spatial characteristics and value of Structuralism architecture.

Ultimately, through this study, we will set research framework for further analysis of the architectural value of Centraal Beheer Office. Furthermore, we will endeavor to find the answer to the question: 'what is the fundamental value that is underlying all of those architectural methodologies?'

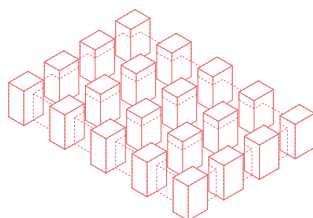
Articulation of Built volume

Structuralism architects thought that huge building mass is not appropriate for the space of human scale. Therefore, they believed that the articulation of the big volume is the way to humanize the architectural space and bring the architecture for each of individuals. According to Herman Hertzberger, a building has to be consists of small units to make individuals control and take care their own place (Lüchinger 1981). Also, this articulation will help buildings to be more easily inserted into the existing urban fabric. Therefore, to Structuralism architects, the idea of articulation is the way to get rid of the distance between architecture and people, architecture and their surroundings.



The Aesthetic of Number

While Functionalism viewed 'whole' and 'parts' as a separate concept, Dutch Structuralism architect attempted to consider 'whole' and 'parts' of a building at the same time. Concerning this idea, Structuralism architects used the repetition and variation of similar/ dissimilar units in their architectural design. By this mean, they plan their architecture to become 'decentralized,' and as a result, they aimed to create 'Democratic architecture.' It means every space of their building could be center and parts depends on their relation, position, and the function (Heuvel 1992). In this regards, an ar-



Repetitive design could realize deCentralized space
(J.Lim, 2017)

chitecture could pursue the wholeness and individuality at the same time.

Order and freedom

Herman Hertzberger asserted the idea of 'Order and Freedom': Order as 'structure' that fundamentally implying permanence, and Freedom as the way how that structure actually interpreted by individuals (Hertzberger, 2009).

Concerning this idea, Herman proposed to use 'the grid' in architecture design as 'protoform.' He said that it seems the grid could function as a restriction, but indeed, it brings the freedom to the architecture (Heuvel, 1992). In other words, this grid only provides fundamental rule and boundary to users, and users can freely make their interpretation on it. Moreover, this grid could function as 'Order' that form the identity of a building that maintains the 'wholeness' while accommodating diverse functions and needs in it.



Fig1.1 Herman Hertzberger compared the idea of Order and Freedom as chess game. Chess players can make creative game based on the rules. <https://thechessstore.com/>

Co-Determination

Hermann Hertzberger said that architecture should be completed based on co-determination of architects and dwellers. Therefore, he wanted to provide users changeable and incompletable space, so that users can freely interpret their space based on their lifestyle and needs. Based on this idea, Herman Hertzberger and the Structuralism architects aimed to realize the architectural space that can encourage individual interpretation and user participation, and ultimately, they pursued to accomplish architectural sustainability through their design projects.



Fig1.2 the building is completed by co-ordination of architects and dwellers (J.Lim, 2017)

Polyvalent Space

To bring individual interpretations to architecture, Herman Hertzberger proposed to start an architectural design from the idea of 'polyvalent space.'

Hertzberger saw that urban fabrics of old cities, such as Amsterdam, could accommodate diverse types of people's lives because

they are consist of 'polyvalent space' that could house various kinds of functions and requirements (Heuvel, 1992).In specific, he interpreted this polyvalent space as a series of space that allows flexible use to dwellers.

He applied this idea of 'polyvalent space' into his architectural design: He extracted 'protoform space' that enable individual interpretations, and planned considerate organization to make them coexist and relate each other. In doing so, he purposed to allow his architecture and users to interact with each other.



Fig1.3 polyvalent is a series of space that allows flexible use to dwellers. (J.Lim, 2017)

Future Growth and Change of the Building

Structuralism architect saw if they let dwellers interpret and complete the space on their own, they would recognize that space as their 'place' and have attachment and responsibility to their place. Therefore, Structuralism architects intentionally incompleting the construction and provided the room for future extension and renovation of the architectural design process. By allowing dwellers to complement their buildings by themselves, Structuralism architect aimed to accomplish constant completion of a building.



Fig1.4 building that allow future growth based on users' needs (J.Lim, 2017)

Integration of opposite concepts : Dual Phenomena

The Dutch structuralism architects recognized that the seemingly conflicting concepts, such as small/large, public/individual, part/whole, open/closed, are in fact in a relative relationship. They thought that architects should make these concepts coexist together in harmony to realize diversity, complexity, and confrontation to their architectural space.

For example, Hertzberger saw that private/public and interior/exterior are not the contrast concepts but that are related each other to continuous change. Therefore, instead of dividing them, he attempted to distinguish them by spatial design methodologies carefully and planned gradual sequence by intermediate space to create a more fluent spatial experience (Heuvel. 1992).



Fig1.5 gradual relationship between seemingly conflicting concepts (J.Lim, 2017)

Social Interaction

'People,' their mutual encounter, and the relationship between users and the built environment was the Central aspects of Dutch Structuralism architecture. To achieve these goals, they attempted to create the place that belongs to everyone and brings social interaction. For example, Herman Hertzberger wanted to accomplish social interaction of users in his building. Moreover, he tried to extend that social interaction to the surroundings by enlarging the openness of his building. The inner street and square-like public space of his building were derived from this idea. Creating a visual connection, utilizing intermediate space were also design methodologies that Hertzberger frequently used in this architecture projects for this purpose.



Fig1.6 the place that belongs to everyone and brings social interaction (J.Lim, 2017)

To summarize, we could find that it is available to sort these architectural methodologies of Structuralism architecture into three categories based on their common denominators. To make a classification, we set three groups for our further analysis; Configurative Design, Co-Determination, and Integration. This category will work as the research tool for our further analysis of Centraal Beheer Office.

Category	Architectural methodology
Configurative Idea	Articulation of Built Volume
	The Aesthetics of Number
	Order and Freedom
Co-Determination	Polyvalent Space
	Future Growth and Change
Integration	Integration of Opposite Concepts
	Social Interaction

table 1. Grouping architectural methodologies of Structuralism architecture (J.Lim, 2017)

Flexibility

By reflecting previous analysis, it would be able to find that, every characteristics of Architectural Methodologies imply the concept of 'Flexibility' in them. Flexibility is quite a broad term that contains both positive and negative meanings at the same time. Even each of architectural methodologies is showing slightly different meaning and characteristics of 'flexibility.' Therefore, it is necessary to point out what was Herman Hertzberger's idea of 'Flexibility' and what is the character of 'Flexibility' that each of architectural methodologies presents.

Herman Hertzberger mentions that 'the open space' concept of Functionalism provided too much freedom to its users, and therefore, it even disturbed users to interpret the space in their own ways. To him, excessive open space is even inefficient as much as the space only for specific function (Lüchinger, 1981). In other words, 'Flexibility,' presenting too neutral and open, was linked to irresponsibility. In this regard, to Herman Hertzberger, the true 'Flexibility' in architecture should provide the possibility and boundary for individual interpretation and participation of users. By this mean, he thought that user and architect could complete the building together.

In the previous chapter, we studied that architectural methodologies of Structuralism architecture could be grouped into three categories.

First of all, the flexibility in Configurative Idea is more related to planning the structural/spatial system that can support changeable and flexible architectural space. In this case, the flexibility is showing more 'systematic' characteristics that presenting the coexistence of 'regulation/freedom' and 'unity/diverse expression.'

Secondly, the flexibility in Co-Determination seems more related to the relationship between users and the architectural space that architect provided. In other words, it is showing the closer link with individual interpretation and user participation. Therefore the flexibility, in this case, more highlight 'the value of individuality.'

Thirdly, the flexibility in Integration looks more linked with how to form considerate interactions in architecture. For example, it aims to create flexible relationship not only between users but also between different concepts such as public/private, in/out. Therefore, in this point, the flexibility is showing more 'gradual' characteristics that blurring the boundaries between different individuals.

Based on these analyses, this research would like to define 'Flexibility' as the concept that 1. help individuals to maintain their own values, 2. allow them to coexist each other with a gradual relationship, and 3. provide the systematic 'protoform' that could combine diverse individuals into one wholeness. Therefore, rather than mere 'openness' or 'neutrality,' this research will recognize 'Flexibility' as the multi-sided concept that includes individuality, plurality, mediated relationality, systemicity, etc.

Structuralism architecture was the movement that pursued 'humanity value.' To achieve this goal, they attempted to explore the origin of human being and to find the fundamental underlying principle of architecture. After this exploration, they established their architectural design concept and methodologies. Structuralism architects thought that architecture should contain 'the quality of human life,' and has to respond to various lifestyles of users. Concerning to this, Structuralism architects regarded user as essential being in architectural design. They thought users could complete building with architects, so their architectural design has to consider the role of users from the beginning.

Based on this idea, Structuralism architecture set their own architectural methodologies. We categorized these methodologies into three groups based on their shared characteristics: Configurative Design, Co-Determination, and Integration. By this categorizing, we made the research framework to perform more organized analysis in further research of the spatial value of Centraal Beheer Office.

Moreover, this research found that the idea of 'Flexibility' is underlying all the architectural methodologies of Structuralism architecture. Based on the analysis of those methods, we defined the concept of the flexibility with our point of view. By defining this, we found that it would be able to say not only that 'Flexibility' is the essential and fundamental idea that has to be dealt in all of our further analysis, but also that it could provide us more precise scope for examining the spatial value of Centraal Beheer Office. For these reasons, we will more elaborate our main research question as below.

“What are the possibilities and limitations of the spatial flexibility of the Centraal Beheer building?”

HISTORICAL BACKGROUND

This chapter will investigate historical backgrounds that influenced the spatial design of Centraal Beheer Office

principles of typology 1950s to 1960s

Open-plan offices for large groups of employees with a high degree of division of labour, performing routine activities with a low level of concentration.

Concept developed in the 1960s to provide efficiently organised, multi-purpose areas, based on arguments such as transparency and clarity of working process, and the development of group spirit.

Sociologists have attested to the implicit coercive nature of open-plan offices, which is caused by social control, reliance on technical equipment, and visual and acoustic disruptions. Separate offices are suitable for independent work requiring concentration, and also for multi-occupant offices for very small groups constantly exchanging information.



Fig 2.1.1 open-plan office

source: <https://www.buerolandschaft.net/landschaften/detail/buch-und-ton/>

principles of typology 1970s

The reversible office was an attempt to improve the open-plan office system. Larger areas were subdivided into separate offices, which are better for work requiring great concentration, and this began a move toward greater flexibility. High energy prices also cast doubt on the desirability of open-plan offices.

They also allow greater environment because of their smaller size (max. 7.50m to window).

Although it is still a popular trend, the open-plan office appears to be useful for very few organisational forms or types of work.

The prime objectives were often to improve the quality of the workplace while retaining the flexibility to adapt to new office technologies and group reorganisation, and to use the working space economically and reduce operating costs.

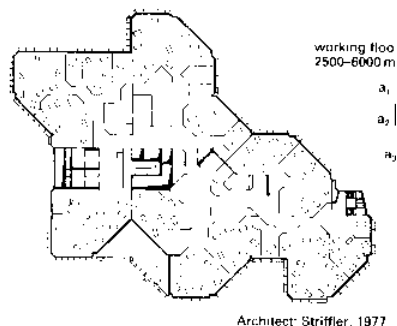


Fig 2.1.2 1970's office plan
(Neufert, P. 2002)

principles of typology 1980s - 1990s

There are three categories in modern office buildings: closed plan, open-plan and modified open plan.

Closed plan offices have full-height walls or partitions dividing the space into offices with doors. The advantages include a controlled environment, security, visual privacy, physical separation, external views and traditional system furniture applications. Disadvantages include lower efficiency than in an open plan office, lack of flexibility, especially in responding to changes in office technology, the high cost of relocation, restricted individual and group interaction, and the fact that more extensive mechanical systems are required.

In open-plan offices, all workstations are located in an open space with no ceiling-height divisions or doors. The advantages include efficient space utilisation, greater planning flexibility, ease of communication and lower life cycle costs. Disadvantages include higher initial costs, no visual privacy, no external views and less environmental control.

Modified open-plan offices combine elements of both the others by positioning certain workstations in an open plan with systems furniture, and others in private offices.

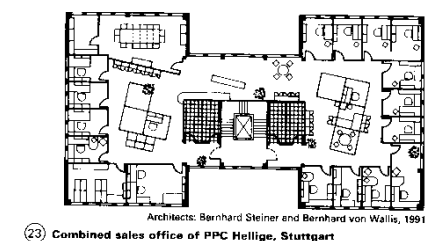


Fig 2.1.3 1990's office plan
(Neufert, P. 2002)

Historical Background working environment:

What are the standards in office space floor arrangements in the time Centraal Beheer was built?

After changing from separate offices in the 1950s, to open-plan concepts after the mid 1960s, and group office principles in the 1970s and 1980s, it seemed that a combined office design is becoming established in the 1990s.

Due to this research on office styles, Hertzbergers' vision on creating a more sympathetic office is not so irregular as we thought before.

They were already trying out open office plans in the 1960s. And in the 1970s they were already leaving these open-offices behind because they were not suitable for most office functions. Hertzbergers' idea of creating open space built up from modules is new, but the whole open-plan office space is already established in the time the building was designed.

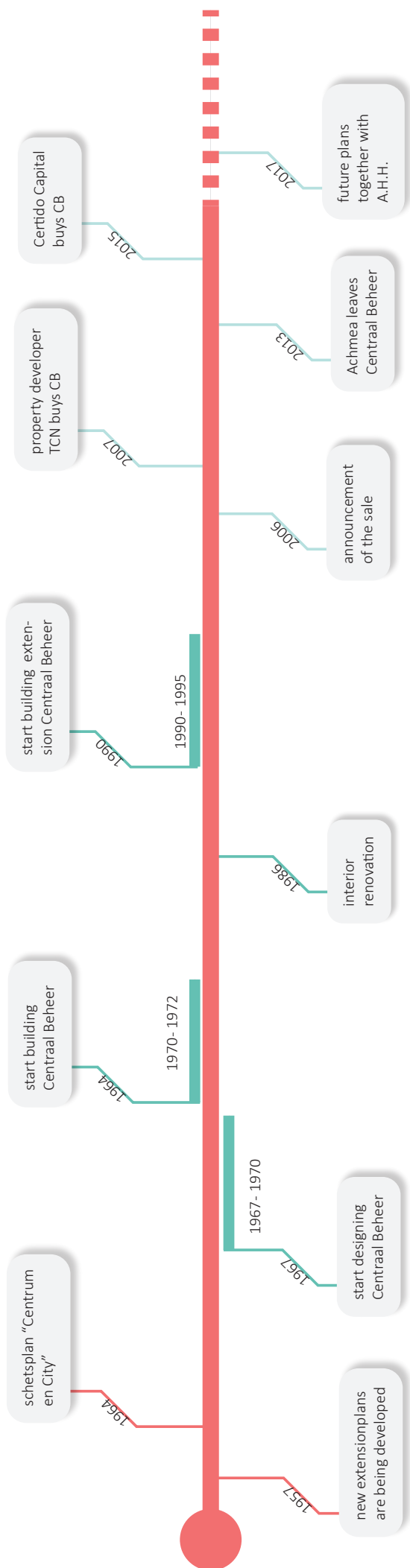


Fig. 2.1.4 Timeline Centraal Beheer office. (Van Pelt, 2017)

SITE AND SURROUNDINGS

In this chapter, the research is about the possibilities and limitations of the flexibility of the site and the surroundings. In order to come to the right conclusions we will take care the following topics.

1. How the site and surrounding had been changed?
2. Land usage: Function and Facilities
3. Demographics
4. Vacant space
5. Traffic flow
6. Morphology of the surrounding
7. Greenery
8. Views / Atmosphere in the area

We will do that with the following restrictions, we will mostly look at two different scale levels. The city center of Apeldoorn on the big scale and the direct surrounding of the Centraal Beheer building on the smaller scale. When necessary we will eventually zoom out or in even more. From the surrounding of Apeldoorn to the border between the site and the building.

Site + Surroundings

What has been changed

INTRODUCTION SITE + SURROUNDINGS

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Fig.2.2.1 1895- Centraal Beheer site on the edge of the village, far from the center (Topotijdreis, 2016)

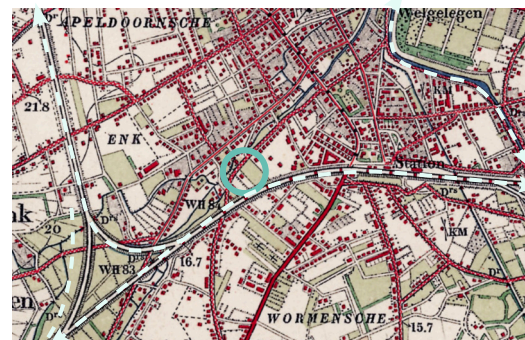


Fig.2.2.2 1916- Centraal Beheer site on the edge of the village, far from the center part of Apeldoorn, next to road, stream and railway (Topotijdreis, 1916, 2016)

HOW HAS THE LANDSCAPE AROUND THE CENTRAAL BEHEER BUILDING CHANGED OVER THE YEARS?

This research is conducted with four maps of moments in the history of Apeldoorn.

In 1895 is Apeldoorn just a little village and our site is far from the city center. The railway isn't even constructed yet.

On the next map, there are two defining elements visible; the railway and the canal. The site is still located on the edge of the village with the Wormensche Enk, a surrounding farmland.

On the map of 1975, it is visible that our site is almost enclosed with buildings, but the footprint of this former landscape, this Enk, it still visible in the lower density. In 1976 are the new important roads around our site constructed which changed the landscape completely into the car-oriented area.

Our site has always been on the edge of the village, in a more rural surrounding although it has been more and more enclosed and is now an official part of the city center.



Fig.2.2.3 1975- Centraal Beheer still located next to old road, but almost enclosed by the, now city instead of village, Apeldoorn (Topotijdreis, 2016)

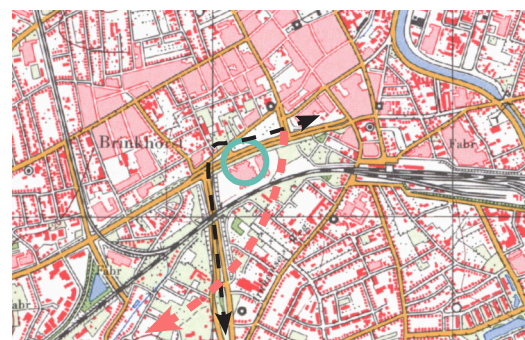


Fig.2.2.4 1976-Centraal Beheer located next to new primary roads, but still not completely enclosed by building blocks (Topotijdreis, 2016)

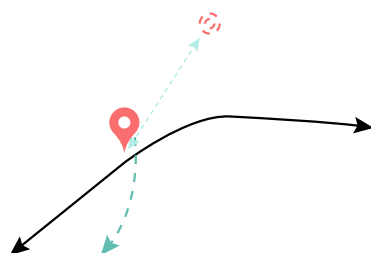


Fig.2.2.5 Next to important infrastructure, but always away from real city center. And the edge of the town has been pulled away from the site (Van Pelt, 2017)

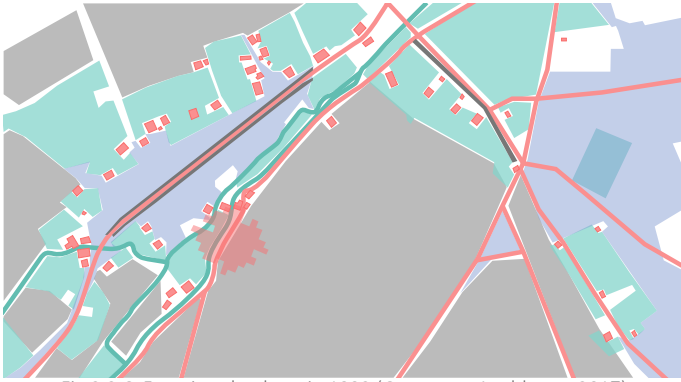


Fig.2.2.6 Functions land use in 1832 (Gemeente Apeldoorn, 2017)

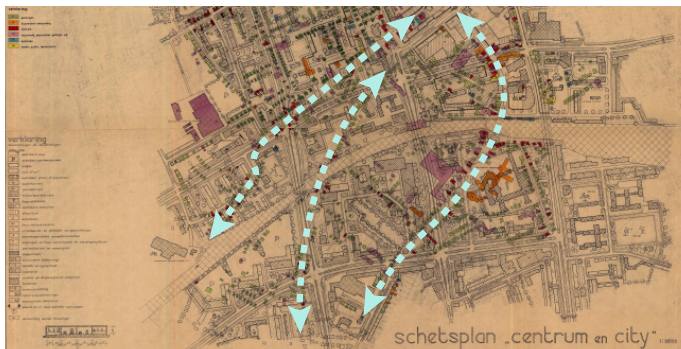


Fig.2.2.7 Schetsplan Centrum en City 1964 (CODA, 2017)



Fig.2.2.8 Current functions (Van Pelt, 2017)



HOW HAS THE LANDSCAPE AROUND THE CENTRAAL BEHEER BUILDING CHANGED OVER THE YEARS IN TERMS OF FUNCTIONS?

As seen on the previous page, our site has not always been part of the busy built area. It started as just a few buildings in an area of farmlands and wet heath. Not even close to the center of the village. There are a main road and stream. The heath functions as an extension of the road, the rest of the landscape is filled with gardens around the houses and farmland. So there is one function in a broad open landscape with a low density.

Schetsplan of 1964: original lanes visible in the overlay of lines of trees. But this was intended to be replaced entirely. But this plan was not executed as is visible in the current functions layout. The city has grown, but our site is still not located right in the center of facilities. And it is still not very diverse in functions, most of the surrounding buildings are dwellings. It is an 8-minute walk away from the center, although it was intended to be right in the new center.

Possibilities

+ intended to be a part of the center. But still not in it, although not too far away to use the facilities of the center. It has never been a part of the city that is dense in functions, but there could be a demand for it because it is close the dwellings of the center

Limitations

- Divided from the dwellings around it and also from the city. This makes it less focussed on the surrounding and more on itself. Which would decrease the demand for a new social function for the neighborhood?

Site + Surroundings

Demographics

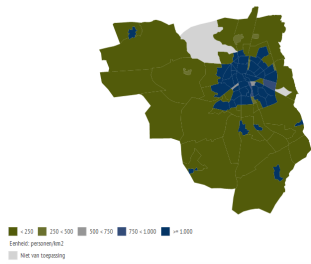


Fig.2.2.9 Inhabitants per km² >1000 (Apeldoorn in Cijfers, 2017)

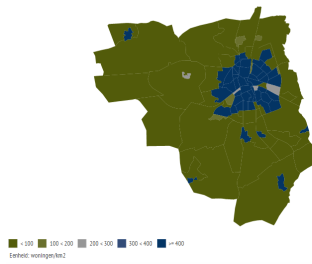


Fig.2.2.10 Dwellings per km² >400 (Apeldoorn in Cijfers, 2017)

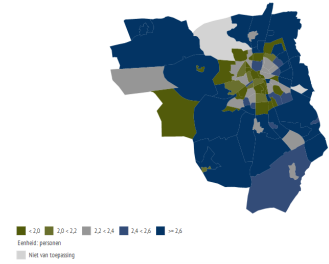


Fig.2.2.11 Average dwelling occupation per km² <20 (Apeldoorn in Cijfers, 2017)

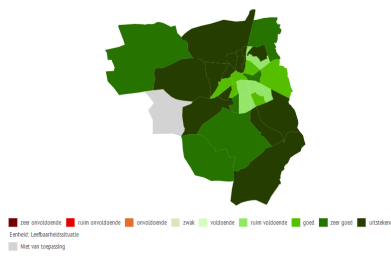


Fig.2.2.12 Score of living 0 = national average- ample enough (Apeldoorn in Cijfers, 2017)

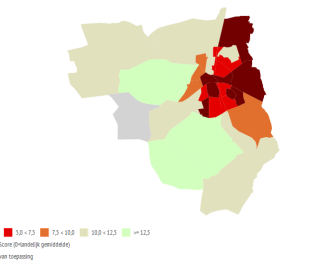


Fig.2.2.13 Score of physical environment <5.0 (Apeldoorn in Cijfers, 2017)

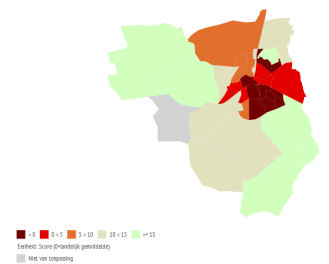


Fig.2.2.14 Score of safety 0 = national average- 0 (Apeldoorn in Cijfers, 2017)

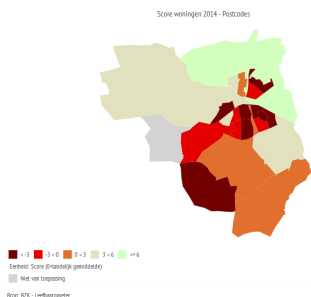


Fig.2.2.15 Score of dwellings 0 = national average 3<6 (Apeldoorn in Cijfers, 2017)

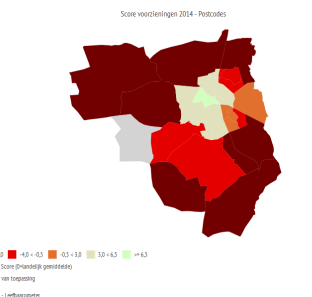


Fig.2.2.16 Score of servicex 0 = national average >6.5 (Apeldoorn in Cijfers, 2017)

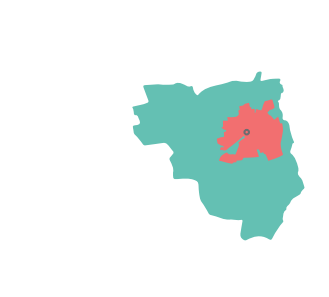


Fig.2.2.17 There is a difference between the inner city and the suburbs(Van Pelt, 2017)

WHAT IS THE LIMITATIONS AND POSSIBILITIES OF THE NEIGHBORHOOD IN TERMS OF SPATIAL LIVING QUALITY?

This research is about the possibilities and limitations of the neighborhood based on the demographic research on the inhabitants of the neighborhood.

As is visible in the previous pages was our site not always a part of the city center, but in the current situation, it is a part of the inner city center. This means that it is in the densest part of the city but with the lowest dwelling occupation. The score of the dwellings and services is high in this part compared to the rest of Apeldoorn. But the safety and physical environment ratings are low in the city center. The score for the livings rate is average, so it is not a place where people want to be. Hertzbergers idea of creating a place where everyone is equal,

where is connecting and feeling safe is not visible in the surrounding of the building. The area is quite likable due to its services, but besides that, it has the worst physical environment of the city.

City center compared to the rest of the city:

- + Facilities, the density of the facilities is much higher in the city center part.
- Environment, the physical environment of the neighborhood of our building is very low compared to the rest of Apeldoorn. This is probably because the outskirts of Apeldoorn are more like a village, while the center has the atmosphere of a city.



Fig.2.2.18 Map of the built and unbuilt area in the center of Apeldoorn (Van Pelt, 2017)



Fig.2.2.20 Surrounded by the biggest unbuilt space of the city center (Van Pelt, 2017)

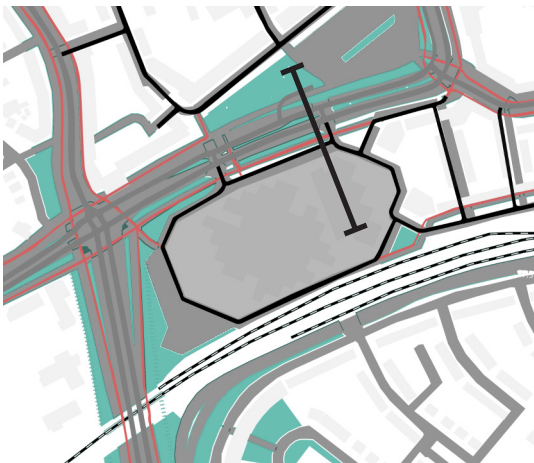


Fig.2.2.19 Use of the open space on the smaller scale, mostly roads and public green (Van Pelt, 2017)

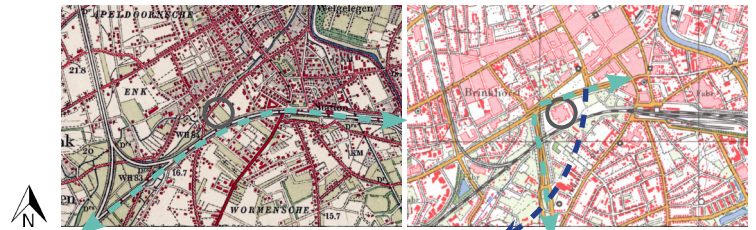


Fig.2.2.21 Unbuilt space created by construction of the railway (Topotijdreis, 2016)

Fig.2.2.22 Open space created by construction of the new planned urban infrastructure intervention of 1976, Wormensche Enk is getting pulled away from the site (Topotijdreis, 2017)

Fig.2.2.23 Unbuilt space in front of the building, filled up by the Willem Alexanderlaan (Google, n.d.)



Fig.2.2.24 Section Prins Willem Alexanderlaan, width = 115 m (width Grote Markt Delft = 120 m) (Van Pelt, 2017)

WHAT ARE THE POSSIBILITIES AND LIMITATIONS OF THE VACANT SPACE AROUND THE SITE?

This research is about the vacant space around the site, how it is used and how it is affecting our site and building.

We saw in the previous pages that our site used to be on the outskirts of the village. Which resulted in an enormous vacant space around our site, but this situation has changed. The Centraal Beheer building is still, although it is now officially part of the city center, situated in a very open place.

The building is located in the most open place in the city center. But these open spaces can be traced back to former functions. The two big roads are part of the city center transformation of 1976,

and the park in front of our site is in a way the last remaining of the former Wormensche Enk, the rest is swallowed up by the city.

The building acts as a freestanding object without any connection to the surrounding space on this scale level. Unbuilt space surrounds the Centraal Beheer building, but this space is filled up by infrastructure works which act as a barrier between the free open space in the park in front and the building site. The building would become a part of the center of Apeldoorn by creating a link or a real connection between the park in front and the building site.

Site + Surroundings

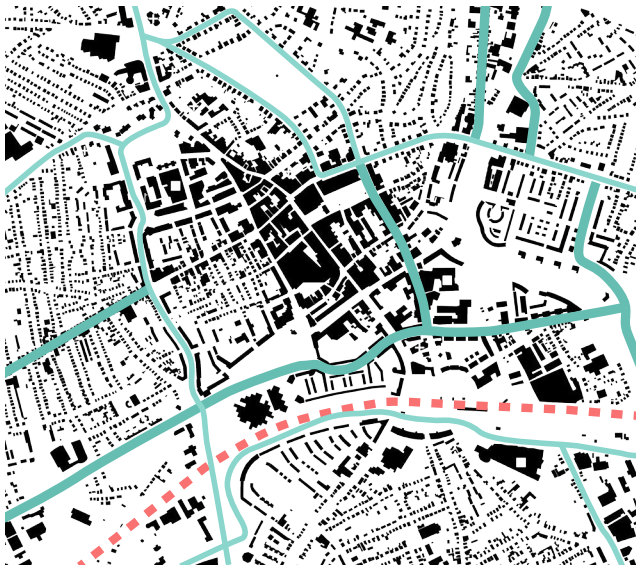


Fig. 2.2.24 infrastructure (Van Pelt, 2017)

primary roads secondary roads railway

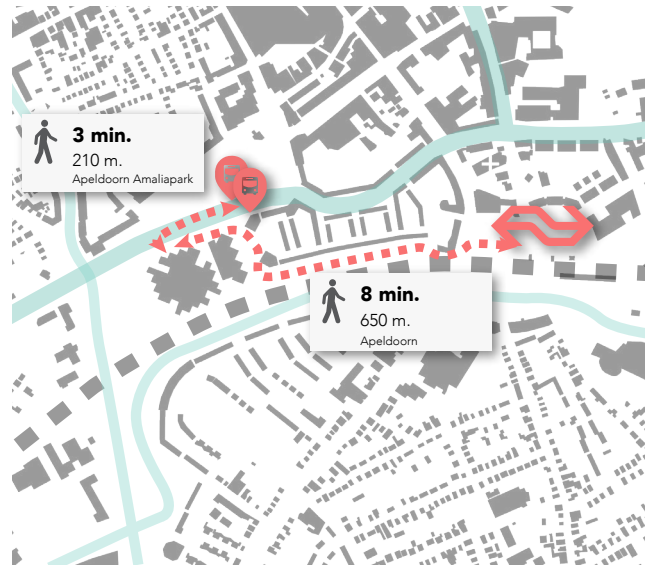


Fig. 2.2.26 public transport (Van Pelt, 2017)



Fig. 2.2.25 small scale infrastructure (Van Pelt, 2017)

bike lane secondary road primary road

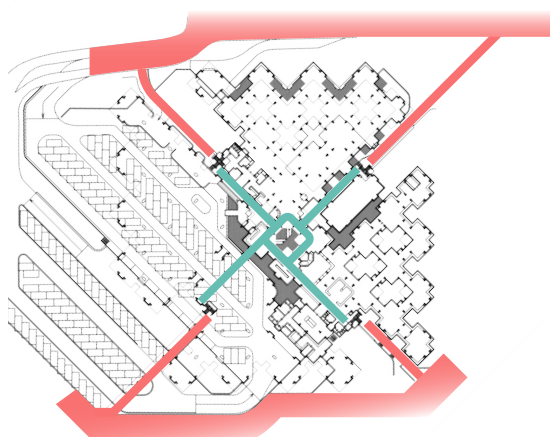


Fig 3.26 infrastructure in and out of the building

Traffic Flows

As is visible on the previous page, the vacant space is filled up with roads. But how are these roads used and connected to our building site?

On the bigger scale is our building located next to a big primary road into Apeldoorn, this road uses a lot of space and forms a real border on the north side of the site. On the south side is another defining border, the railway. But all these big infrastructure objects do have an advantage. The site is very well connected on the bigger scale. It is very close to the train station, and buses will stop almost in front of the building.

The building intended to be so well connected on the building level as well. It lacks the main entrance, but it has four interior streets which were meant to be connected to the surrounding roads. It has a huge own car park which means that the building was excellent access.

We can conclude that the building is very well accessible, but this has its downsides as well. The surrounding infrastructure are defining elements in the space use of the surrounding. They are enclosing the site and shutting down the options to connect the building with its surroundings.

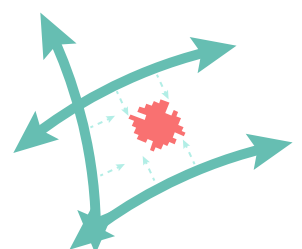


Fig. 2.2.27 Traffic Flow Conclusion (Van Pelt, 2017)

WHAT ARE THE MORPHOLOGICAL LIMITATIONS AND POSSIBILITIES OF THE BUILT AREA IN THE SURROUNDING?

This research is about the morphological relationship between the Centraal Beheer building and the buildings around out.

We have already concluded that the building works as a free-standing object in its context based on the fact that the roads are acting as a border between the building and its surroundings. The same thing is going on at the morphology level. There is zero overlap between the Centraal Beheer building and the rest of the buildings of the city center. Most of the buildings are older and smaller. There are some big bigger building blocks in the center, but Centraal Beheer is the only freestanding building with this kind of angled shape and size.

Although a very big part of the city center is relatively new, our building acts as a ufo in its context. It is something else completely.

But due to the distance between our building and the next buildings, it is not really visible that it is such a different building.

Future possibilities in extending the structure of the building to connect it with the surrounding buildings directly are not easy. The infrastructure next to the site is huge borders. Extending the interior streets would lead to nowhere because reaching the surrounding buildings is very hard. And also connecting the building with its context by blowing up the building volume is inhibited by the roads.



Fig.2.2.28 Buildings in 1832 compared to the current situation (Van Pelt, 2017)



Fig.2.2.30 Centraal Beheer building compared in shape and size to the rest of the city center (Van Pelt, 2017)



Fig.2.2.31 Centraal Beheer twice the size (Van Pelt, 2017)

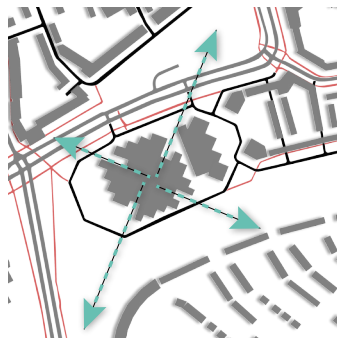


Fig.2.2.32 Centraal Beheer extension of the inner streets (Van Pelt, 2017)

Fig.2.2.33 Centraal Beheer building compared in age to the rest of the city center (Van Pelt, 2017)



Fig.2.2.34 Centraal Beheer is different compared to its surroundings in scale (Van Pelt, 2017)

Site + Surroundings



Fig.2.2.35 Greenery in the area (Van Pelt, 2017)

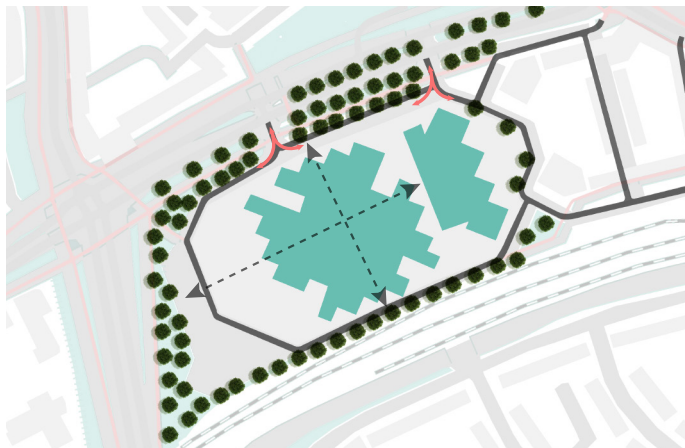


Fig.2.2.36 Greenery surrounding the site, blocked views in 4 directions (Van Pelt, 2017)

Fig.2.2.37 Functions in land use in 1832 (Van Pelt, 2017)



Fig.2.2.38 Map of Apeldoorn in 1900- Park and green around the canal are already visible (Topotijdreis, 2016)



Fig.2.2.39 Park between city center and Centraal Beheer (Van Pelt, 2017)



Fig.2.2.40 Park in front of Centraal Beheer is the closest to the city center (Van Pelt, 2017)

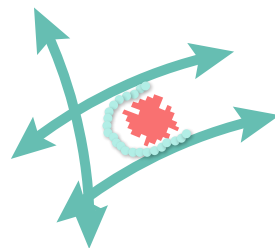


Fig.2.2.41 The building site is not just enclosed by roads, it is enclosed by trees as well (Van Pelt, 2017)

WHAT IS THE SPATIAL INFLUENCE OF THE GREENERY IN THE AREA?

And what are the limitations and possibilities of the local greenery? We see in the big scale a city center with a few bigger green zones just outside the city center, one of these is just in front of Centraal Beheer. Some of these are quite old, the park in the north and the green area already visible in the map of 1900. And the direct surroundings of our site used to be nature as is visible in the kadastral map of 1832.

On the smaller scale, it is clearly visible that there are a lot of trees surrounding the site. On the kadastral map of 1832 is also visible that our site used to be agricultural land and that the roads are shielded with a row of trees.

The building is surrounded by trees, which makes it isolated from its surroundings and has partly lost a visual connection with the surrounding public space.



Fig.2.2.49(Google, n.d.)



Fig.2.2.42 (Google, n.d.)



Fig.2.2.50 Map of the unbuilt space (Van Pelt, 2017)

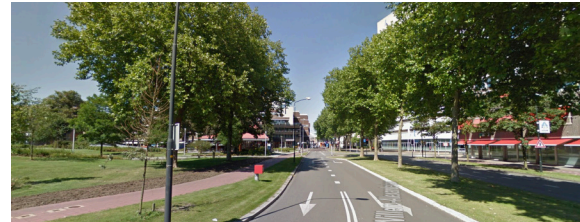


Fig.2.2.43 (Google, n.d.)



Fig.2.2.44 (Google, n.d.)



Fig.2.2.45 (Google, n.d.)



Fig.2.2.46 (Google, n.d.)



Fig.2.2.47 (Google, n.d.)



Fig.2.2.48 (Google, n.d.)

WHAT ARE THE SPATIAL CHARACTERISTICS OF THE PUBLIC SPACE IN THE AREA?

Our building site is surrounded with wide, big open public spaces. With lots of green but also very car oriented with wide roads. But this is just the first layer around our building site. These roads with a very urban character are cutting through a more rural landscape. Behind these road is an atmosphere which is much more oriented to pedestrians.

The Centraal Beheer building was designed and intended to be a part of this pedestrian area, but this is never fulfilled as is visible in the in the area. There is a possibility to bring this connection back into play.

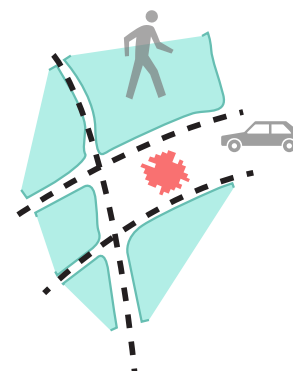


Fig.2.2.51 The building site is situated in a urban landscape surrounded by a more rural landscape (Van Pelt, 2017)

Site + Surroundings - Conclusion

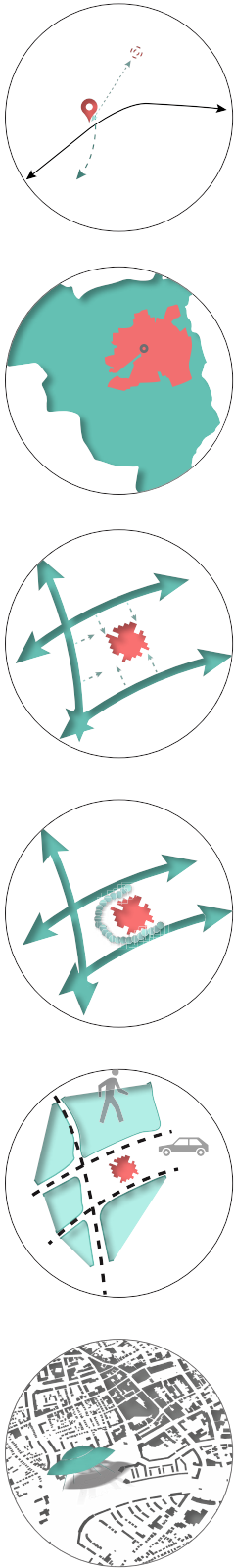


Fig.2.2.52 Conclusions (Van Pelt, 2017)

WHAT ARE THE POSSIBILITIES AND LIMITATIONS OF THE SITE AND THE SURROUNDING?

Our site has always been far away from the city center, on the edge of the village. They had plans to bring it back to the center but these plans are not executed. Our site is no longer at the edge of the town, but it is still in an open area and not really in the city center. This could be a threat but it could also be seen as an opportunity to create something new.

Our site is now officially located in the city center, which results in some positive characteristics. The facilities are quite good in this area, but the physical environment is rated below average in this part of the town.

Our site is situated in a very open area, but this space is far from unused. Three big infrastructural elements are affecting the building site and they act as huge borders between the Centraal Beheer building and the rest of the built environment.

Not only the roads are closing off the site, the local greenery is working in this way as well. They are visually hiding the building from the surrounding and they are blocking the views from the building.

Our site is situated in a very urban environment, but this is just a small layer surrounding the site. Behind these big, wide open car-oriented areas are more rural streets with more attention to pedestrians instead of cars.

The Centraal Beheer building is different compared to its surroundings. Different in size, scale and age. Most of the city is made of small scale old buildings. There are some bigger building blocks, but they are enclosed by other buildings while the Centraal Beheer building is a freestanding building. It acts as a freestanding object, designed to be an important part of the public space, but it has never worked in that way. It is working as an island, a freestanding building on its own.

CENTRAAL BEHEER OFFICE BUILDING

Structure

Dutch structuralist architects, including Herman Hertzberger, considered structure as the essential part to achieve their architectural idea. This is because this structure(skeleton system) functions as the fundamental 'Structure' of architecture, and it will serve as an Order that functions as a firm foundation for Freedom. In other words, to Structuralism architects, the structure was a regulation that encouraging free interpretation, and a useful means that can bind diverse 'individuals' as a 'whole.'

How the grid system of Centraal Beheer Office planned? What was the goal that Herman Hertzberger wanted to accomplish with this grid?

As the starting point of investigation of 'Configurative Idea' in Centraal Beheer Office building, this page will focus on how the grid system is applied to the architectural design process of the building. With his idea of 'Order and Free,' Herman Hertzberger described his own idea of 'GRID.' According to him, the grid in architectural design help not only to set the regulation for a load-bearing system but also to create the foundation as a necessary rule that can be interpreted based on various perspectives. In this regard, he went on to say that grid can even

increase the freedom in architecture design.¹

Moreover, this 'grid' generates Minimum Ordering to combine every 'parts' into the 'whole.' Centraal Beheer Office designed consists of a lot of 'islands' that belong to diverse types of users, and those islands were planned to serve to accommodate various needs of diverse users. With this design methodology, the grid was necessary as a minimum regulation that prevents the building became a 'chimera of multifarious individual interpretation.' Based on this idea, Hertzberger applied a 'Polyvalent' structure/spacial system into Centraal Beheer Office.

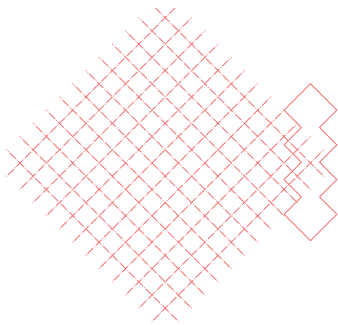


Fig.2.3.1 set the diagonal grid on the site (J.Lim, 2017)

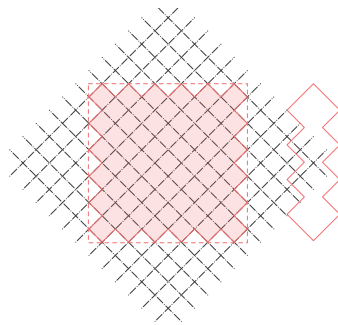


Fig.2.3.2 set the boundary for the volume of the building (J.Lim, 2017)

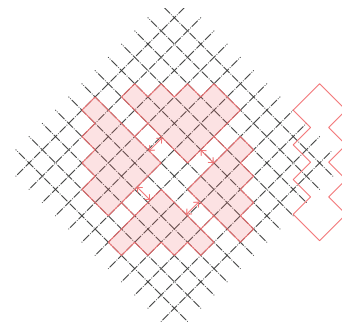


Fig.2.3.3 divide the volume into four areas (J.Lim, 2017)

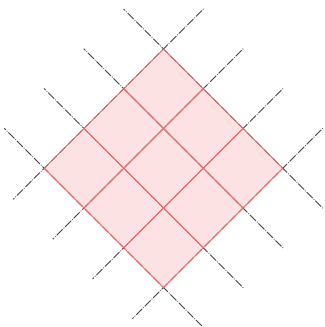


Fig.2.3.4 articulate the volume by the grid, create the module of the building(J.Lim, 2017)

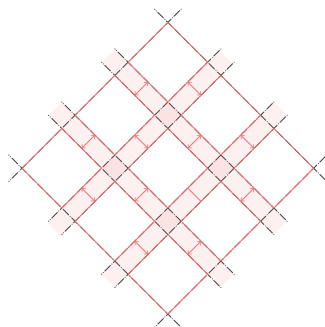


Fig.2.3.5 detach each modules : each module functions as an 'island'(J.Lim, 2017)

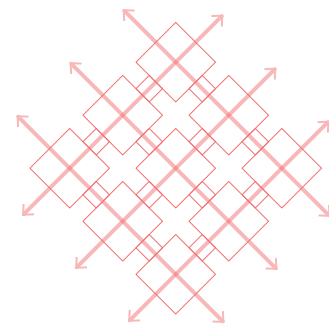


Fig.2.3.6 connect each 'islands' and create movement flow (J.Lim, 2017)

Structure

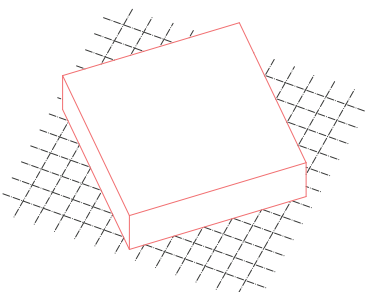


Fig.2.3.7 three dimensional volume on the grid'(J.Lim, 2017)

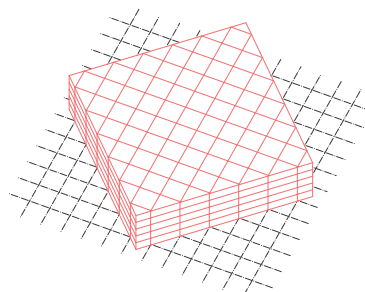


Fig.2.3.8 articulate the volume by the grid(J.Lim, 2017)

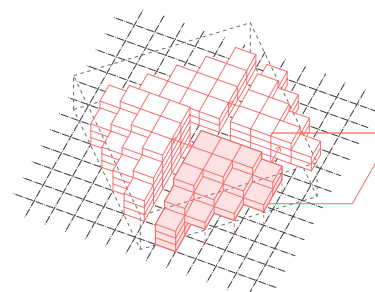
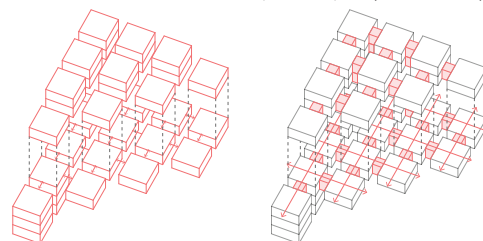


Fig.2.3.9 form the building mass by extracting unnecessary volume parts(J.Lim, 2017)



Structure

How the module of Centraal Beheer Office planned?

As mentioned above, Herman Hertzberger designed Centraal Beheer Office as polyvalent architecture, which consists of many 'modules.' For this reason, we can imagine that it might be a starting point of the design work for Herman Hertzberger to plan how to make the base module. Therefore, to analyze this module would be the first step to investigate the fundamental structure of Centraal Beheer Office.

In setting the module of the building, Herman Hertzberger de-

signed the primary structural system of each module. This structural system was also elaborately planned in connection with the spatial design of the module. For example, it defines how to distinguish the corridor and working area by different height.

Every module consists of a cruciform corridor that penetrates the module, and four spaces created by this passage. The size of these areas is based on the required working space for four people. This format applied into all of the space of the building, including the parking lot, bathroom, cafeteria, machinery, etc.

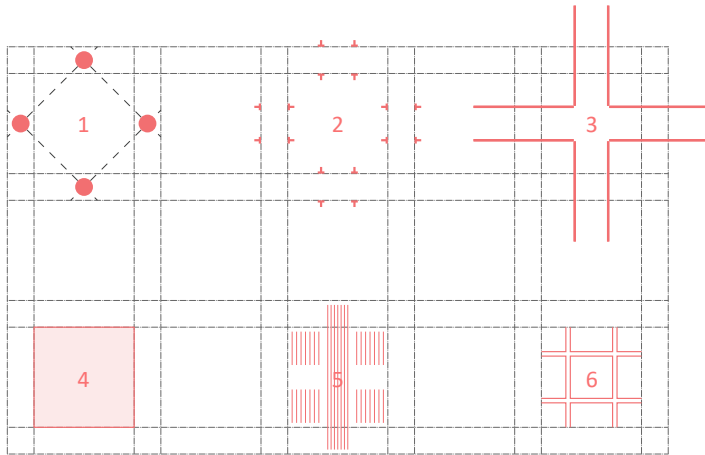


Fig.2.3.10 structure system of the module : 1. underground column, 2. column, 3. beam, 4. floor, 5. wiring, 6. ceiling(J.Lim, 2017)

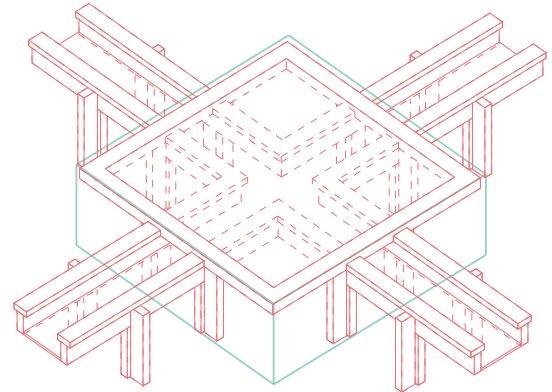


Fig.2.3.11 3D drawing of structural system of module(J.Lim, 2017)

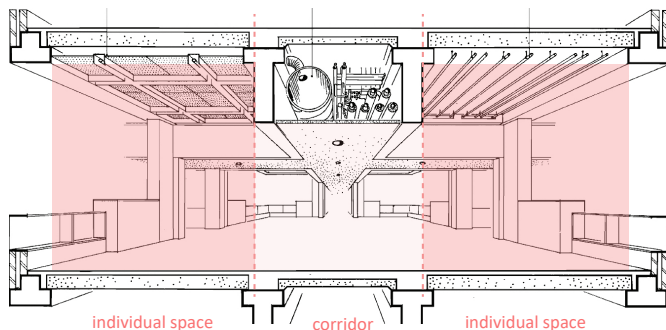


Fig.2.3.12 spatial distinguish by the height of the space(J.Lim, 2017)

The grid line of the building is based on the size of the module, and every building space follows this grid. About this fact, it would be able to make a further discussion concerning the size of the module: was it rightsized? For example, it is doubtful that the size of the module also could well accommodate other different functions such as machinery. It seems that the building tends to obsess to follow the regulation although it is sometimes not appropriate. Therefore, it can be interpreted as one of the limitations of this building.

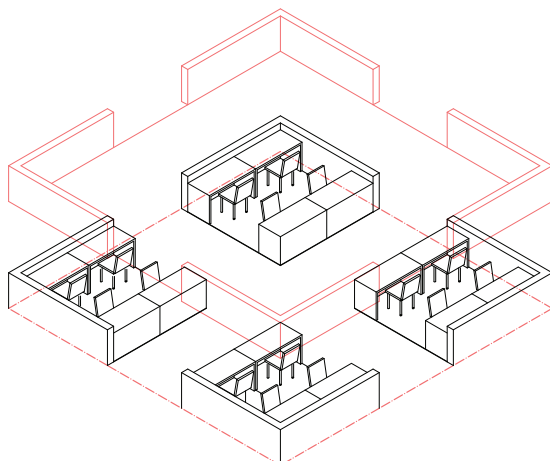


Fig.2.3.13 size of standard module : based on the working area for four people (J.Lim, 2017)

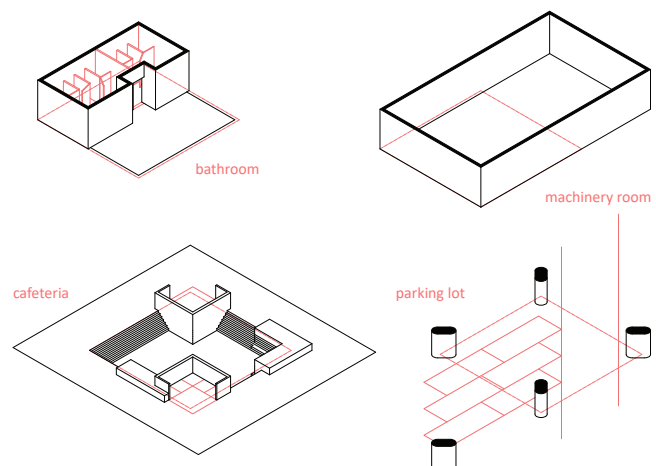


Fig.2.3.14 size of various spaces of Centraal Beheer Office : red dotted line is the size of standard module(J.Lim, 2017)

What is the characteristics of the configuration design of Centraal Beheer Office?

In Centraal Beheer Office, every module is detached each other and corridors are connecting them. These passages are penetrating modules, and they are forming four individual spaces on the corner sides. This individual space is the minimum unit of Centraal Beheer Office. The main beam is following this passage, and columns are located on the edge of a module.

How the configuration design of Centraal Beheer Office improved from Hertzberger's previous design?

In this point, it would be able to make a comparison with modules organization of Centraal Beheer and other the prototype projects. In designing the module of Valkenswaard town hall, Hertzberger attempted to enlarge the void space, so he removed every corner space of a module. In Amsterdam town hall, he de-

tached more each module to assure adequate void space, and change the shape of individual space into rectangular form. Leo Heijdenrijk's Amsterdam town hall, which is similar to Hertzberger's design, presents more precise divisions of the space.

Valkenswaard town hall and Heijdenrijk's project seems more elaborated than Hertzberger's Amsterdam town hall and Centraal Beheer Office. However, their module designs are too complicated so that it results to decrease the flexibility of the individual space. It seems that Hertzberger tried to revise this problem in his Amsterdam town hall project by simplifying the module design, and this plan applied to Centraal Beheer Office. These different kinds of module design clearly prove the idea of Herman Hertzberger that, to achieve the flexibility, the 'protoform space' has to be simple rather than specific.

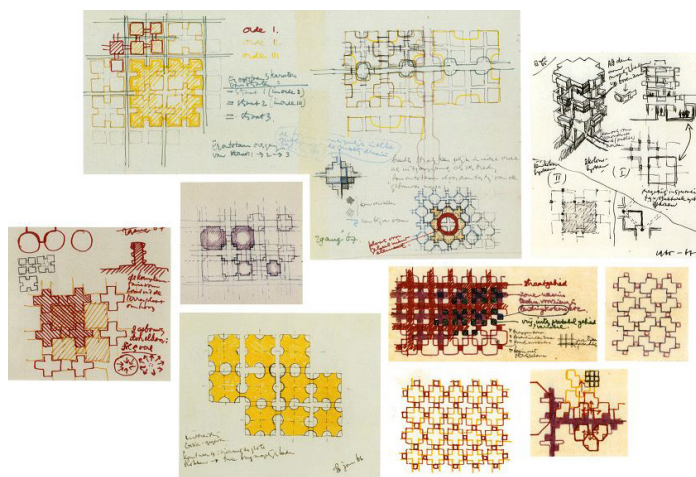


Fig. 2.3.15 configuration system design sketch of Herman Hertzberger. <http://vaumm.blogspot.nl/2012/02/centraal-beheer-by-herman-hertzberger.html>

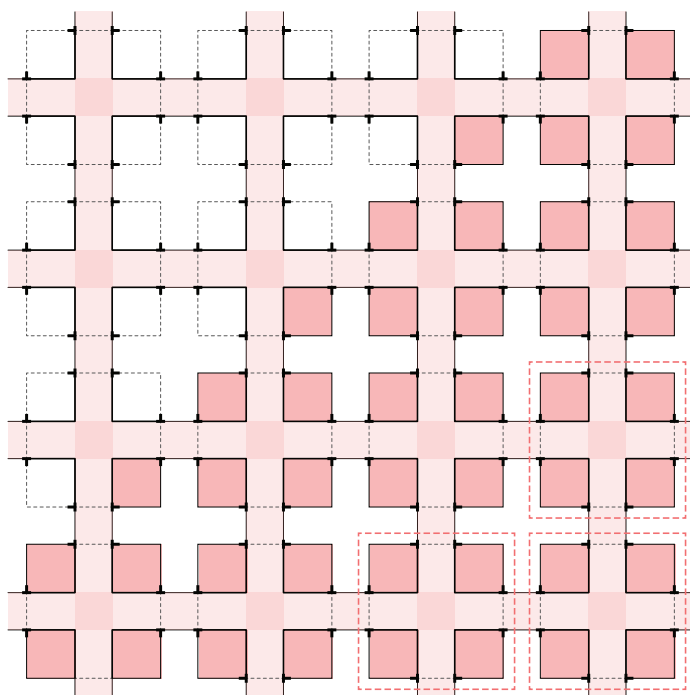


Fig. 2.3.16 configuration system of Centraal Beheer Office. (J.Lim, 2017)

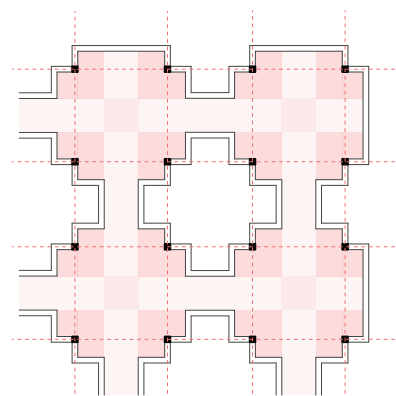


Fig. 2.3.17 Valkenswaard town hall, 1996, Herman Hertzberger(J.Lim, 2017)

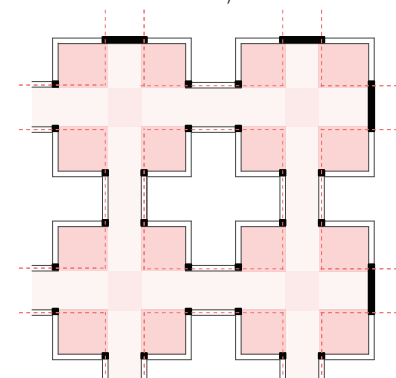


Fig. 2.3.18 Amstern town hall, 1968, Herman Hertzberger(J.Lim, 2017)

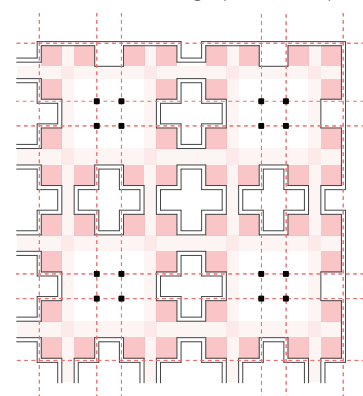


Fig. 2.3.18 Amsterdam town hall-second round, 1968, Leo Heijdenrijk(J.Lim, 2017)

Structure

What is the relationship between structure and spatial system of Centraal Beheer Office?

The load-bearing system of Centraal Beheer Office consists of the main beams and the secondary beams. The main beam is the thickest component among the construction elements of Centraal Beheer Office, and it is sustaining the whole load of the building. On the other hand, the secondary beam is much thinner and taking a supplementary role in the construction system. Therefore, in the view of construction, the main beam is more vital than the secondary one. However, the secondary beam is the structure that is supporting the module. Therefore, in the spatial viewpoint, the secondary beam becomes the more important

component. It means the importance of the construction system in this building could be differently interpreted based on the aspect that we are more focus on. Moreover, since the secondary beam is taking relatively less important part of the load-bearing system, it provides more abundant possibilities in flexible spatial design: for example, the change of facade design and material usage of a module.

In this regard, it would be able to say that the construction system of Centraal Beheer Office shifted from its spatial system. Furthermore, the relationship between construction and spatial logic of Centraal Beheer Office is providing the possibility of the flexible use of the space.

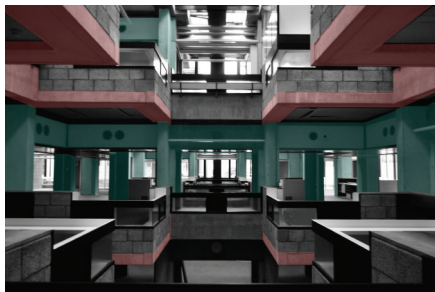


Fig.2.3.20 Main beam and secondary beam of Centraal Beheer(J.Lim, 2017)

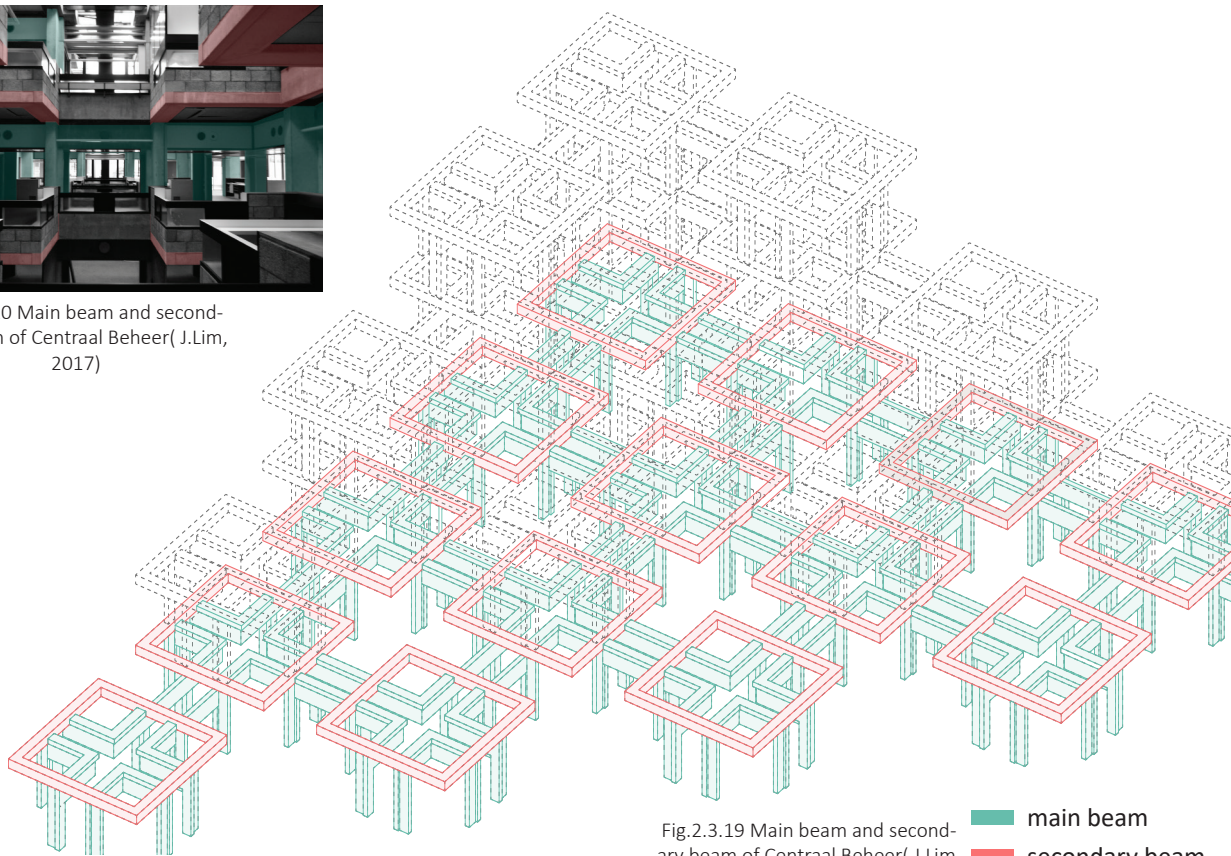


Fig.2.3.19 Main beam and secondary beam of Centraal Beheer(J.Lim, 2017)

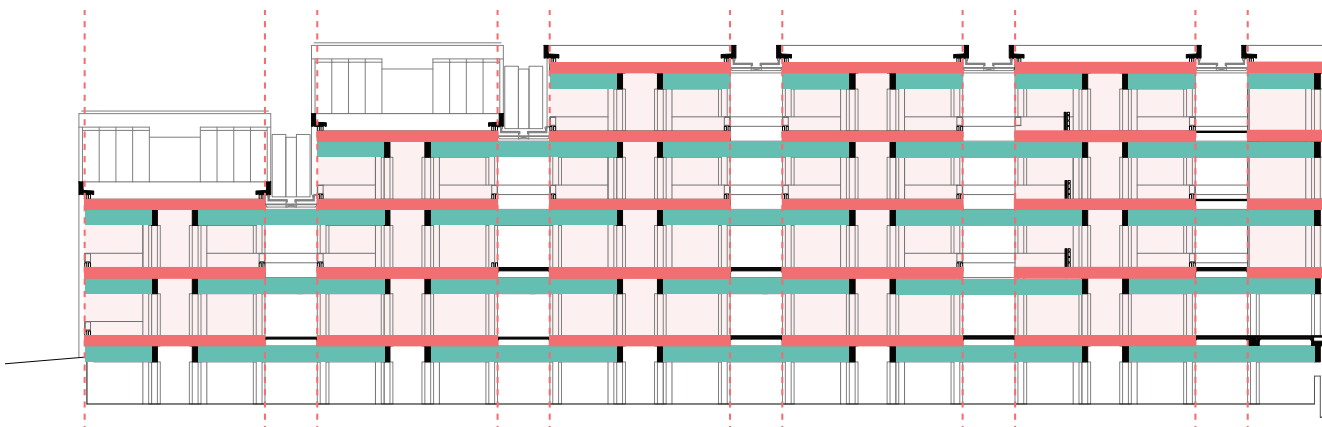


Fig.2.3.21 Main beam and secondary beam of Centraal Beheer in section(J.Lim, 2017)

*Which parts are Fixed and Changeable in Centraal Beheer Office??
What is the possibilities the Spatial Flexibility from this factors?*

The analysis of structure system of Centraal Beheer Office presents that this building is on the strict regulation (the grid system). Unlike the idea of Herman Hertzberger, the grid system is providing restriction rather than freedom in this building from the structural viewpoint. It is because the building tends to obsess too much to follow the rule without any of exceptions. Moreover, it seems that the grid could provide freedom only when we follow that regulation. That means, it is entirely a long way off from freedom when we have to change the rule (structural system) itself.

However, despite its rigid regulation, we can still find Flexibility in it. For example, the structural system of the building implies a lot of changeable parts that can directly influence the spatial quality of the building. Also, the relationship between structural and spatial system provides the possibilities of alteration for the improvement of the building. Therefore, even though its strict restriction, we can still find the way to modify the existing structure system to enhance the spatial quality of Centraal Beheer Office.

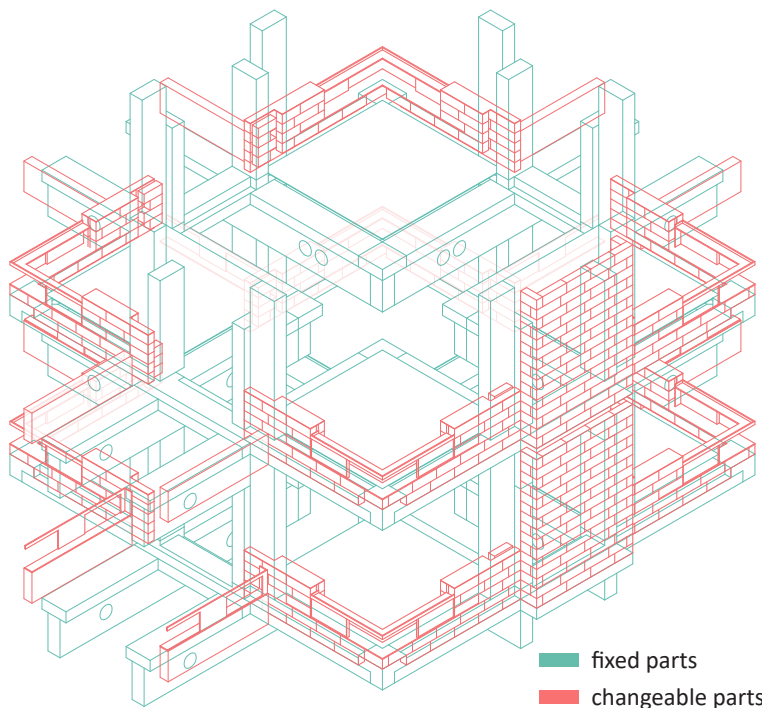
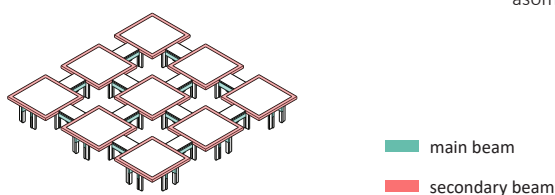
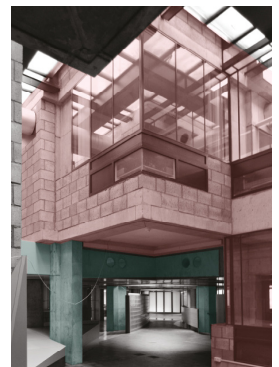
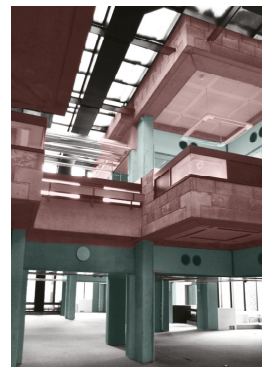
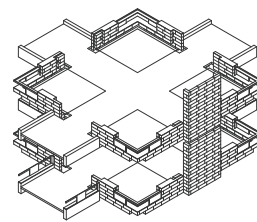


Fig.2.3.22 Fixed parts and changeable parts in isometric view (J.Lim, 2017)



By altering the floor and the secondary beam, we can create the alteration of existing structure system. For example, when we remove part of them, we can generate more void space for bigger space or increase the visual connection between floor and floor.

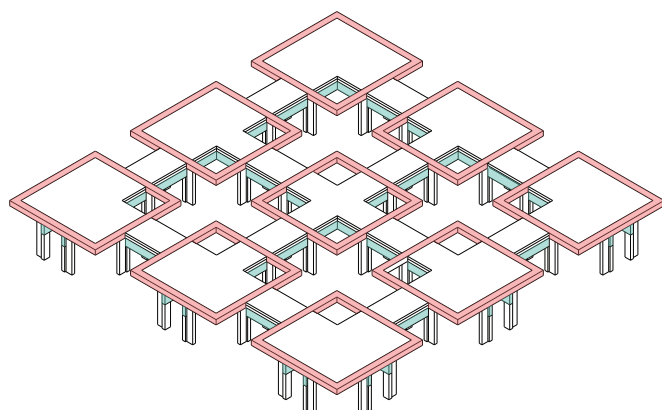


Fig.2.3.23 what if we remove the part of the floor? (J.Lim, 2017)

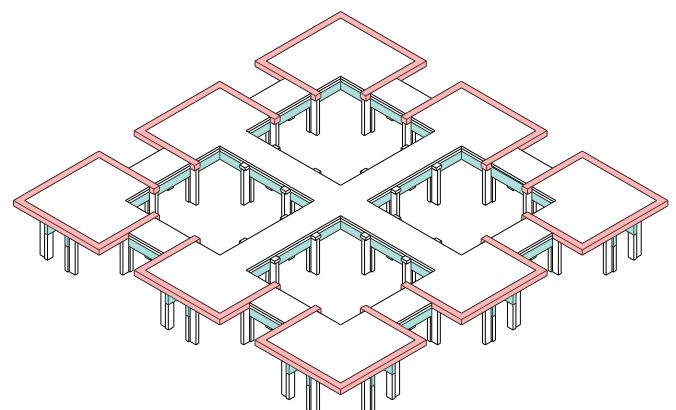


Fig.2.3.24 what if we remove the part of the floor & the secondary beam? (J.Lim, 2017)

Structure - Conclusion

Is the polyvalent system of Centraal Beheer Office truly provide freedom to the building?

The idea of polyvalent space derived from Hertzberger's investigation of urban contexts such as the inner city of Amsterdam and Casbah.² The Centraal concept of Hertzberger's 'polyvalent space' is to make a series of spaces which possess the possibility of individual interpretations.

With his idea of 'the grid,' Hertzberger applied the idea of polyvalent space by organizing a series of repetitive 'unit.' Therefore, the repetition of the same unit consists the current polyvalent system of Centraal Beheer. However, the polyvalent system of this building seems to put more weigh on following the grid. On strict grid line, every units and distance between them is all the same.

Moreover, in this system, it is essential to set 'rightesized' module. But it is doubtful that the current size of the module is appropriate to accommodate newly required function. Therefore, it is important to provide 'new polyvalent system' that can alternate current polyvalent system that is more obsessed on repeating same modules.

What is 'the new polyvalent system'?

The Centraal idea of the polyvalent space of Hertzberger is 1. to create 'protoform' space that can flexibly accommodate diverse types of function, and 2. make continuation of those protoform spaces and plan organic relationship among them. Concerning to this, the important thing is 'setting flexible protoform' and 'plan-

ning considerable organization among them,' not making a repetition of same modules.

Therefore, the way to realize the new polyvalent system is to investigate the way to break the existing regulation that is too strict and repetitive while keeping the value of the idea of Hertzberger's polyvalent space.

How can we realize 'the new polyvalent system' onto existing building?

In the current polyvalent system of the building, the most fundamental element is the module of the building. However, by previous analysis, even the structure of this module could be decomposed as the main beam and the secondary beam. And the previous study mentioned that the secondary beam is changeable while the main beam cannot. Concerning to this, it would be able to say that this 'main beam' and its grid line is the most fundamental component of Centraal Beheer Office. It means, if we keep this structure, we can make variations on this grid. For example, we can set more diverse types of modules on this main structure system.

To summarize, all of the analysis of Structure System of Centraal Beheer indicates the limitation and the possibilities of the spatial flexibility of the building regarding 'polyvalent system.' And by changing our recognition of what is the fundamental element of the building, we can make further interpretation of how to accomplish the new polyvalent system into the building. Therefore, it would be able to find the way to *break the existing rule while keeping the rule.*

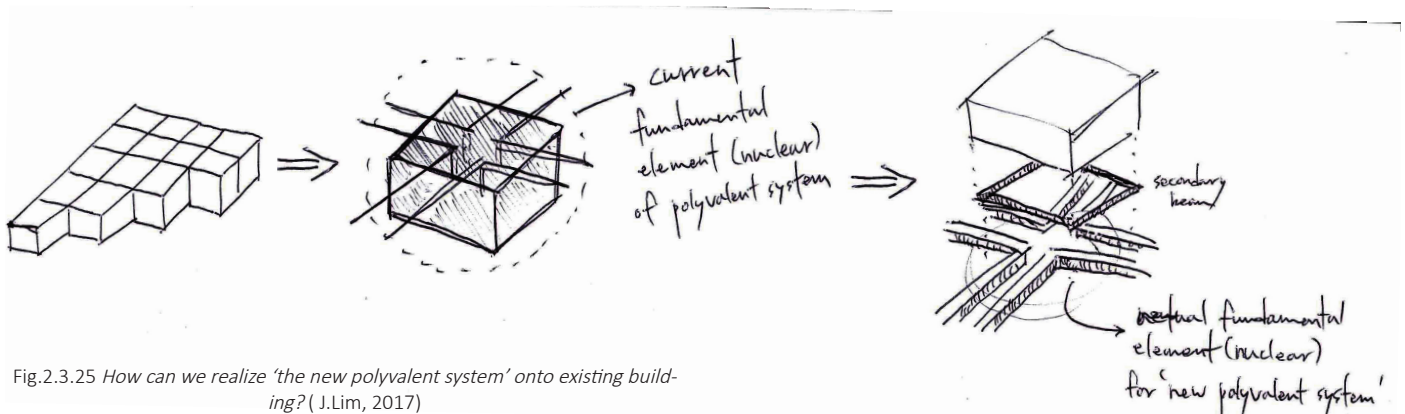


Fig.2.3.25 How can we realize 'the new polyvalent system' onto existing building? (J.Lim, 2017)



Fig.2.3.26 existing polyvalent system that consist of same size and scale of modules(J.Lim, 2017)

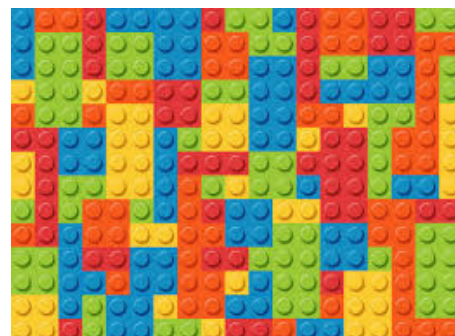


Fig.2.3.27 new polyvalent system that consist of diverse size and scale of modules(J.Lim, 2017)

This chapter will present how the construction system of Central Beheer Office was planned in more technical point of view.

When forming the structure system of Central Beheer Office, Herman Hertzberger applied a prefabricated construction system to build the grid and frame of this building. This is based on the idea of Structuralism architecture that building has to provide the possibilities to its dweller for their self-complementation and future extension.³

The structuralism architects wanted to plan a building that dwellers can continuously make complementation after its first completion. Therefore, it was necessary for them to let dwellers be aware of how the skeleton system of the building is working.⁴ Also, the skeleton system of the building should ensure the easier renovation/extension work.

The prefabricated system was the most appropriate method to achieve these goals. While the mass concrete structure that is too fixed to be changed, prefabricated structure system consists of several components that can be partly removed or changed. In this regard, prefabricated structure system was more appropriate construction means for more efficient renovation/extension work than mass concrete.

For these reasons, this chapter will focus on how the prefabricated system was actually applied to of Central Beheer Office. As followings, it will investigate 1. what is the prefabricated structural components that compose the structure system, 2. how they are joined each other, and 3. how the prefabricated system of Central Beheer Office could meet with future extension.

Fig.2.3.28 Structure system of Centraal Beheer (J.Lim, 2017)

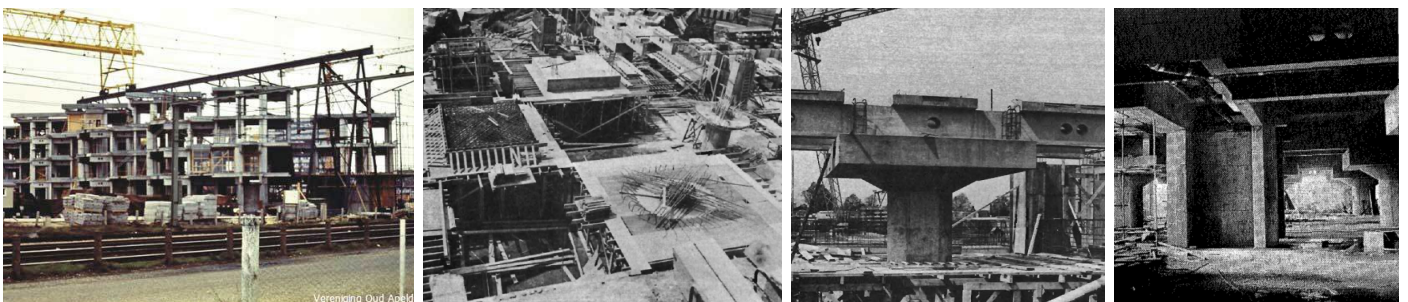
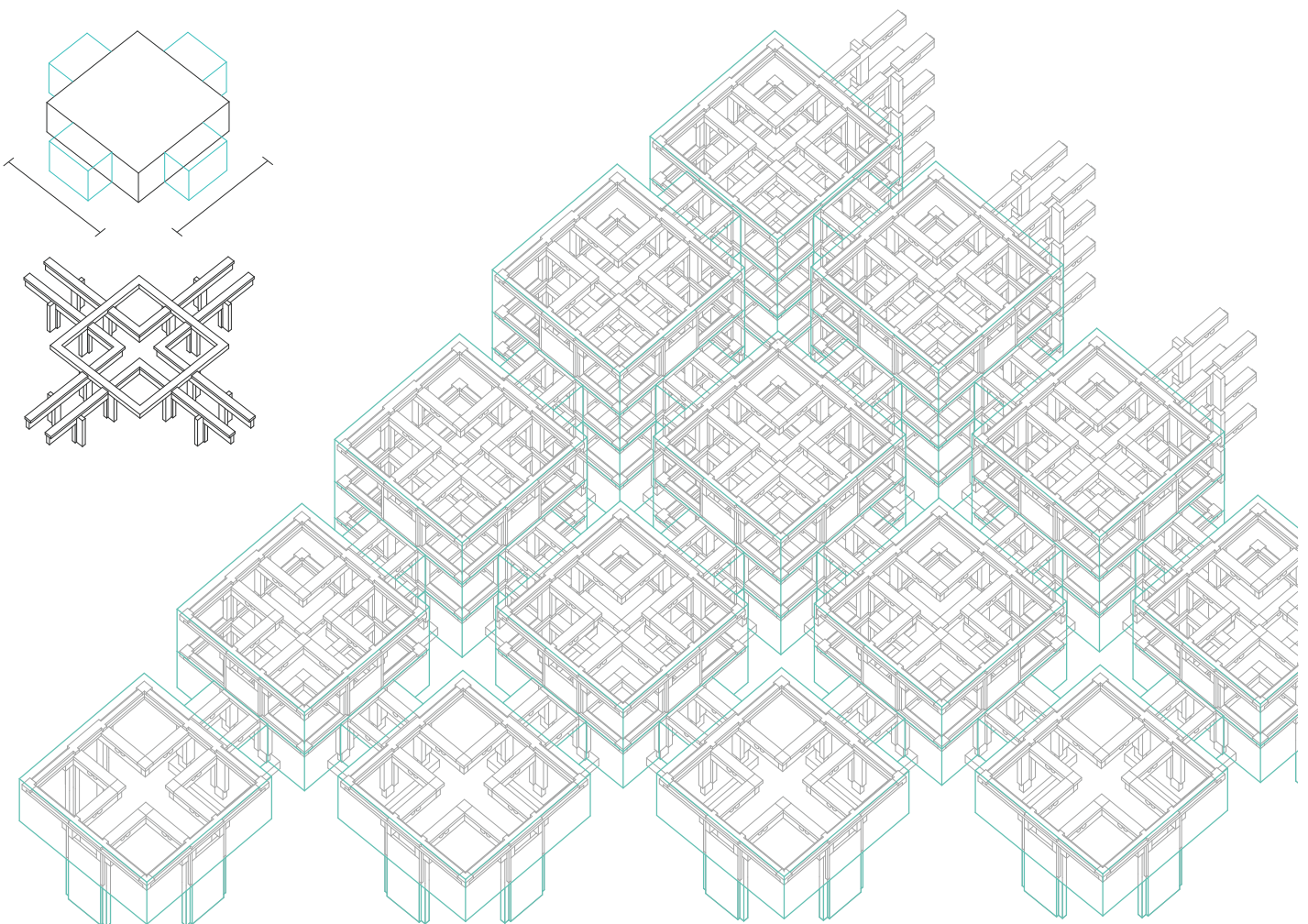


Fig.2.3.29 construction of Centraal Beheer Office, source from <https://www.verenigingoudapeldoorn.nl>, Dokumentatie bouwtechniek 1971, Kantoorgebouw voor Centraal Beheer te Apeldoorn (from right to left)

Construction

What is the components of prefabricated system and what is there standard joint?

This chapter is consists of three pages that presenting the prefabricated system of Centraal Beheer Office as follow.

The first page will describe each prefabricated structural components and their standard joint structure, which is the dominant framework that is commonly seen in the building. The next page will present how were these prefabricated elements actually joined in order. And the third page will show some of the exceptional joint structure for the underground floor, side walls, and rooftop.

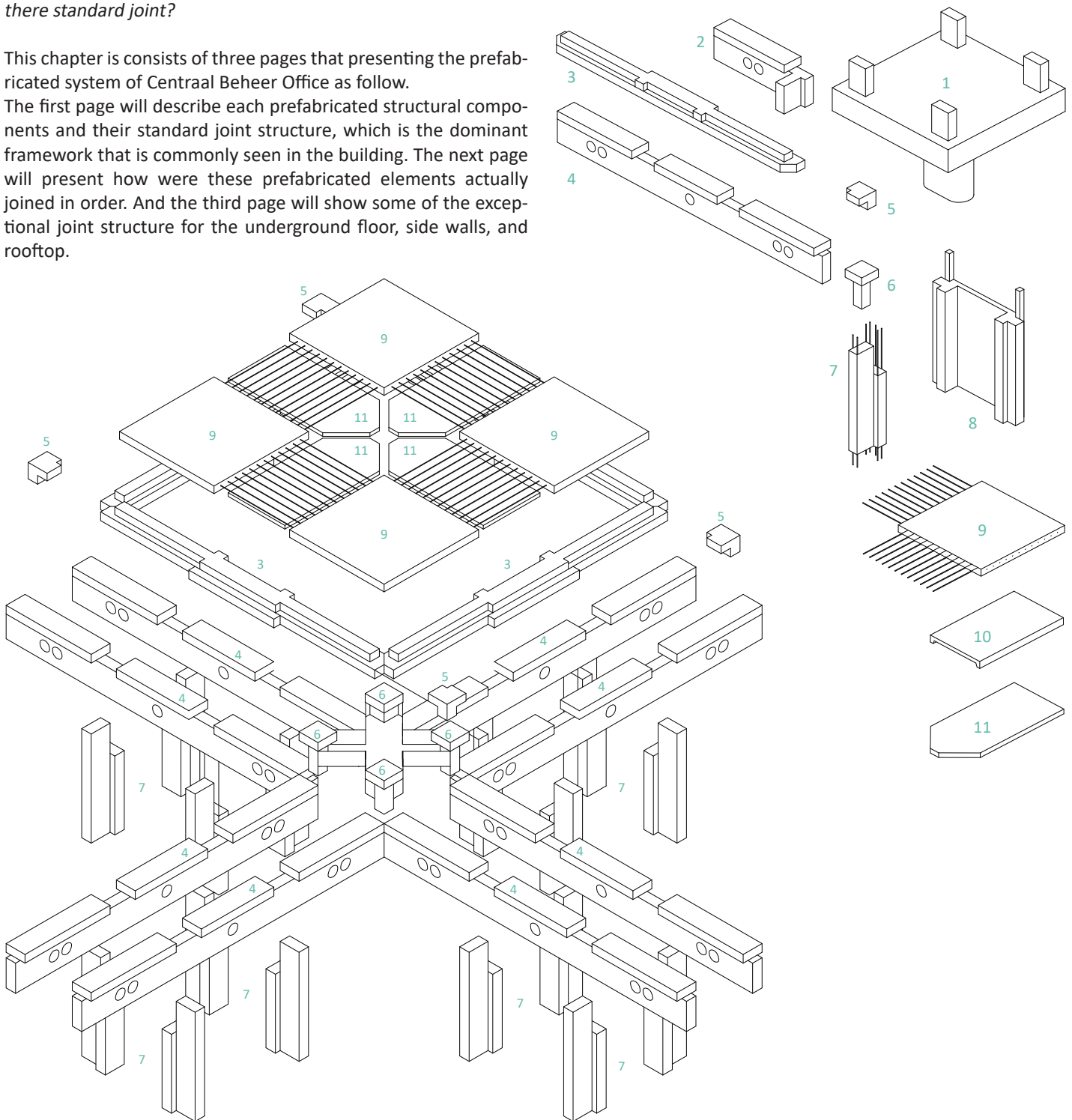


Fig.2.3.30 standard joint system of Centraal Beheer Office (J.Lim, 2017)

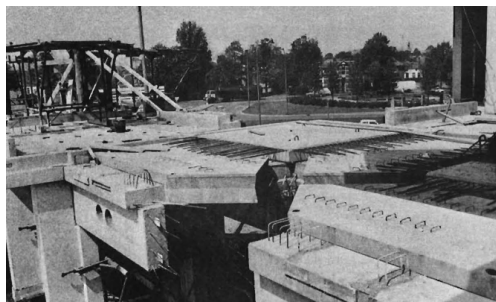


Fig.2.3.31 prefabricated component construction, source from Dokumentatie bouwtechniek 1971

1.

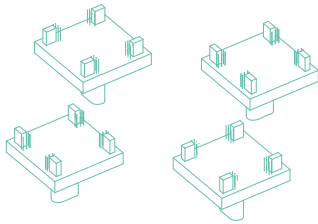
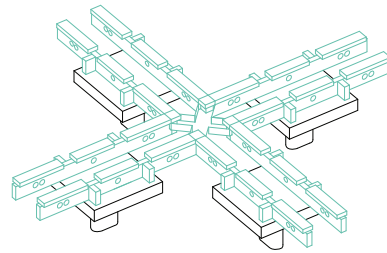


Fig.2.3.32- 1. underground foundations (J.Lim, 2017)



2. place main beams on underground foundations (J.Lim, 2017)

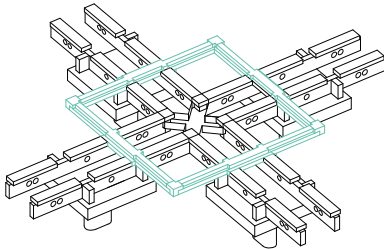


Fig.2.3.32- 3. place secondary beams on main beams

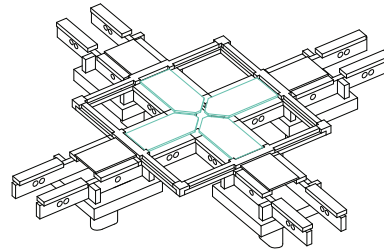


Fig.2.3.32- 4. place the floor components on the corridor (J.Lim, 2017)

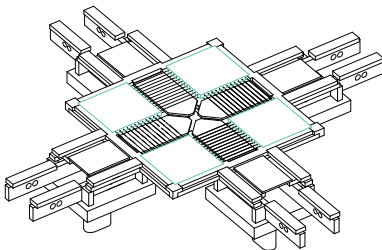


Fig.2.3.32- 5. place the floor components on the individual space (J.Lim, 2017)

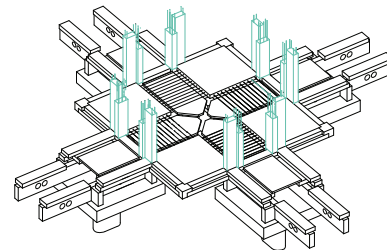


Fig.2.3.32- 6. place columns on secondary beams (J.Lim, 2017)

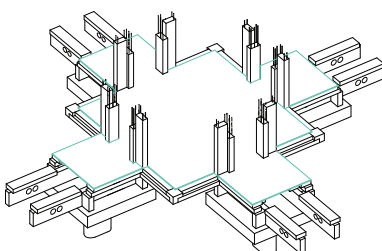


Fig.2.3.32- 7. place the floor (J.Lim, 2017)

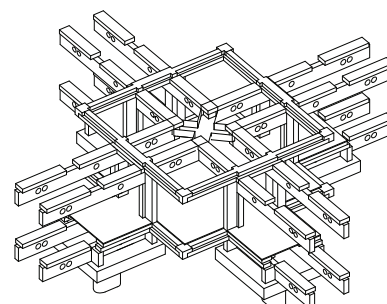


Fig.2.3.32- 8. repeat the process 1- 7 (J.Lim, 2017)

Construction

Prefabricated System : exceptional joints

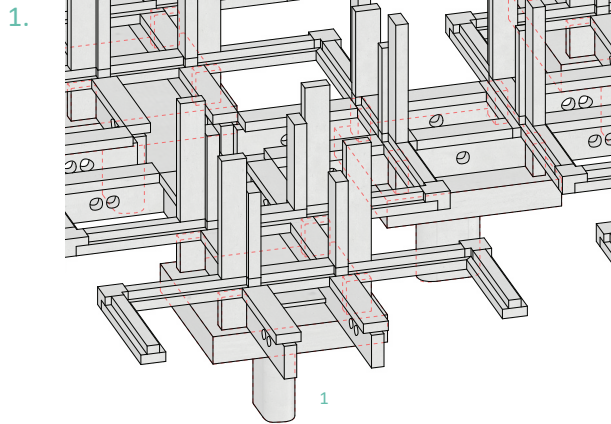


Fig.2.3.33 prefabricated skeleton system in underground
(J.Lim, 2017)

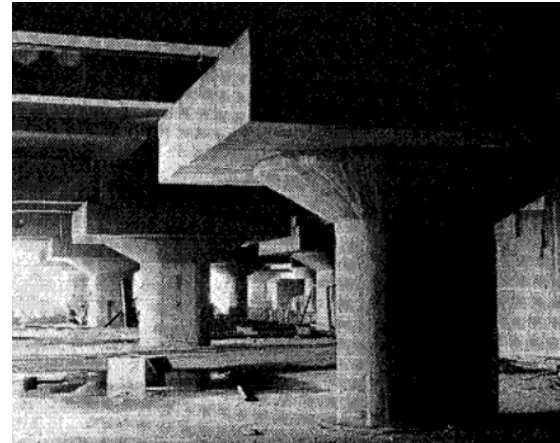


Fig.2.3.36 underground construction, source from Kantoorgebouw voor Centraal Beheer te Apeldoorn

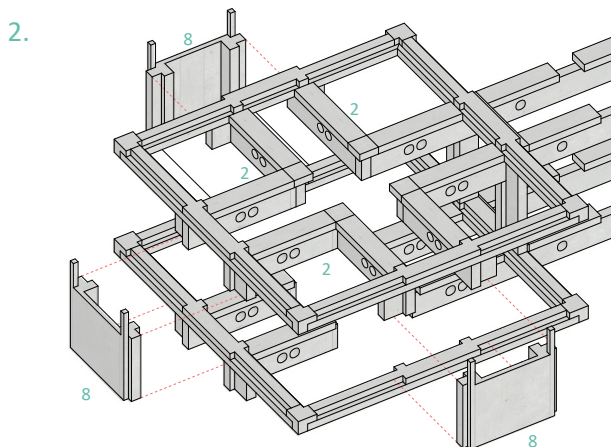


Fig.2.3.34 prefabricated skeletom system in the side wall
(J.Lim, 2017)



Fig.2.3.37 side wall, (J.Lim, 2017) Photo taken by Jinhyuck Lim

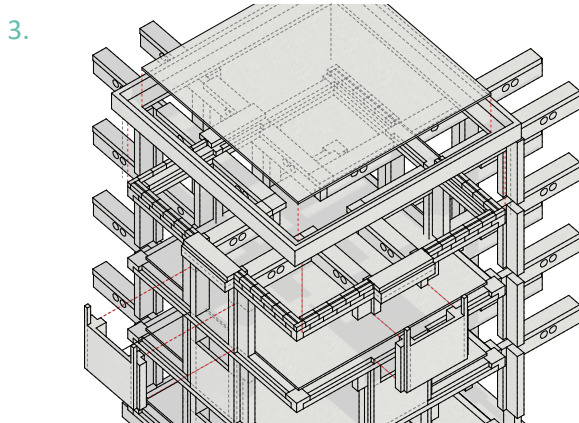
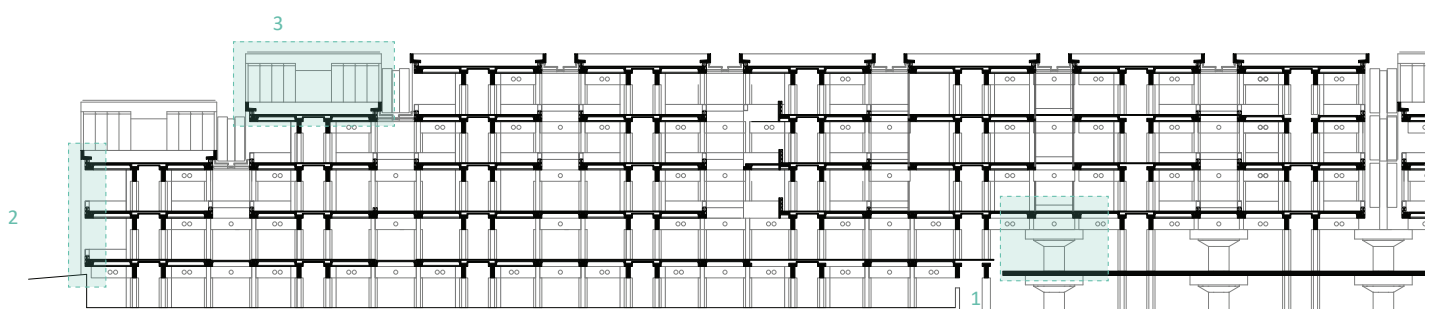


Fig.2.3.35 prefabricated skeletom system in the roof top
(J.Lim, 2017)



Fig.2.3.38 roof top construction, source from Dokumentatie bouwtechniek 1971



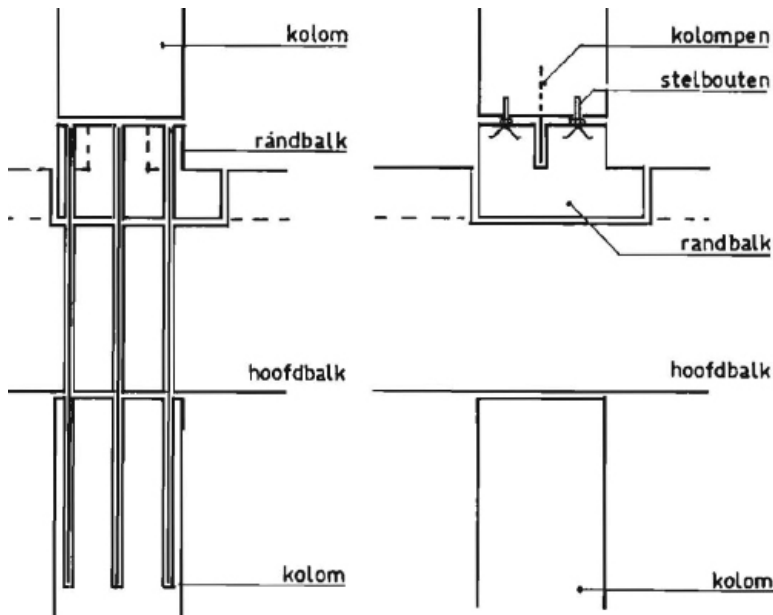
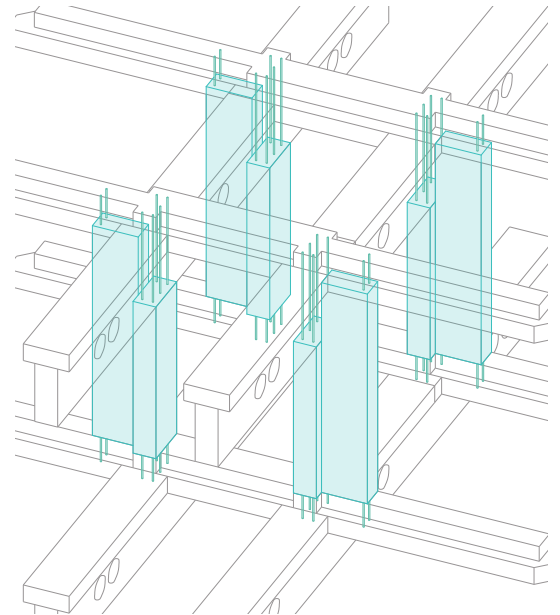


Fig.2.3.39 the main beams, columns, and part of the secondary beams are joined by iron reinforcing rods. source from Dokumentatie bouwtechniek 1971



As the more practical analysis of 'Fixed and Changeable parts of Centraal Beheer Office' in the Architectural study, this chapter will focus on *'which prefabricated components are fixed and which are changeable.'*

Before that, we need to investigate about factors that are related to this question. First of all, it is required to check more precisely how the prefabricated elements are combined each other. Unlike floors that are placed on the beams with cement, the main beams and columns are joined by iron reinforcing rods. Moreover, iron reinforcing rods also penetrate the parts of secondary beams since they are positioning between the main beam and columns. Therefore, it is necessary to remove those reinforcing rods if we want to remove those part.

Another thing to check is how is the building load transferred to each prefabricated components. As described in the former study, the main beams and column actually bearing the building load instead of the secondary beams and floors. Moreover, when we focus on the underground floor

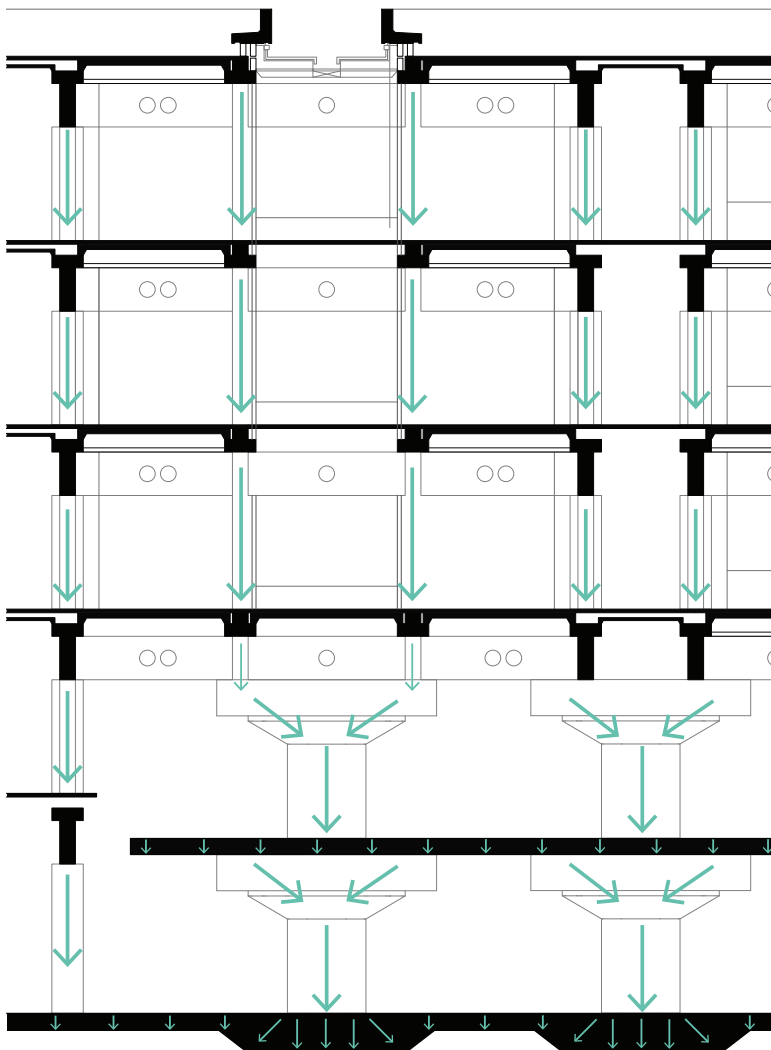


Fig.2.3.40 the load transfer system of Centraal Beheer Office(J.Lim, 2017)

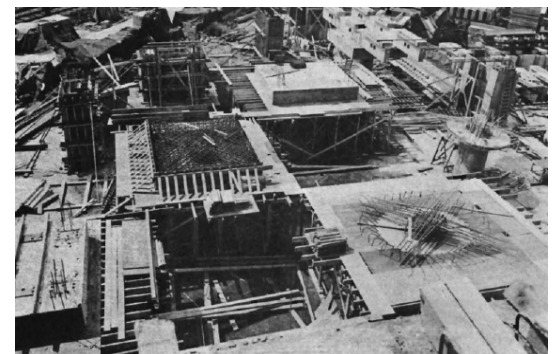


Fig.2.3.41 the underground construction, source from Dokumentatie bouwtechniek 1971

Construction

of Centraal Beheer Office, the load-bearing system becomes quite different with the upper level's one. The building load is flowing as Y-shape in the mushroom-like shape columns(a huge plate on one huge column), and the concrete floor is also bearing the building load at this level. So it was necessary not only to plan these columns as the thickest one in this building but also to place a more massive concrete ground foundation under these columns. In Centraal Beheer Office, each of columns is bearing maximum 125 tons approximately 125 tons (Hertzberger, 2009). This means the columns on the underground floor are enduring about 500 tons maximum. Herman Hertzberger design this different load-bearing system to make parking lot based on the grid system he planned.

Based on this information, we can analyze which prefabricated is changeable or not. First of all, it seems apparent that we cannot change the underground load-bearing components since they are bearing all most of building load. With the same reason, it would be extremely challenging to remove the main beams, columns, and part of secondary beams. Also, even though it is possible, removing them will be cost a lot of time and energy since they are also combined with iron reinforcing rods.

However, it seems possible to remove floors and nodes of beams as they are not taking a role in load-bearing and joined only by cement. Moreover, if there is no burden for load-bearing, it would be even possible to remove the main beam/columns at the same time. By this means, it might be able for us to make more variations in the spatial quality of Centraal Beheer Office. In this regard, the prefabricated system of Centraal Beheer Office could bring the spatial flexibility into the building.

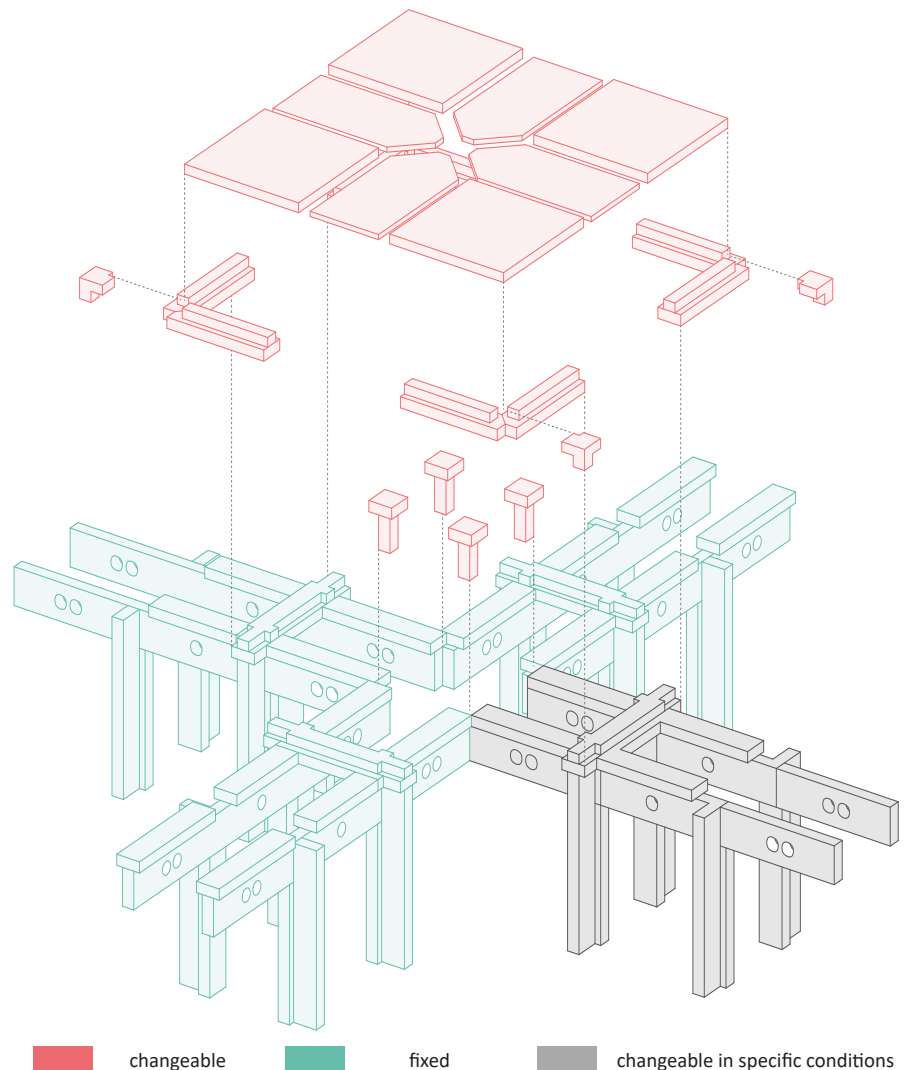


Fig.2.3.42 which prefabricated compoments are changeable or not.(J.Lim, 2017)

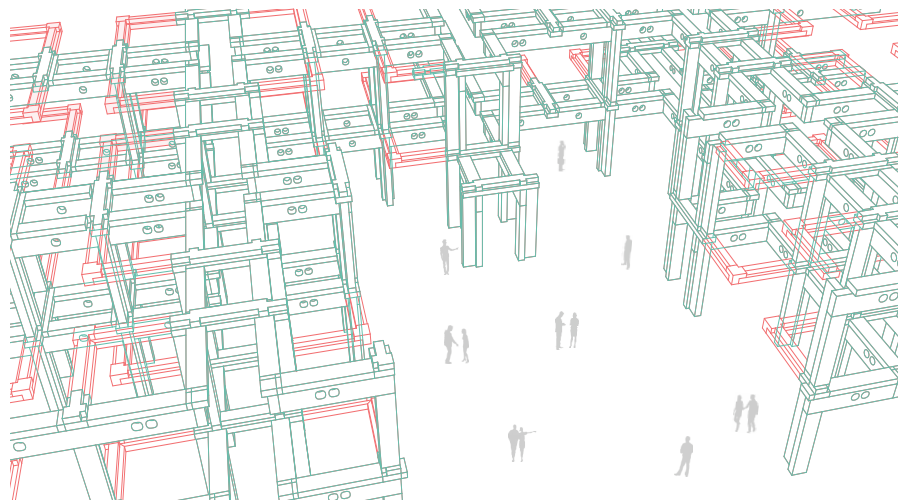


Fig.2.3.43 the modification of current prefabricated system could create the new spatial quality into the building, such as bigger open space and the variation of various kinds of spaces(J.Lim, 2017)

Space

This section will explore deep into the spatial system and the space of Centraal Beheer Office. Especially, this chapter will analyze the space based on the research scheme that we set in the previous section; Configurative Idea, Co-Determination, and Integration.

Therefore, with these three categories, we will investigate the answer to the question: how the limitations and opportunities of the spatial flexibility of the building appear?

Space - Configurative Idea

Why and how Herman Hertzberger applied repetitive design in Centraal Beheer Office?

Dutch Structuralism architect used a repetition and variation of similar/ dissimilar units in their architecture design. By this mean, they wanted to accomplish the integration of 'whole' and 'parts,' and decentralized spatial organization. As a result, they aimed to remove hierarchy in their building and create a democratic relationship between every space. Herman Hertzberger thought a neutral space, the basic unit of a building, possess applicability so that they can accommodate diverse functions. By configuring these modules, Hertzberger wanted to form his building as 'the union of various individual interpretation.' (Lüchinger, 1981)

Centraal Beheer Office clearly followed this idea. The building

shows the form of Polyvalent spatial organization, presenting a repetitive configuration of same size/form of modules and structure. The standard unit is repeating all over the design, and even exceptional units such as inner street and side wall parts also show similarity with the standard one.

Indeed, this repetitive design removes the hierarchy in the building and combines the whole and the parts. However, since every unit and their designs are same, this repetitive design also brings too monotonous atmosphere into the building.

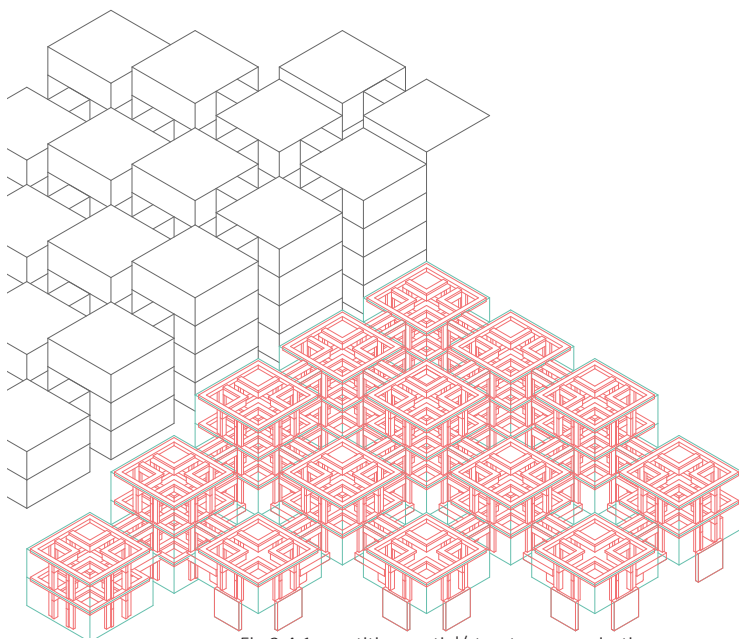


Fig.2.4.1 repetitive spatial/structure organization of Centraal Beheer Office (J.Lim, 2017)

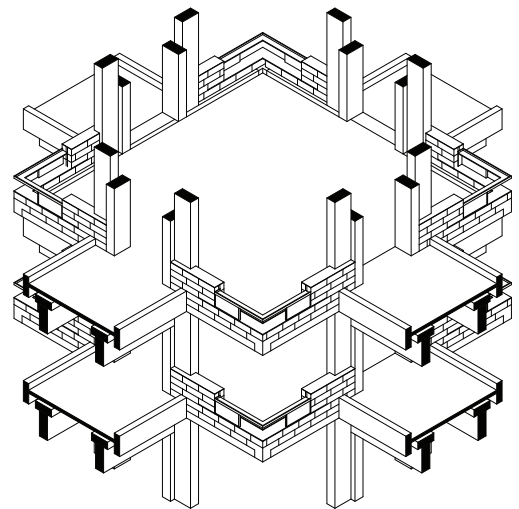


Fig.2.4.2 standard unit of Centraal Beheer Office (J.Lim, 2017)

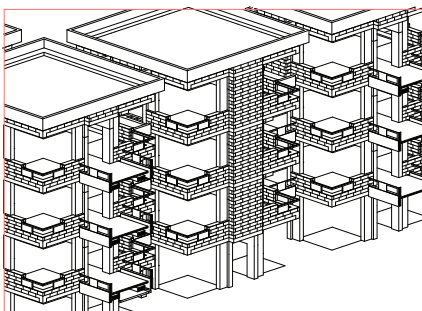


Fig.2.4.3-1 exception 1. innerstreet (J.Lim, 2017)

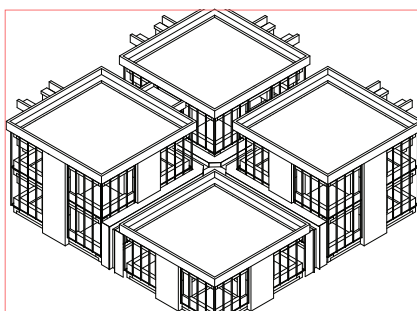


Fig.2.4.3-2 exception 2. rooftop and side wall (J.Lim, 2017)

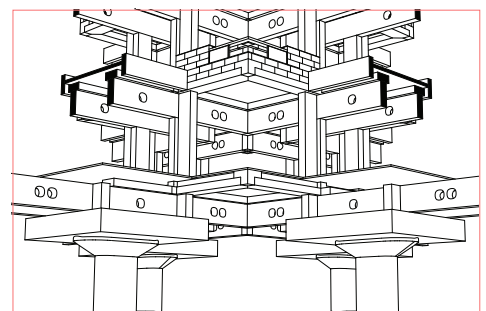


Fig.2.4.3-3 exception 3. underground structure (J.Lim, 2017)



Fig.2.4.4 innerstreet (J.Lim, 2017)



Fig.2.4.5 side wall and rooftop (J.Lim, 2017)

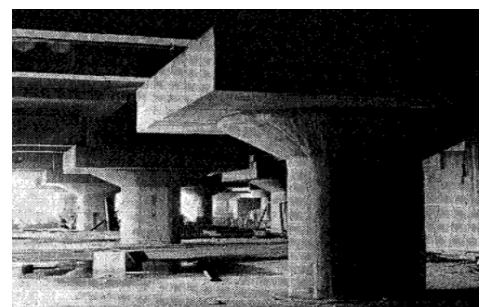


Fig.2.4.6 underground construction, source from Kantoorgebouw voor Centraal Beheer te Apeldoorn

*What is the spatial quality that is created by repetitive design?
What is the reason for that quality?*

Centraal Beheer Office shows highly repetitive spatial organization. Therefore, when seeing its plan, section, and axonometric drawings, we assume that this building would also have low spatial quality. However, Centraal Beheer Office actually presents much more vibrant and more affluent space. One of the reasons for this disparity is the rhythm of light-darkness, and low-high. Herman Hertzberger recognized that seemingly contrast concepts, such as small/large, public/individual, partial/total, open/closed, are in fact relative each other. Even they complement and

complete each other, so they have to coexist and harmonize with one another (Hertzberger, 2009). Centraal Beheer Office presents how the coexist these seemingly opposite concepts could improve the spatial quality of the building. Light-darkness, and low-high: these contrast concept is bringing a dynamic rhythm into the building. And this rhythm allows the user to feel the more affluent spatial sense of the building.

Through the harmony between opposing but relative concepts and the repetitive spatial organization, Centraal Beheer Office creates the spatial rhythm to the entire building. And this spatial rhythm enhances the quality of the space.

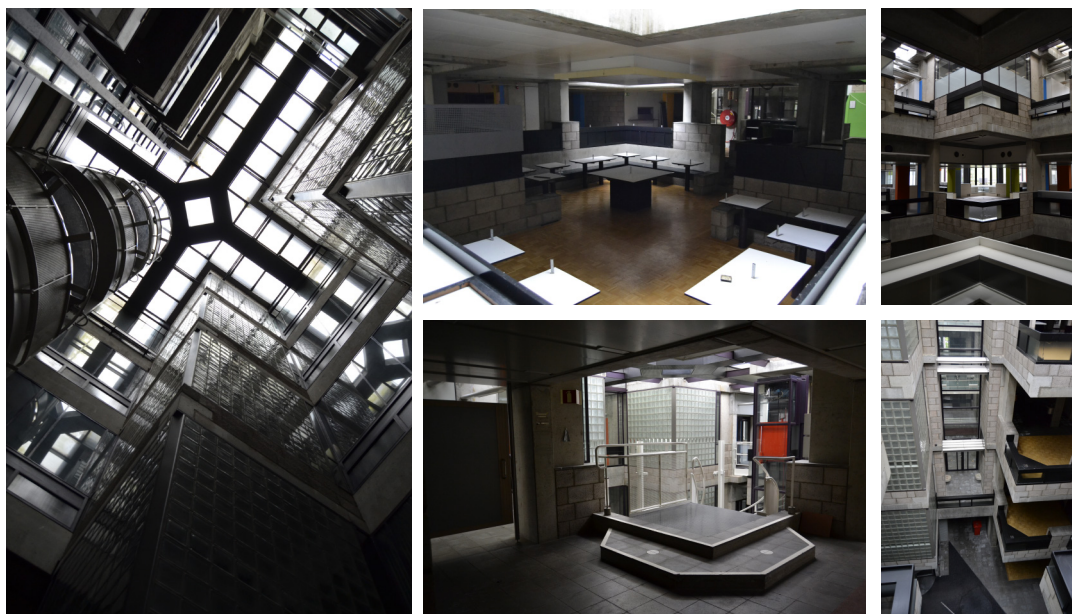


Fig.2.4.7 spatial quality of Centraal Beheer Office (J.Lim, 2017)

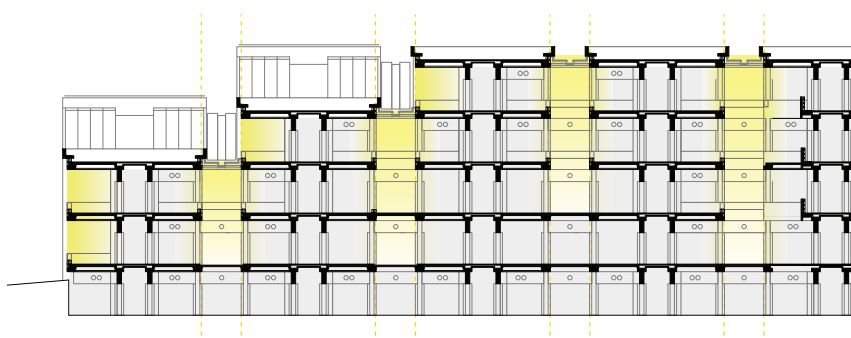


Fig.2.4.8 rhythm of Light and Darkness (J.Lim, 2017)

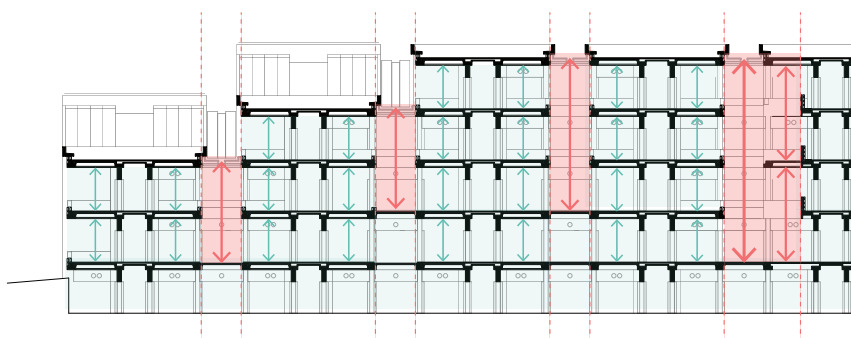
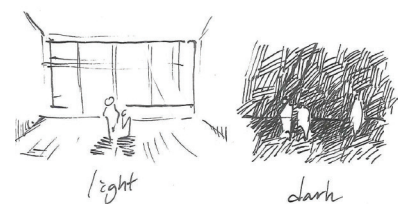
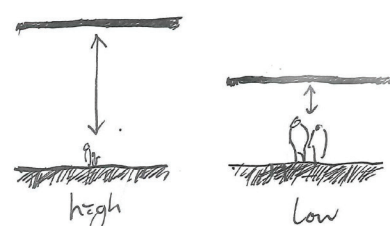


Fig.2.4.9 rhythm of High and Low (J.Lim, 2017)



Space - Configurative Idea

There are more spatial values that repetitive the space organization of Centraal Beheer Office is providing. When seeing the lowest level and higher floors of each office area in a plan, it seems the lowest level is apparently larger than other stories. However, when experiencing the building, the feeling of the space is different: the higher levels show broader spatial sense. It presents the difference between a two-dimensional and three-dimensional width. One of the reasons is the vertical visual interaction of the building that void space provides. These void space reduce the area of the room on a two-dimensional level, but ironical-

ly, they function as a vital role in widening the spatial feeling in a three-dimensional level. Other reason could be 'the sense of belonging' of the space. The floor of the lowest level is too much open, so even though space itself is ample, we cannot recognize them as useful space that belongs to specific uses. This observation strongly related to Herman Hertzberger's concept of 'Flexibility': a too much open space is as inefficient as the space only for specific use.

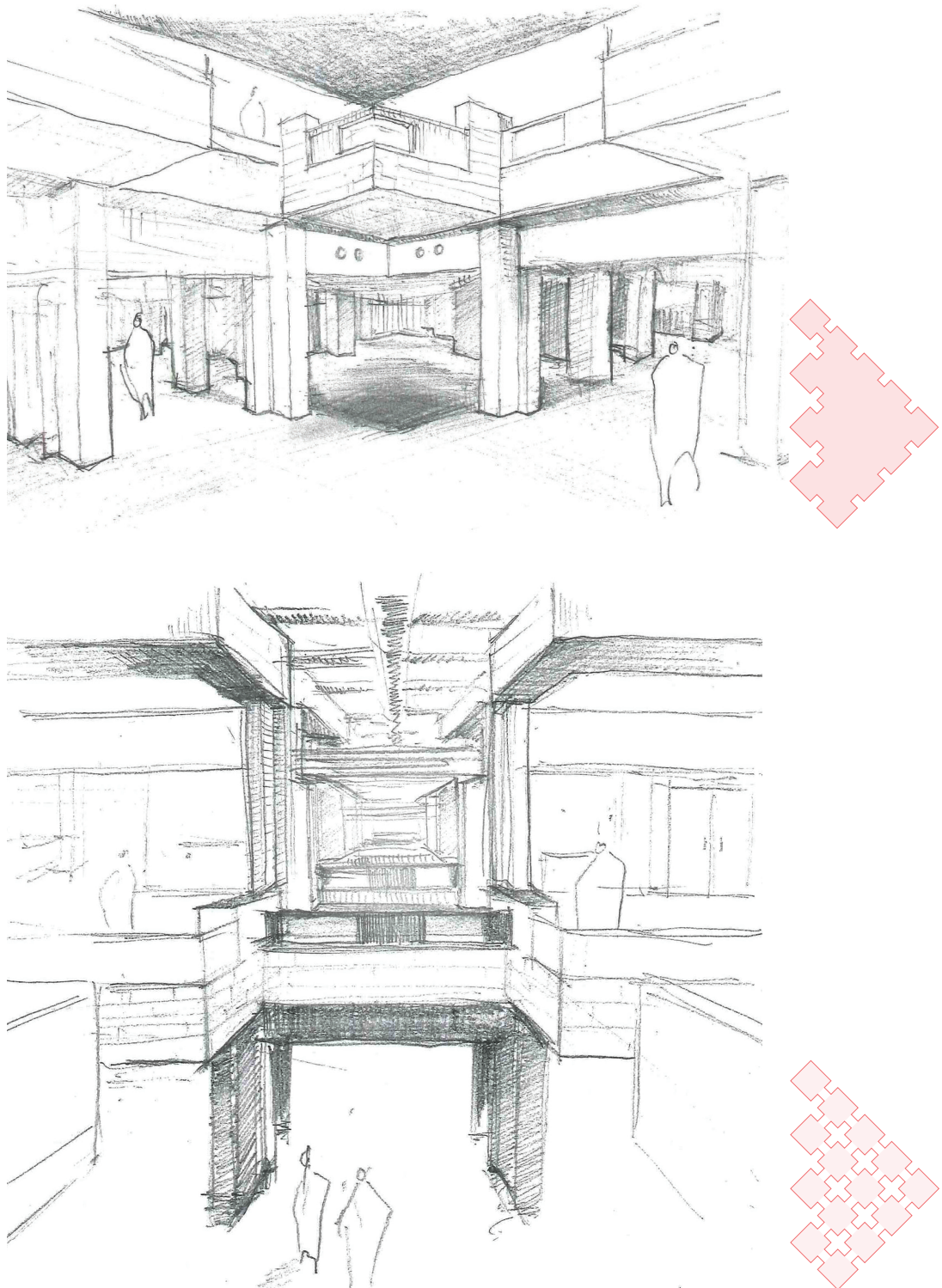


Fig.2.4.10 the difference between a two-dimensional and three-dimensional width, left: the lowest floor of working area, right: the first floor of working area (J.Lim, 2017)

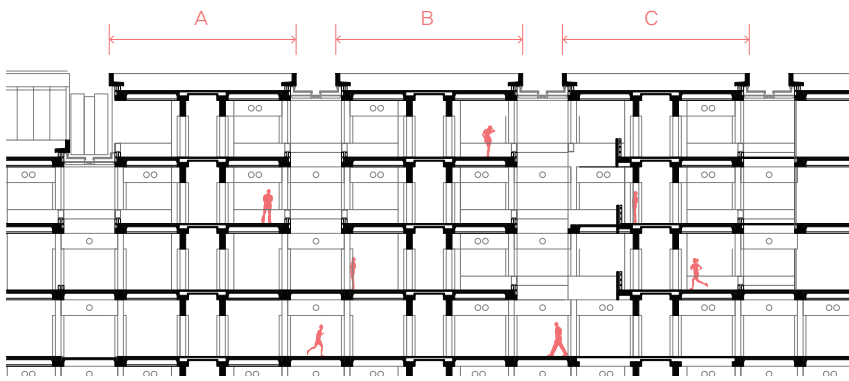


Fig.2.4.11 it is extremely difficult for users to find their orientations in Centraal Beheer Office (J.Lim, 2017)

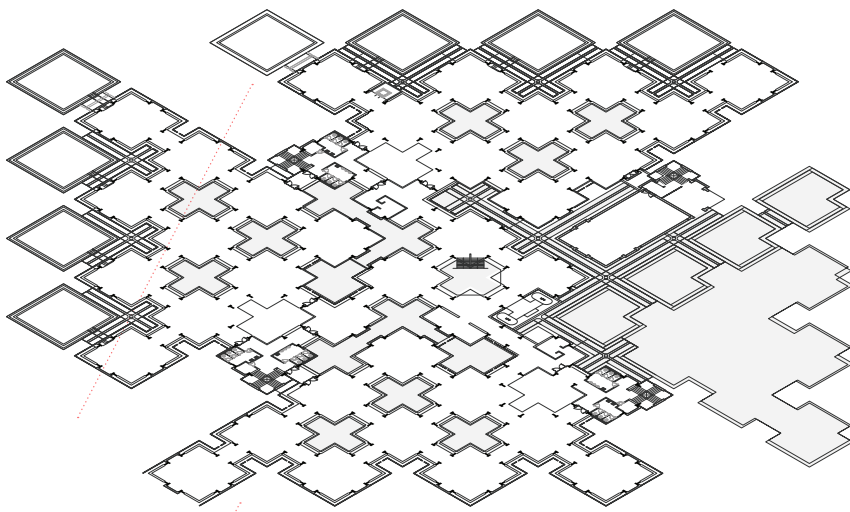


Fig.2.4.12 2F plan of Centraal Beheer Office(up) and photos of each space (down) : As shown below, every space of Centraal Beheer Office is too repetitive to distinguish them. The concept of 'deCentralization' brought 'excessive labyrinthian' space into the building (J.Lim, 2017)

How the idea of 'decentralized space' applied to Centraal Beheer Office? Is this approach create the spatial quality of the building?

It would be able to assume that the repetitive spatial organization of the building is also linked with the idea of 'decentralized space.' By this idea, Herman Hertzberger wanted to create 'democratic' architecture: every space could be high/low hierarchical place according to their function, position, etc (Heuvel, 1992).

However, the idea of 'decentralized space' is realized as 'excessive labyrinthian space' in a real. Indeed, it is complicated to find the orientation in Centraal Beheer Office. The structural/spatial logic of the building is too repetitive, and every space/material is too unified. Therefore, it seems that 'deCentralized space' idea is actually realized as 'de-individualization' of every space.

Of course, it is possible that those space could be refined by individual usage so that the situation could be different in the past. However, in the excursion with Tu Delft student, Herman Hertzberger also partly agreed that it was difficult for users to find the way in the building. He went on to say that some indicators helped people to recognize where they are, but his mention proved that indicators were necessary for the building to let people know where they were.

In this regard, it could be better to rethink of the value of 'decentralized space,' and suggest the new design methodology to harmonize that idea with 'convenient usage' of the building.



Space - Configurative Idea

What are the spatial qualities that are missed because of repetitive design?

*What if the size and organization of modules become diverse?
And what if the width of inner-street become widen?*

Since Centraal Beheer Office is strictly following the grid system, the building consists of an excessive repetition of the same size of modules. Even though some of the functions, such as machinery, require the different size of the room, there are no exceptions in the building. It even prevents to accommodate the programs such as community hall. Moreover, it is also limiting the quality of inner-street. For example, if the width of inner-street becomes more broaden, it could provide more sunlight into the building and could create the sense of public space by attracting more people. For these reasons, it would be useful to think of changing size/organization of current module system. Of course, Herman Hertzberger's idea of 'Function follows Form' is still valuable, but

the idea of 'Form follows Function' could be more appropriate sometimes.

What if we create the hierarchies of the space?

In the office zone of Centraal Beheer Office, every space unit showing the same size and same design. This repetitive spatial organization is causing deCentraalization of space and somewhat removing the hierarchy between the area. However, even though 'decentralized space' was one of the architectural methodologies of Structuralism architecture, it is doubtful to say that the hierarchy of space is negative. Instead, the hierarchy could provide clear orientation to the users so that it could solve the problem of excessive labyrinthian space. Moreover, we can even harmonize deCentraalized space and hierarchical space at the same time, and it could provide more spatial quality in the building.

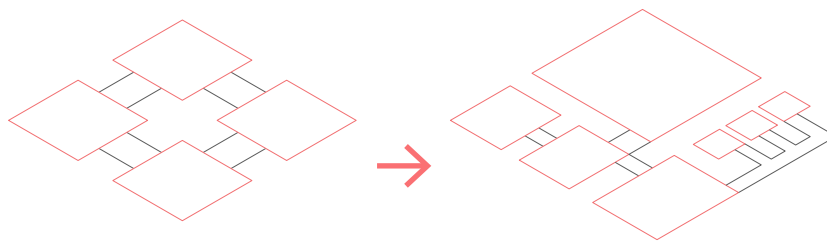


Fig.2.4.13 what if the size and organization of modules become diverse? (J.Lim, 2017)



Fig.2.4.14 what if the width of inner-street become widen? (J.Lim, 2017)

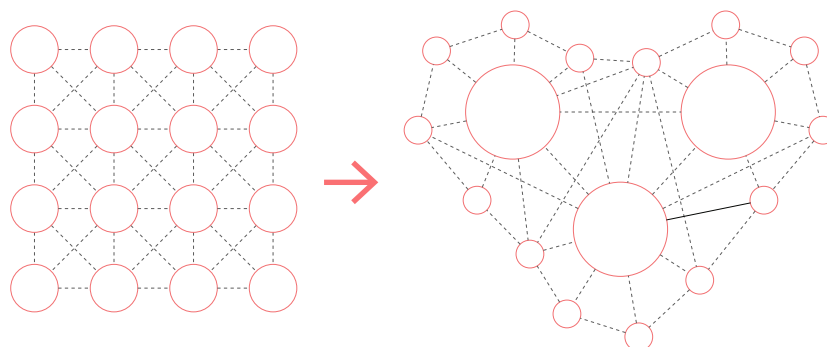


Fig.2.4.15 what if the hierarchy between the space is created? Is the hierarchy negative?
(J.Lim, 2017)

What was the working environment that was common during the design period of the Centraal Beheer building?

The benefits of a big open office space are bigger than the traditional ones:

1. Flexibility.
2. Better contacts
3. The feeling of being involved.
4. Anti-hierarchy.

Big open spaces have enormous benefits. But a lot of technical difficulties were found based on the discussion between all kinds of people working for Centraal Beheer. These problems are:

- Avoiding noise disturbance people shouldn't disrupt each other with their talking. They should listen to each other's conversations of have the feeling that someone is listening to their conversations.

- Creating an adequate artificial lighting system a vast space is depending on the artificial light because only the borders can be lit with natural daylight. The atmosphere in the building will rely on it.
- A great view the same thing as with the natural sunlight. People want an office with a view because there is a need for contact with the outside world so that people won't feel locked in their own building.
- Climate Ventilation of big working spaces is only possible with a mechanical ventilation system.

Based on these problems a big office space can create some considerable challenges. Not only just the technical difficulties but also some social problems.

- Massification effect. No one is alone anymore. People act like they are being watched all the time, which is very hard to deal with. This extra flexibility is a benefit for the organization, and so the job, but for the people who are actually working it can affect their feelings. People will lose their individuality.
- The danger of closing up. There is no longer a reason why the whole floor won't be filled up with desks and cabinets. It is the first step in expanding, and it is hard to avoid.

Hertzberger tried to create a new phenomenon, an office space that is built up in a way to create the highest spatial quality.



Fig. 2.4.16 very big office spaces. Bürogrösraum, Bürolandschaft.

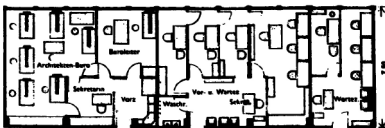


Fig. 2.4.17 traditional booths system

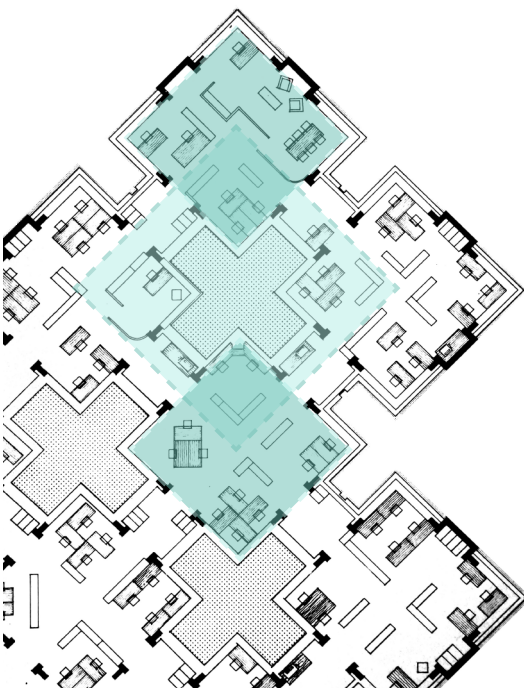


Fig. 2.4.18 Centraal Beheer plan (HNI)

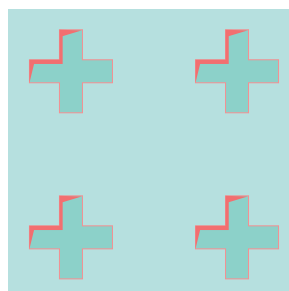


Fig. 2.4.19 ongoing space, over multiple levels, without creating a big open space (Van Pelt, 2017)

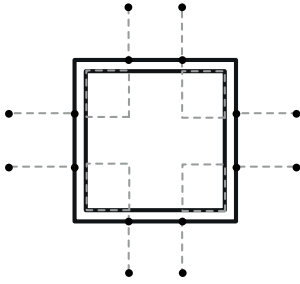


Fig.2.4.20 Standard 9m x 9m unit
(M.Wang, 2017)

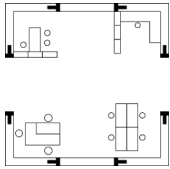


Fig.2.4.21-1 Office
(HNI,2017)

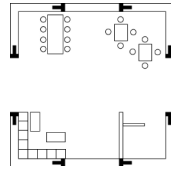


Fig.2.4.21-2 Restaurant
(HNI,2017)

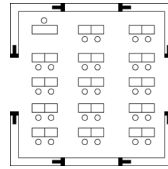


Fig.2.4.21-3 Education
(HNI,2017)

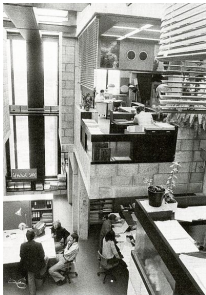


Fig.2.4.22-1 Office area
(HNI,2017)



Fig.2.4.22-2 Restaurant
(HNI,2017)



Fig.2.4.22-3 Center
Street(HNI,2017)

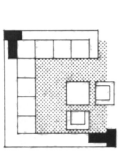


Fig.2.4.23-1 Rest Space
(HNI,2017)

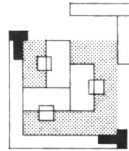


Fig.2.4.23-2 Office for 3
people(HNI,2017)

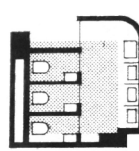


Fig.2.4.23-3 Toilet(HNI,2017)

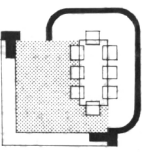


Fig.2.4.23-4 Meeting Room
(HNI,2017)

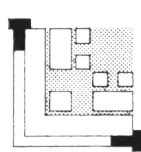


Fig.2.4.23-5 Restaurant
(HNI,2017)

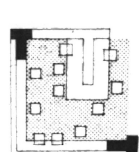


Fig.2.4.23-6 Restaurant
(HNI,2017)

What is the standard unit and what are the exceptions?

The module that allows individual interpretation is an excellent example of the polyvalent space that Herman Hertzberger mentioned. Repetitive spatial units articulate the whole office zone, and these modules can accommodate various social situations like offices, restaurants, and meeting room or rest place. They also allow people to reinterpret its function and, in this way, provide flexibility for future reuse.

One single unit is designed to accommodate a maximum 16 people, normally 12 people in total. From the old photos, we can see that people were using the space as it was planned.

During the excursion, we found that some units have been renovated. Most of the newly renovated parts are half-transparent glass walls and full blocked space divided by partition walls. We can assume that people require more privacy due to noise problem or some personal reason.

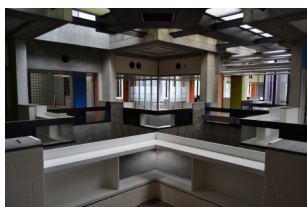


Fig.2.4.24 Regular quarter with
glass partition wall. (M.Wang, 2017)

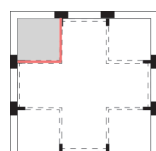


Fig.2.4.25
2 + 1 quarter were transformed in to
a private zone. (M.Wang, 2017)

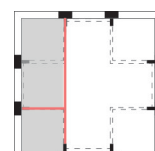


Fig.2.4.26
Regular quarter with glass partition
wall. (M.Wang, 2017)

What is the most 'fundamental element' of Centraal Beheer Office? How was this element designed?

As described in 'the analysis of module' in the previous chapter, the basic module of Centraal Beheer Office consists of four individual interpretational spaces, and the size of one individual interpretational space is based on 'the appropriate area for four working people.' In the excursion with TU Delft student, Hertzberger mentioned that by this means, he wanted to apply 'human scale' into his building.

If we more deeply analyze this idea, we could find that 'the minimum working area for one person' is the most fundamental element of Centraal Beheer Office. This most fundamental constituent space is responding with the size of the size of office furniture such as 1.5m office desk. In this regard, it would be able to say that the most underlying constituent of the building is mostly based on the behavior pattern of 'working.'

This means it could bring some problems if someone wants to reuse this building with other functions such as a dwelling. Since the underlying fundamental scale of the building is based on 'working,' it might be better to rethink about appropriate size from the beginning. For example, most of the Japanese housing is following Tatami system, and the size of the most fundamental unit of that system is based on the minimum area for lying person. This means Tatami system is strongly related to the human behavior of 'sleeping.'

Therefore, when planning to change the program of the building, it could be the way to consider 'what is the most important behavior pattern of the new program.' After the consideration of the appropriate size of the fundamental elements of that program, we can rethink of whether change the current logic of the building or not.

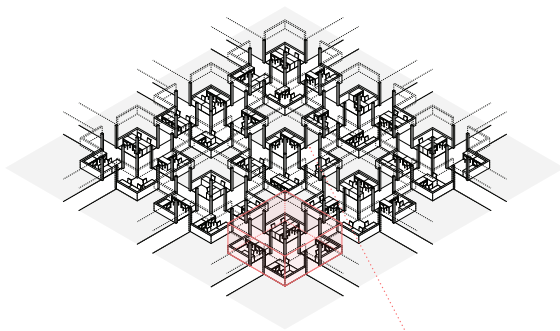


Fig.2.4.27 1 basic unit of Centraal Beheer Office is consists of 4 interpretationable areas (J.Lim, 2017)

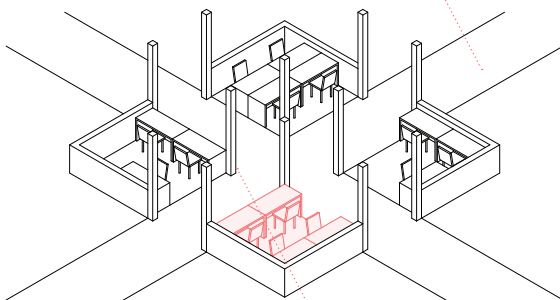


Fig.2.4.28 according to Herman Hertzberger, he designed the size of an interpretationable area based on the working area for 4 people (J.Lim, 2017)

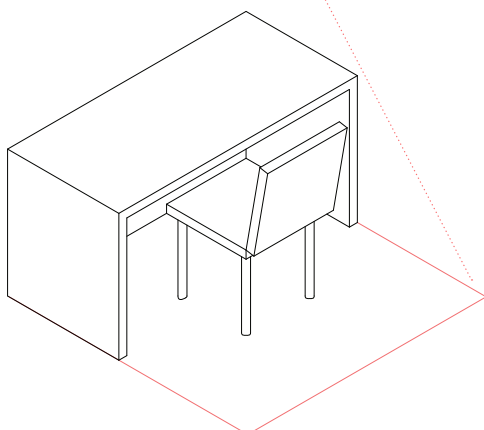


Fig.2.4.29 it would be able to say that the most fundamental nuclear of Centraal Beheer Office is based on 'the size of an office desk and chair' (J.Lim, 2017)

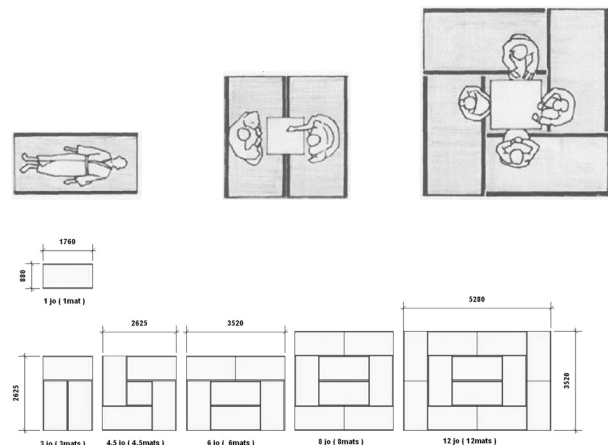


Fig.2.4.30 Tatami system of Japanese houses : minimum size for a laying person,
source from <http://nisekoprojects.com/niseko-construction-basics-scale-proportion/> (up), http://tatamiuk.co.uk/?page_id=309(down)

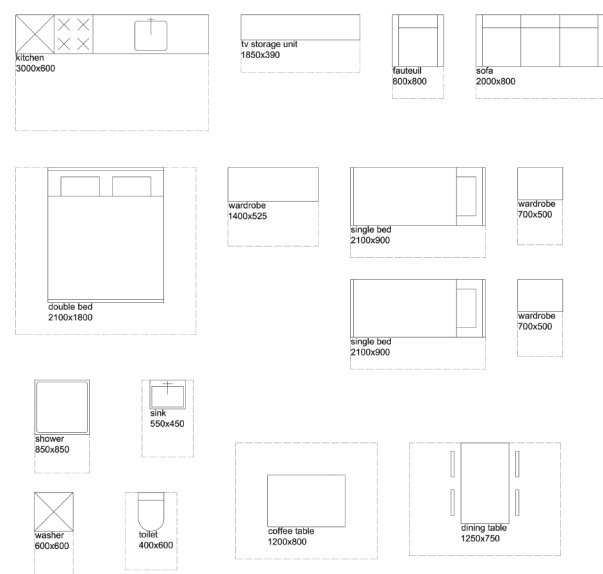


Fig.2.4.31 minimum area for various furnitures,
source from TU Delft Compact Housing workshop

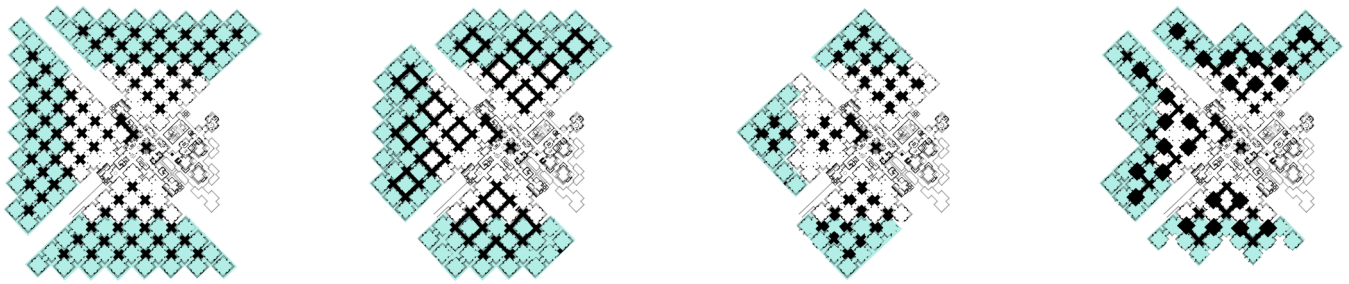


Fig.2.4.32 Possible extension of the plan in the future, based on the existing pattern.
(M.Wang, 2017)

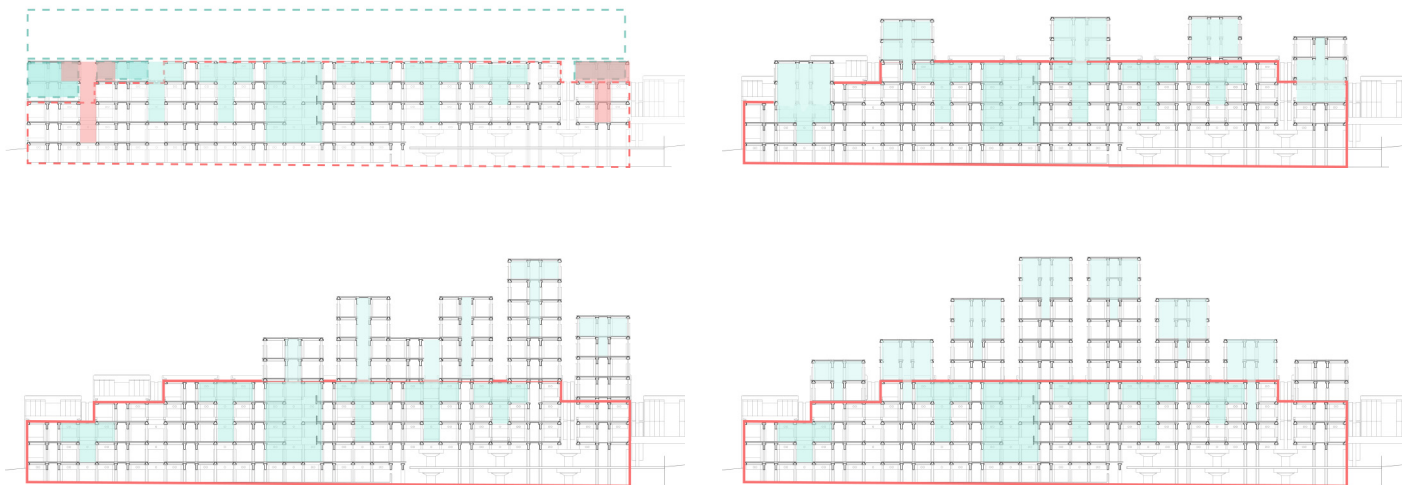


Fig.2.4.33 Possible extension vertically in the future, based on the existing pattern. (M.Wang, 2017)

What is the spatial logic of Centraal Beheer Office that allows the future extension?

Herman Hertzberger mentioned with his idea of the future extension in his book as below.

'Structures must be open-ended both outwardly and inwardly and as a system should not seek to control the application of these structures but stimulate it and influence it through use, generate more freedom for everyone within a greater cohesion.'
(Hertzberger, 2016)

Based on this, we can find that Herman Hertzberger actually encouraged a future extension while following the existing spatial logic.

After studying the existing space design logic, we found the way for a potential extension of future design. From the plan, we can see a denial of hierarchy; the plan of the building provides the

same conditions everywhere so it gives equal spatial opportunities anywhere but will in time start to show differences in intensity.

However, because of the loadbearing restriction, it seems that only limited vertical extension would be possible. Therefore, careful technical analysis of the maximum building load of the current skeleton system will be needed for the future expansion.



Fig.2.4.34 Initial urban plan of Apeldoorn (Van Pelt, 2017)

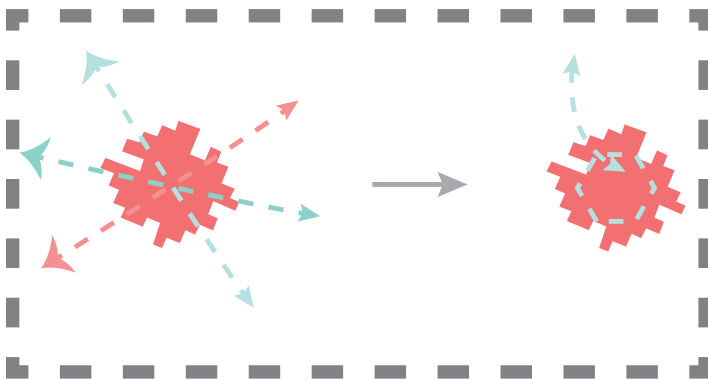


Fig.2.4.35 The isolated Centraal Beheer building now compare to the initial design connect city center and Centraal Beheer (Van Pelt, 2017)

What was the initial idea to connect Centraal Beheer Office with its urban context? What were factors that influenced to its realization?

Centraal Beheer is part of a new urban planning of Apeldoorn. It was located at the site where was going to be the central place (even more important than the city center) in Apeldoorn.

Central Beheer Office was planned together with this urban plan. Therefore, the building was supposed to become the new pedestrian entrance to the city along with its surroundings such as shopping gallery, the office building of Pakhoed, the new station. The pedestrian area between Pakhoed and Centraal Beheer Office was expected to be 'the new backbone' of the new city center of Apeldoorn.

For this reason, Hertzberger attempted not only to insert the inner streets in the building but also to link these streets to the 'backbone' successfully. Therefore, he rotated the grid system of Centraal Beheer Office by 45 degrees from the Prins Willem Alex-

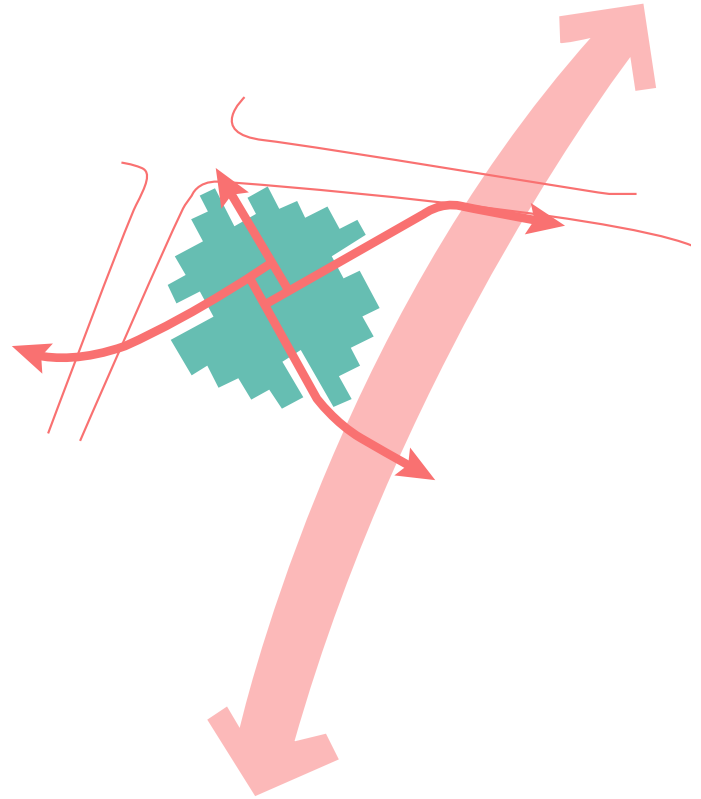


Fig.2.4.36 the isolated island, (J.Lim, 2017)

anderlaan to sync the inner streets of the building to 'backbone' and its surrounding roads. Moreover, he planned many entrances to make public enter the building.

However, his plan was not achieved because of several reasons. Most of all, the urban plan of Apeldoorn was canceled. Therefore, the primary idea to create 'the new backbone' and to link the inner street on to it only remained as the dream. Furthermore, the owner of the building was not pleasant to make a lot of entrances because of security problems. So, unlike the intention of Hertzberger, the inner streets of the building were merely used by people who were working in the office.

For these reasons, although its initial intention, Centraal Beheer Office had become as an isolated island. And the inner streets of the building only achieved half-success.

Space - Integration

How the transition from public to private happens in Centraal Beheer Office?

Herman Hertzberger asserted that 'private' and 'public' are correlated each other, and even they can be blended. He went on to say that these different areas should be connected by intermediate space to create a gradual transition between them.⁵

As seen in the drawing, the ground floor of Centraal Beheer Office presents comparably clear transition between public and private zone. However, from the first floor, the transition between them become more gradual. Between public area and office zone, there are semi-public spaces that are functioning as the intermediate space for a smooth changeover.

This conversion comes about more subtly in office zones. The degree of privacy of each module depends on their position; for example, the cell located on the edge side tends to possess more private characteristics compare to others. Moreover, even each module shows a subtle distinction between private and semi-private zone. For example, four individual areas of a module are separated by the corridors between them, not by walls. And different floor height distinguishes these passage and personal spaces. By this means, each of private areas(individual area) and semi-private area(corridor) are not explicitly 'divided' but gradually 'distinguished.'

In this regard, it would be able to say that this design methodology allows users to flexibly interpret and define their space as 'public' or 'private' area. Moreover, intermediate spaces of the building attribute not only to smooth transition between different zones but also connect and make them interact each other.

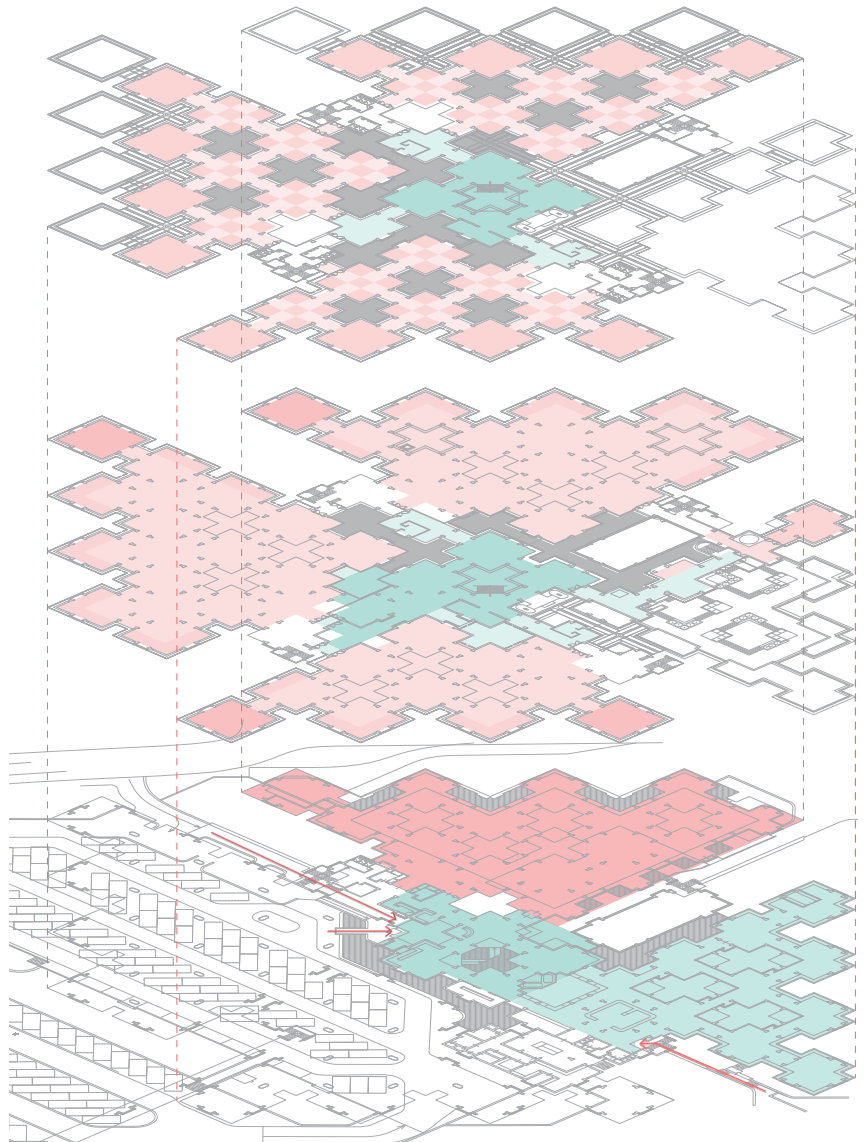


Fig.2.4.37 the transition from public to private in Centraal Beheer Office (ground floor- 2F)
(J.Lim, 2017)

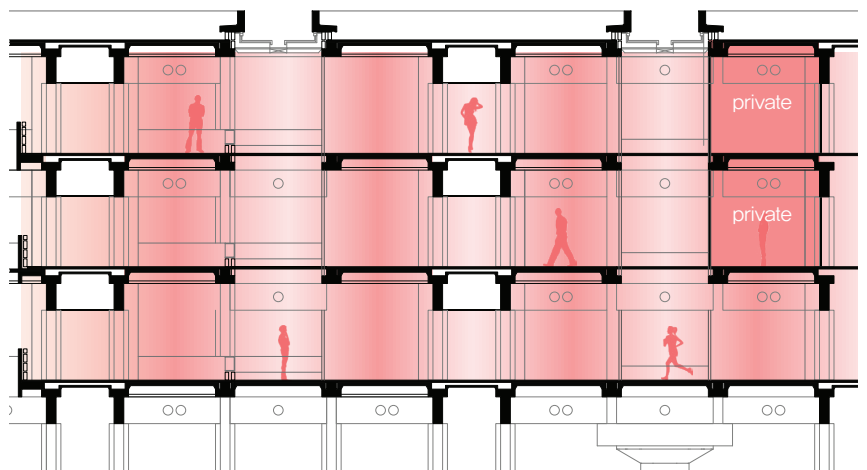


Fig.2.4.38 The private zone and semi-private zone in working area were gently distinguished by their height. If it was needed, they placed the wall to divide private space with semi-private area
(J.Lim, 2017)

How is the hierarchy appearing in Centraal Beheer Office? What are the factors that create the hierarchy in the building?

Even though Structuralism architecture aimed decentralized space, it doesn't mean that they denied any of hierarchy in the building. They didn't think of creating a qualitative hierarchy but thought of a quantitative one. For example, Herman Hertzberger acknowledged that square and street is the center of community life, and attempted to apply those into the architectural design such as an inner street. Therefore, the concept of hierarchy, in this case, is more related with 'how do people frequently use space.'

In Centraal Beheer Office, the public area in the center is taking the role to bind four office zones into one building. Therefore, the spatial organization of the building already implying the hierarchy in it. With the relation to this, we could found that it is following

public-private zoning since they are related to the frequency of use.

By focusing more on office zones, we can find that the position of entrances is also functioning as the vital factor that determines the hierarchy of space. While moving from the entrance areas to edge side, the hierarchy becomes gradually lower. This gradual transition of the hierarchy is following Hertzberger's idea that entrance spaces should function as intermediate space that vitalizes social interaction between people.

In this regard, we can think of creating a new hierarchy in the building, especially in office zones. For example, if we place additional staircase to connect each floor, the staircase area could function as new Centraal area. This means, even though it is difficult to modify the hierarchy of the whole building, the hierarchy of partial area could be flexibly changed by user intervention.

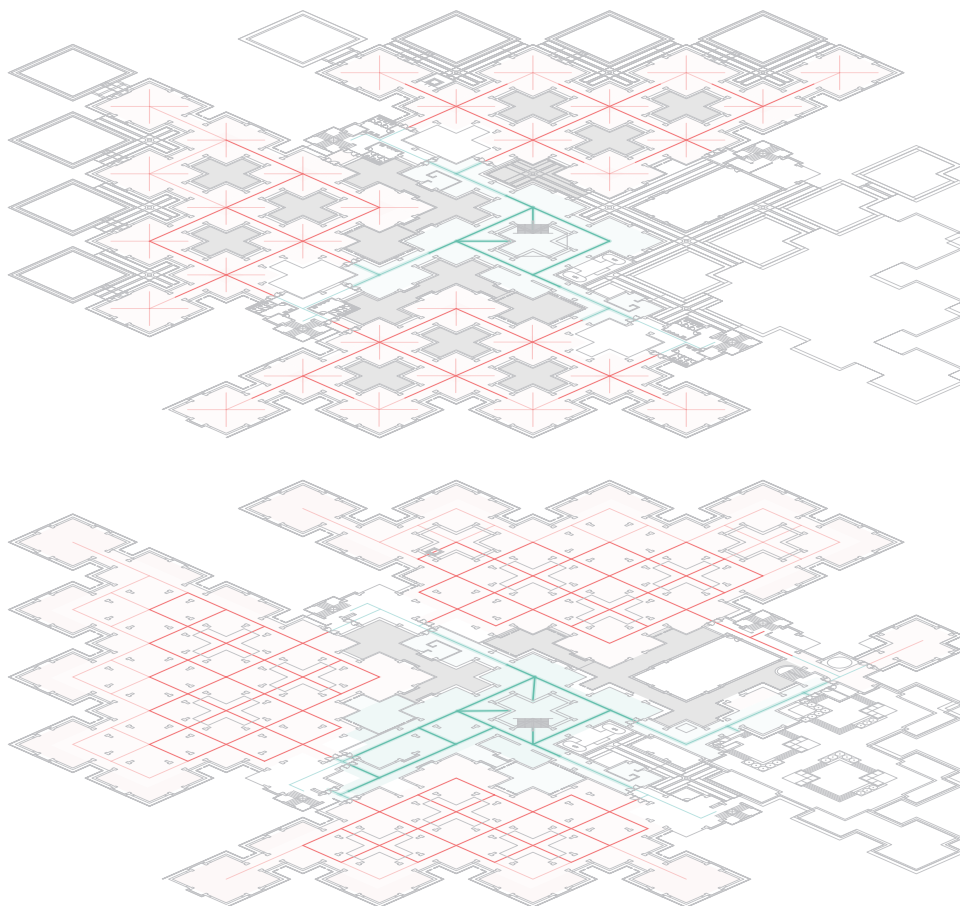


Fig.2.4.39 Hierarchy lines in Centraal Beheer Office : the hierarchy of the building is created based on entrances, functions, position of each space(J.Lim, 2017)

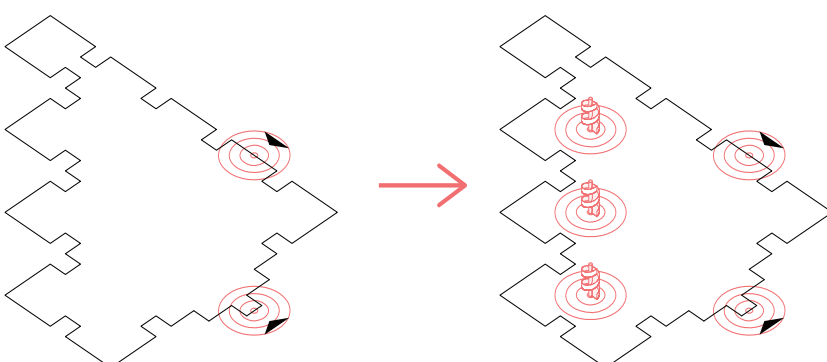


Fig.2.4.40 by small architectural approaches such as placing additional stairs could create new hierarchies in the building(J.Lim, 2017)



Space - Integration

How is the horizontal visual interaction appears in Centraal Beheer Office? What is the design methodology that enhances this communication?

As visual interaction among different floors, Centraal Beheer Office also creates horizontal visual connections among different working areas. For this, Herman Hertzberger removed walls and columns on corner side. In the excursion with TU Delft students, Hertzberger mentioned that he was inspired by disappearing window of Schröder House. This disappearing corner attributes not only to parallel visual connections but also to create the sense of spatial continuity in the building.

In planning this space, the structural system of the Centraal Beheer Office took a vital role. To explain, from the drawings, we can recognize that the position of column strongly affects to visual interactions between modules. Even though it is not explicitly divided by wall, the existence/nonexistence of column on corner side sufficiently influence the feeling of spatial openness.

Therefore, it would be able to say that the structural system of Centraal Beheer Office is taking an essential role in creating social interaction in the building. And moreover, this proves how the structural system and spatial quality of the building could actively interact each other.

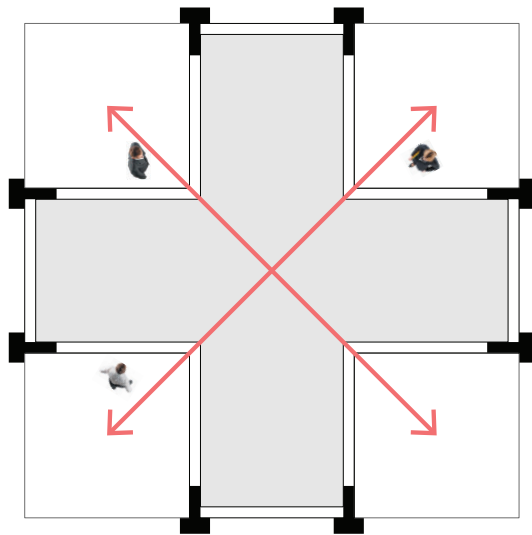


Fig.2.4.41 Herman Hertzberger planned to remove every corner side of modules to create horizontal visual connections between users (J.Lim, 2017)



Fig 4.2.17 Herman Hertzberger mentioned that he was inspired by 'disappearing window' of Rietveld's Schröder House, source from <http://www.remon-line.com/rieteveld-schroder-house-dutch-modernism-1924/>

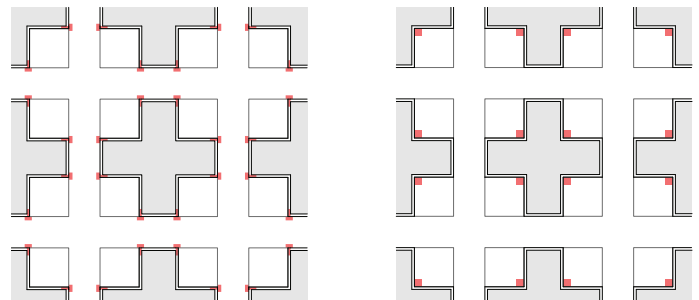


Fig.2.4.42 plan- left : current column system / right : what if columns placed on corner side (J.Lim, 2017)

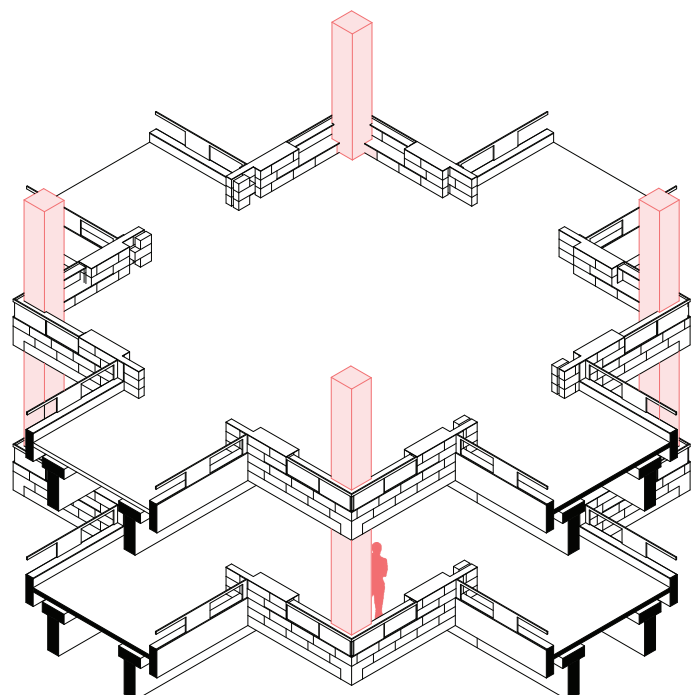
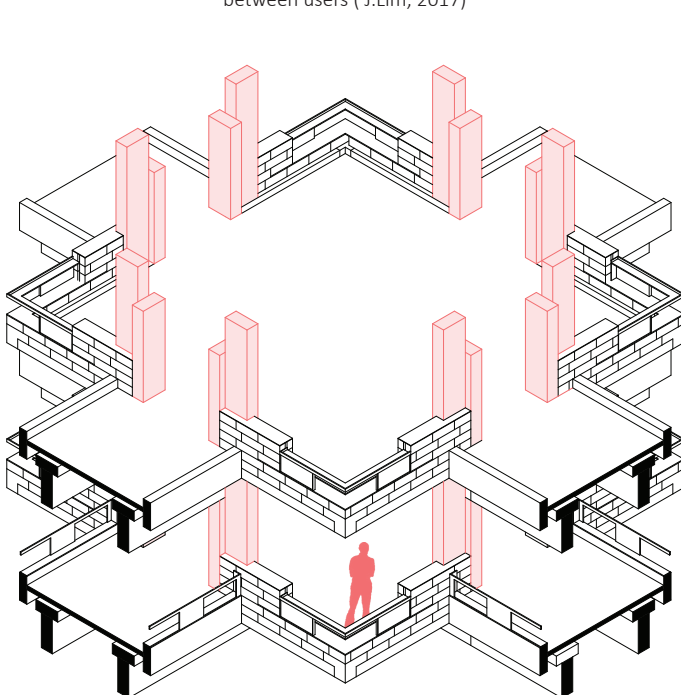


Fig.2.4.43 What if we change the column arrangement of the building? : by comparing two 3D drawings, it is evident that the location of columns strongly influences the sense of horizontal visual connection in the building. In this regards, the structural system of the building could also be regarded as one of design methodologies to create social interaction in Centraal Beheer Office. (J.Lim, 2017)

How does the vertical social interaction appear in Centraal Beheer Office?

The void space between each module creates dynamic vertical visual connections in Centraal Beheer Office. These interactions make people more comfortable to see each other on the upper or lower floor. By this means, it also eliminates the boundaries between each of individual cells. Moreover, these vertical interactions create attractive community area in the building. Besides, with natural skylight and friendly atmosphere, it is easier to allow people to gather in this space, and form this area as small semi-public atrium space.

On the other hand, this spatial design also could make people see others regardless of their wills, so it might cause the users to be watched by anonymous people. Having one's own place would be one of the essential problems of individuals, especially in the working place. Therefore, we can think of that the high quality of the visual connection has to be harmonized with the guarantee of the privacy of users.

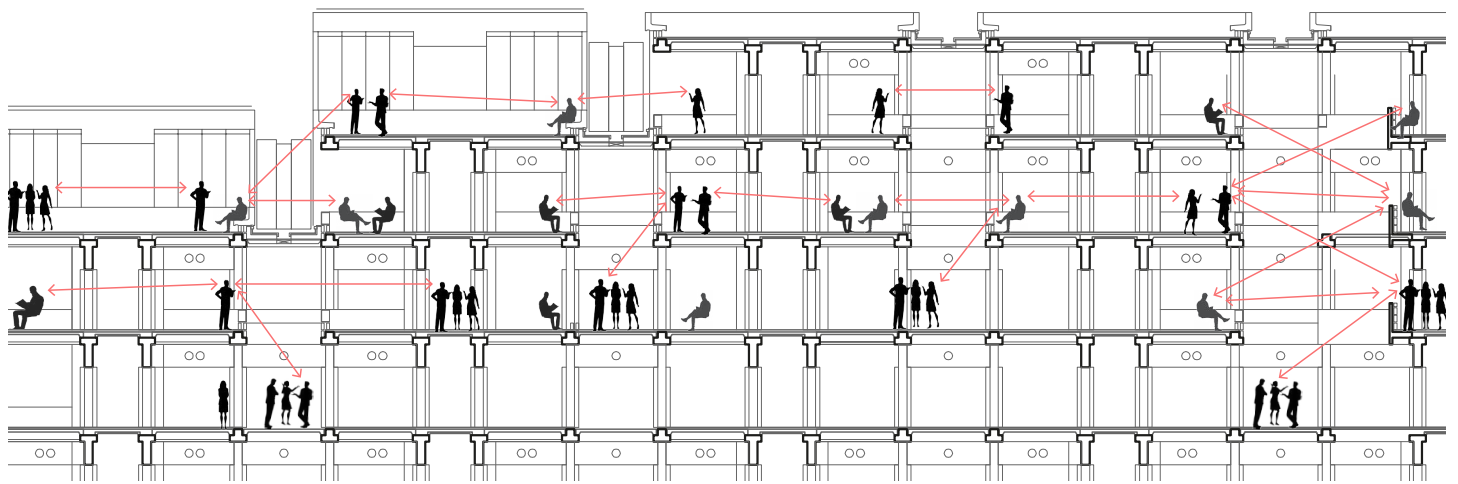


Fig.2.4.44 Sight interaction in section view (M.Wang, 2017)



Fig.2.4.45-1 1 public unit (meeting)
3 personal unit
14 people
(M.Wang, 2017)

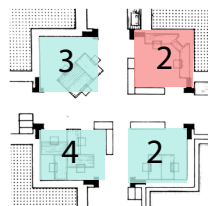


Fig.2.4.45-2 2 public unit
(meeting + relaxing)
2 personal unit
10 people
(M.Wang, 2017)

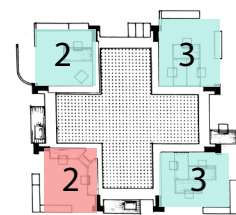


Fig.2.4.45-3 2 public unit
(meeting + relaxing)
2 personal unit
10 people
(M.Wang, 2017)

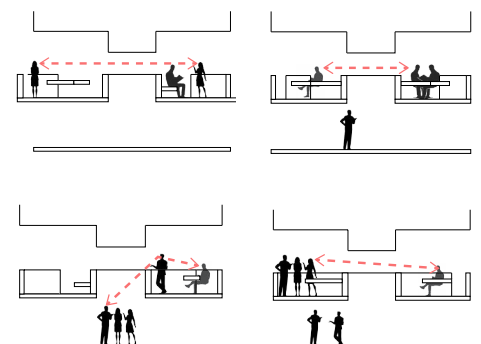
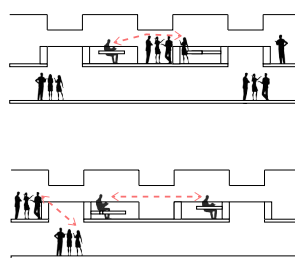
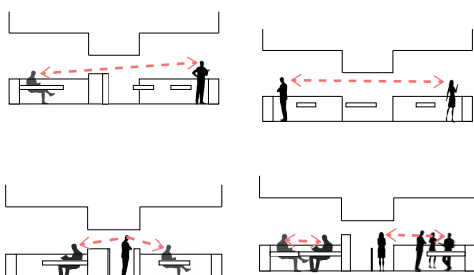


Fig.2.4.46 Sight interaction zoom in on section (M.Wang, 2017)

Space - Conclusion

In this chapter, we explored the limitations and opportunities of the spatial flexibility of Centraal Beheer Office. To perform more precise research, we applied the research frame we set in the former chapter: Configurative Idea, Co-Determination, Integration. The results of analyze are stated below.

1. Configurative Idea

Based on the Configurative Idea, Centraal Beheer Office present repetitive spatial organization. This repetitive design help users to experience unexpected spatial quality from the building. This was because it brought the spatial rhythm of light/dark, high/low, and also create the difference between 2-3 dimensional width.

On the other hand, this repetitive spatial organization also caused the loss of several spatial qualities. For example, the idea of decentralized space realized as labyrinthian space. Also, , obsession with grid system missed spatial possibilities such as broader inner street, the variation of various types of modules.

2. Co-Determination

The idea of polyvalent space was the reaction from irresponsibly huge open space of Functionalism architecture. In other words, it was design-methodology to stimulate individual interpretation and make space that can belong to users.

However, we found that the module size was derived to support the behavior of 'working,' so it could be needed to rethink of the size of units when we want to apply new function into the building.

3. Integration

Centraal Beheer Office was initially planned to function as the urban backbone of the new center of Apeldoorn. However, because of exterior factors such as canceling of the previous urban plan, the building is now presenting isolation from its urban context.

Despite this isolated character, Centraal Beheer Office clearly shows considerate design methodology that creates gradual transitions of public-private and different hierarchies. Moreover, the horizontal/vertical visual connections are the precious spatial quality of the building. But it was also essential to balance between stimulating visual connections and ensuring users' privacy.

By these studies, we found that each of categories clearly presents not only the limitations that have to be improved but also the possibilities that have to be kept. But also at the same time, even though their characteristics are different, those limitations and possibilities are linked with the 'flexibility' that we defined in the former chapter. Therefore, it would be able to say that the building itself already has been implied the possibilities of 'change' and 'growth' from its beginning.

Surface

In this chapter we take a look at the unique rain drainage system, the facade window and the material of the whole building to find the answer of its architectural value and building technology value.

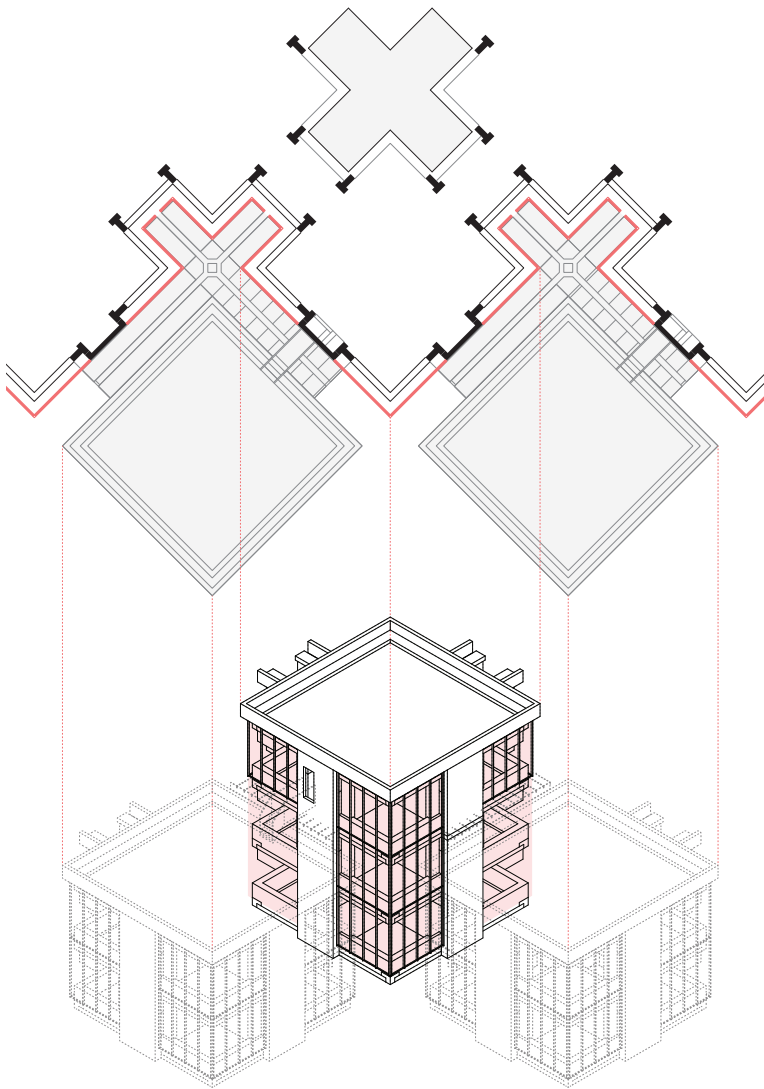


Fig.2.5.1 Interrelation of facade and structure system (J.Lim, 2017)

Exterior facade of Centraal Beheer Office How Herman Hertzberger designed exterior facade? What is the value of the facade design?

In his lecture, Herman Hertzberger mentioned that, while designing Centraal Beheer Office, the most important value to him was the quality of inner space such as the inner-street with full of natural sunlight. However, about the facade, he said that the exterior facade design of Centraal Beheer Office was derived from inner spatial/structure logic.

Concerning Hertzberger's idea of exterior facade design, the essential point of the facade design is neither proportion or material/color scheme; instead, the core of the facade design of Centraal Beheer Office would be 'how the building allows flexibility in their facade design.'

As mentioned in previous analyses, one of the main goals of Centraal Beheer Office aimed to encourage each user to interpret their space in their own ways. And the structure/spatial system of the building functions as the foundation for these individual interpretations.

With the relation to this, the exterior facade of the building is consists of fixed part and flexible part.

The 'fixed part' provides unity to the whole facade even though different infills and materials transform every flexible part. This design methodology prevents the building from becoming the chaotic combination of different expressions. And the 'flexible part' is the vacant portion that allows free infill on it. Changing facade is one of the most efficient methodologies that can directly improve the impression of the building. In this regards, the wide proportion of this flexible part of the facade provides the possibility to Centraal Beheer Office for efficient future transformation.

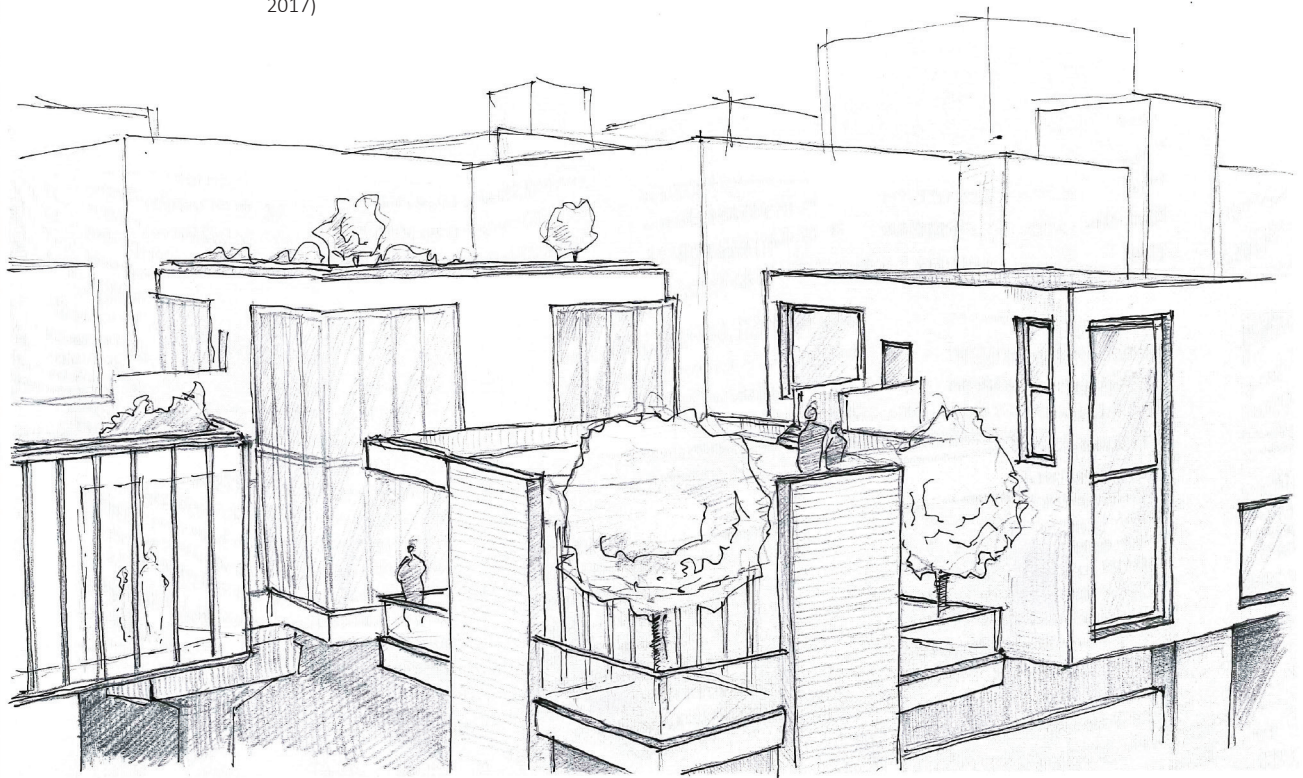


Fig.2.5.2 Future renovation possibility (J.Lim, 2017)

What is the limitation of exterior facade design? What are the values that missed by this?

As mentioned in the previous page, Herman Hertzberger said interior structure/space system defined the exterior facade. The preceding analysis already described the excessive repetitive design of interior space and their limitations. Unfortunately, the outer facade of Centraal Beheer Office is also following this internal spatial logic. Most of all, the facade of the building is showing extreme monotonous characteristic with the same pattern, materials, colors, etc. The problem is that, unlike interior space that could be changed by users, it is challenging for ordinary users to transform the exterior facade. Even there is no reason for them to improve outer facade. In this regard, it would be able to say that excessive monotonous facade design seems not related with Hertzberger's idea of individual interpretation, but instead, it points out how he did not care about facade design elaborately.

Moreover, this monotonous facade design is one of the reasons for less functionality and sustainability of the building. Every facade consists of same material and detail regardless of the existing context they are facing. For example, even though every direction is facing different sunlight, wind, and noise, the whole facade is too 'neutral' to respond to those different circumstances adequately. Users and their needs could be changed, but the surrounding and natural environments are not. Therefore, there is no reason to let the exterior facade to be 'neutral' without corresponding to their surroundings.

While criticizing 'Open Space' of Functionalism, Herman Hertzberger said that 'too neutral and flexible solution is linked to irresponsibility.' However, it seems that his comment could also be applied to his facade design.

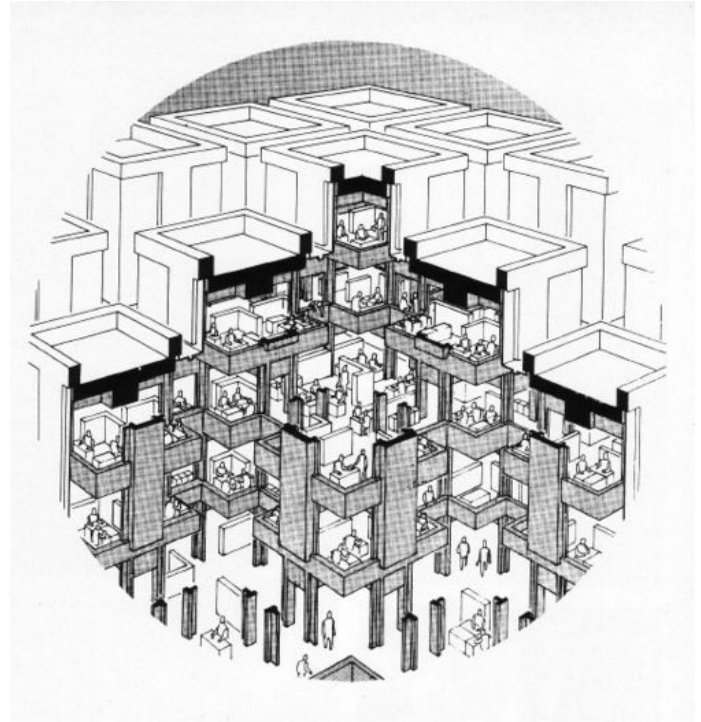


Fig.2.5.3 Herman Hertzberger's drawings proves that he was mainly focused on how to enhance the quality of interior space, not exterior design. (Dokumentatie Bouwtechniek 1971)



Fig.2.5.4 every facade shows excessive monotonous impression. (<http://larryspeck.com/2017/02/28/office-building-Centraal-beheer/>)

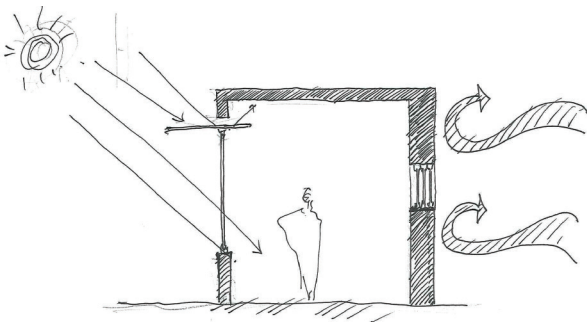


Fig.2.5.5 'specific' facade design that protects the building from various natural environment (J.Lim, 2017)

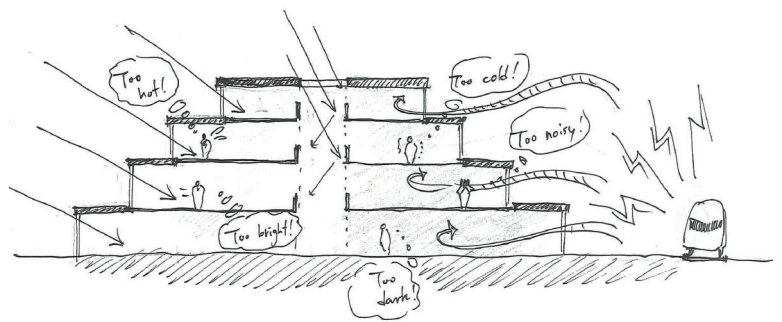


Fig.2.5.6 'neutral' facade of Centraal Beheer Office that protects the building from the various natural environment: It doesn't adequately respond to its surroundings, such as sunlight, north wind, noise from train rail, etc. (J.Lim, 2017)

Surface

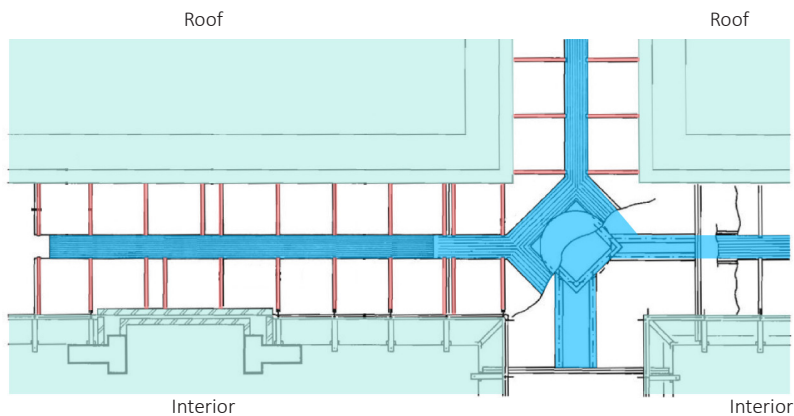


Fig.2.5.7 Rain drainage plan (M.Wang, 2017)

Is the original design able to provide a comfortable indoor environment with the relation to the water drainage system? What can we improve?

The water drainage system is visible from both interior and exterior and acts as ornaments of the building design. Its design intention made the gutter exposed to the indoor office and thus cause the cold bridge problem. What's more, the almost flat drainage surface causes the water difficult to runs down, and instead of water would gather together and increase the moisture for moss to grow.

The connection component for the above rain drainage helps to support the surface, as the beam mainly supports the gutter beneath it, this component can be removed. But it is entirely right angled which made the surface flat and difficult for water to run down to the gutter.

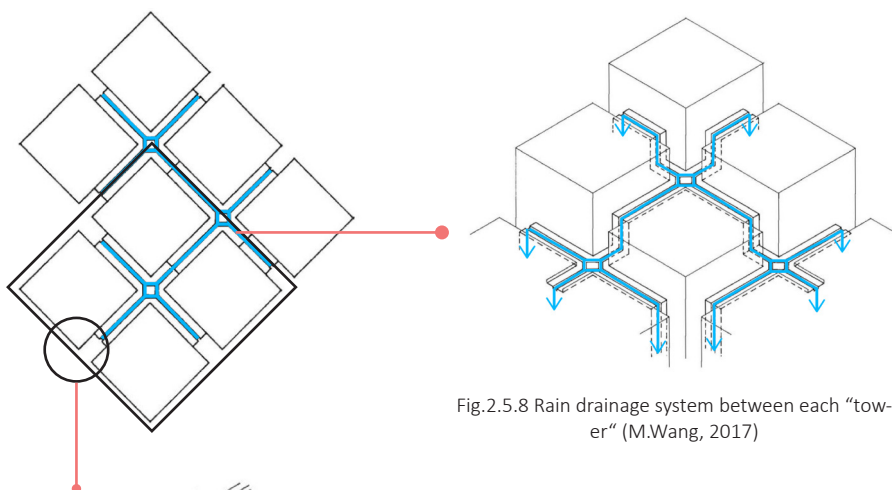


Fig.2.5.8 Rain drainage system between each "tower" (M.Wang, 2017)

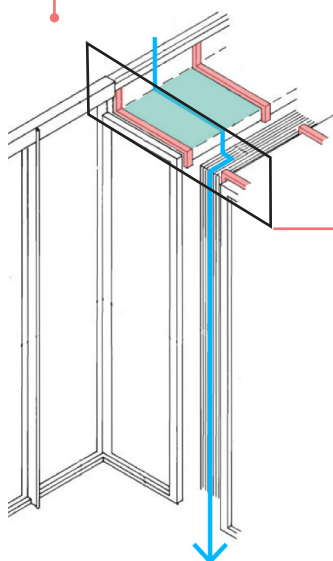


Fig.2.5.9 Rain drainage system with moss problem on top surface (M.Wang, 2017)

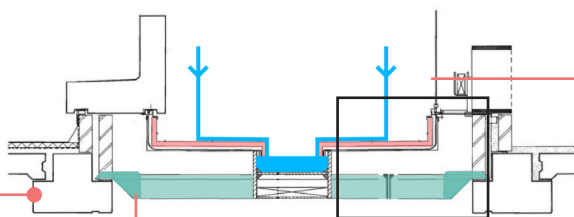


Fig.2.5.10 Supporting beam for rain gutter (M.Wang, 2017)

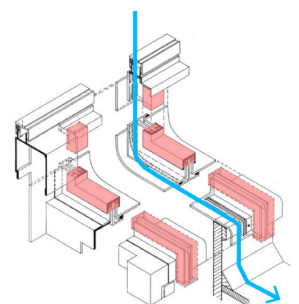


Fig.2.5.12 Rain drainage section detail

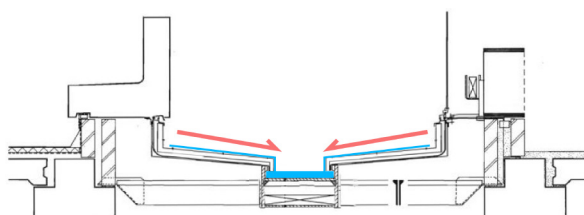


Fig.2.5.11 Renovation Possibility (M.Wang, 2017)

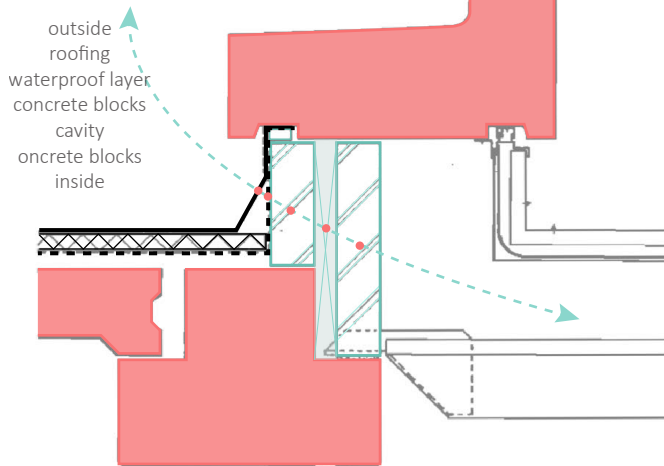
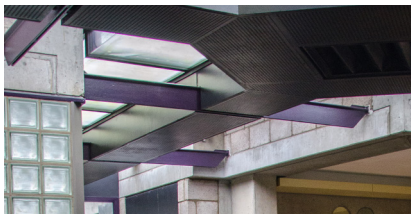
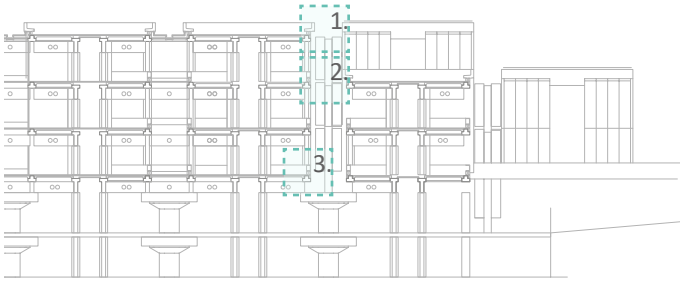


Fig.2.5.15-1 Detail (Van Pelt, 2017)

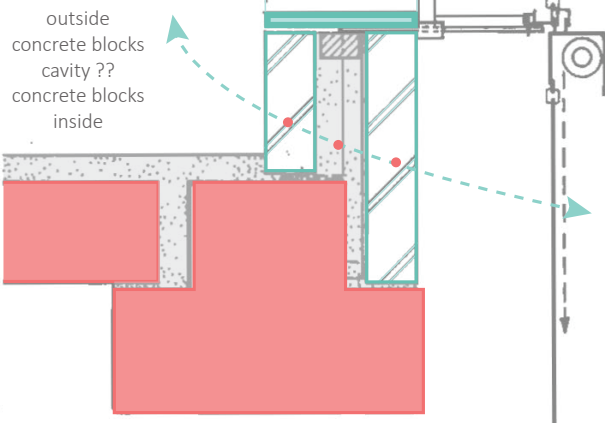


Fig.2.5.15-2 Detail (Van Pelt, 2017)

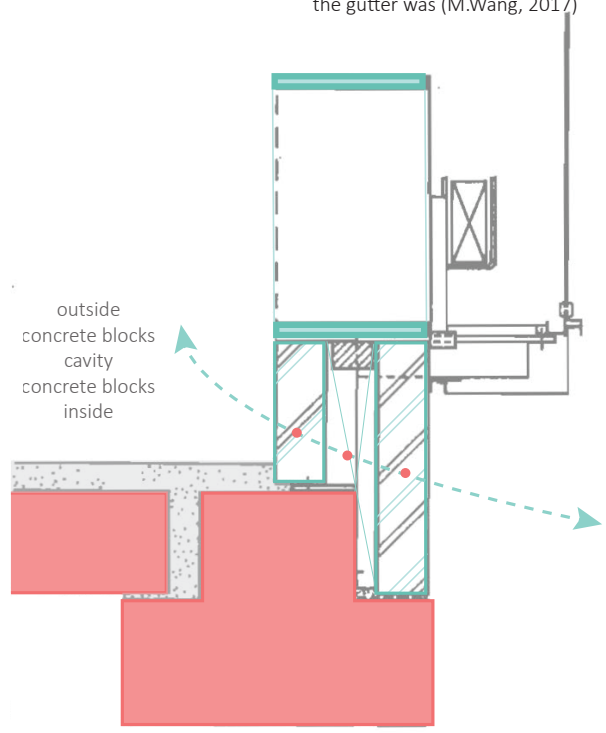


Fig.2.5.15-3 Detail (Van Pelt, 2017)



Fig.2.5.12 Moss on the higher drainage gutter surface, and some sign of corrosion on the lower gutter. (M.Wang, 2017)



Fig.2.5.13 Look from interior, connection gutter where rain runs from higher "tower" to a lower one. Delicate detail design, but easy to broken with leaking problem. (M.Wang, 2017)



Fig.2.5.14 Look from interior, as the drainage system is designed translucent for where skylight comes in, moss covered some light and the gutter was (M.Wang, 2017)

Surface

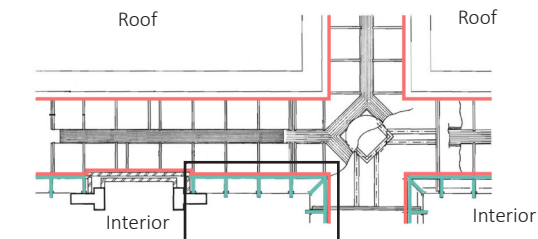


Fig.2.5.16 Roof plan
(Bouwkundigontwerp.Dokumentatie bouwtechniek.1971)

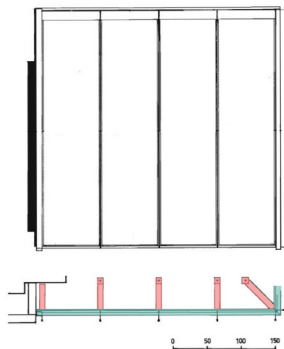
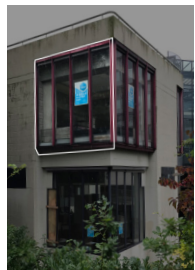


Fig.2.5.18 Facade window frame
(Bouwkundigontwerp.Dokumentatie bouwtechniek.1971)



Fig.2.5.19 From the picture we can see the moss on the frame and also on the interior facade which means the facade is not well-sealed to prevent water get in.(M.Wang,2017)

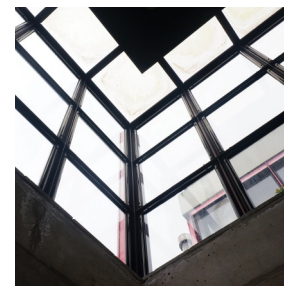


Fig.2.5.20 From some special tower, we can see the clear sign of leaking, also the flat glass roof make water difficult to run away thus cause the problem of moss.(M.Wang,2017)

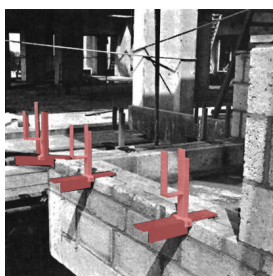


Fig.2.5.21-1 Construction photo

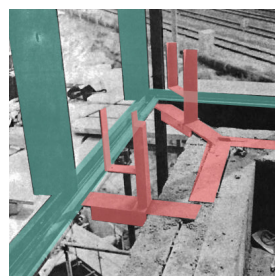


Fig.2.5.21-2 Construction photo

The window frame is attached to the concrete facade and it is clear that we can remove them easily. There is no thermal isolation between the frame, the connecting components and the facade, what's more the connecting also hold the heater, which means it has a more drastic temperature change and easy to be damaged.



Fig.2.5.21-3 Construction photo

The upper part of the frame is attached to the roof without thermal insulation.

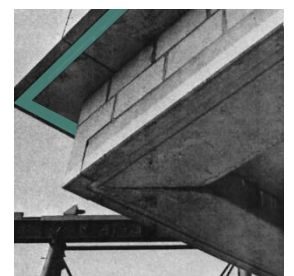


Fig.2.5.21-4 Construction photo

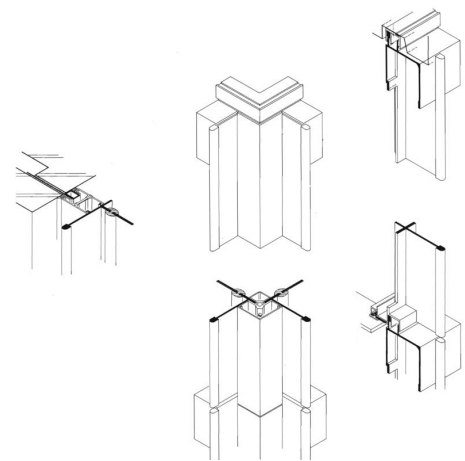
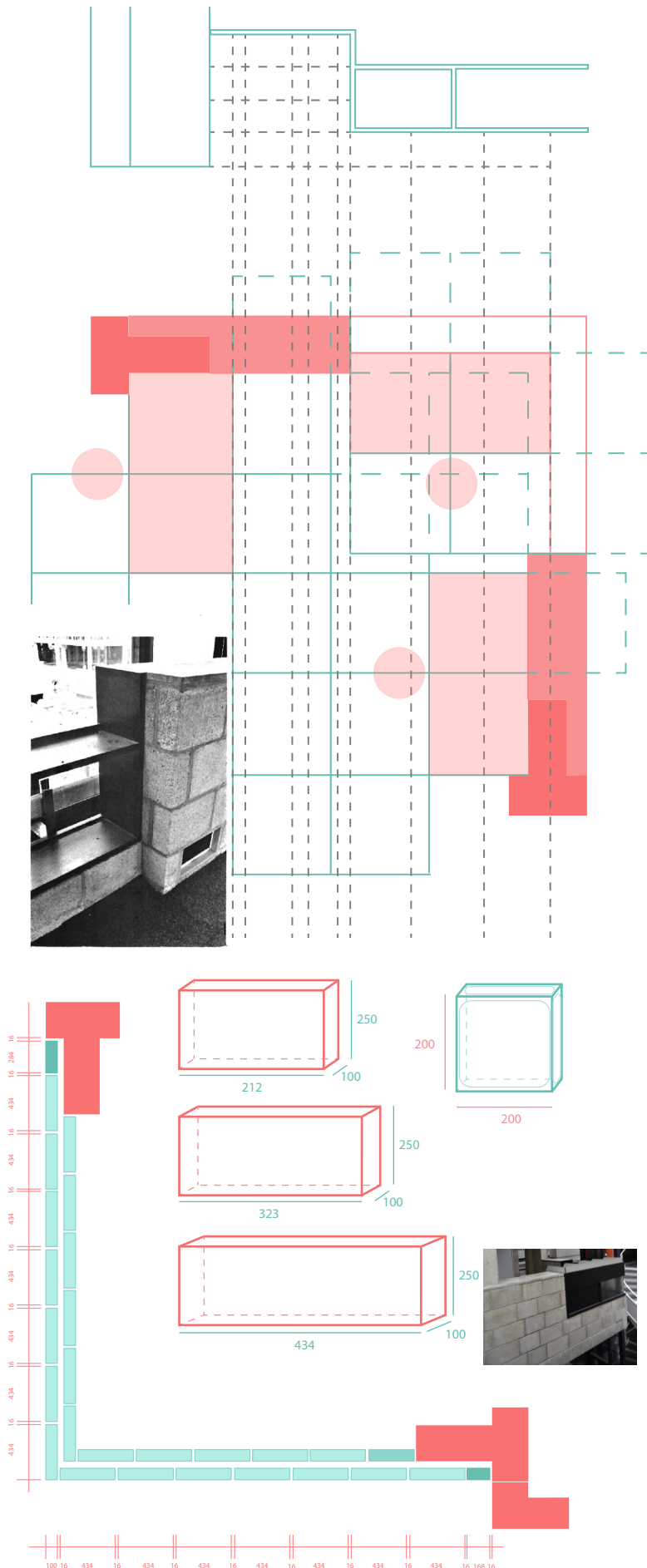


Fig.2.5.17 Window detail: single-layer without thermal insulation
(Bouwkundigontwerp.Dokumentatie bouwtechniek.1971)

Is the original window design able to provide a comfortable indoor environment? What can we improve?

The original design used single-layer window without thermal insulation can cause noticeable damage to the interior facade (leaking, moss). But on the other hand, the window frame is proved to be removable and thus indicated a future possibility.



What is the influence of using modularity on the spatial design?

Hertzberger used a lot of standard modules in his design of the Centraal Beheer building. And it would make sense that all the dimensions of these modules are related to each other. And if that is the case, then the smallest module would be the starting point for the rest of the dimensions.

The smallest module is the concrete block, But if we overlay the grid of these stones over the floorplan, they don't align. The dimensions of the floor space are not derived from the size of these blocks, only the size of the black wooden furniture in the parapets is related to these blocks, as the height of these is divided by the height of the blocks.

All these blocks aren't the same size. It looks like a monotonous whole, but this is a reality. There are one standard size and a few exceptions.

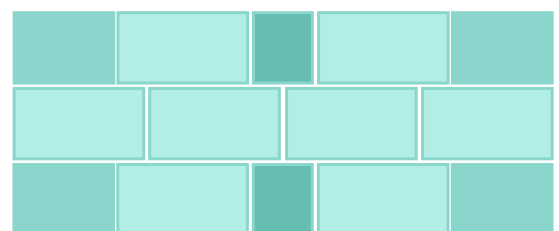
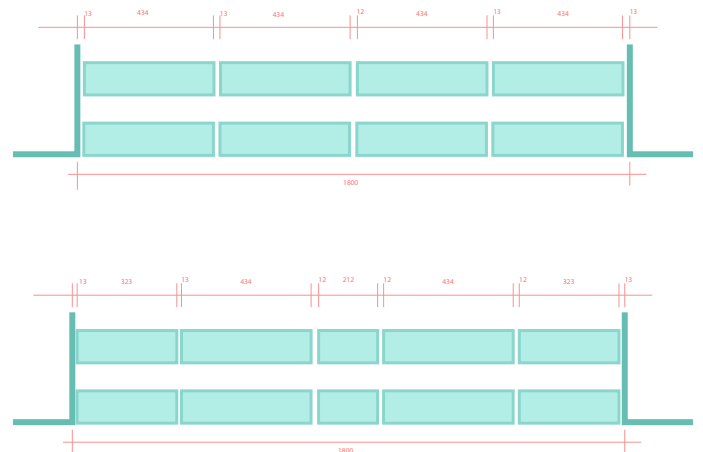


Fig.2.5.22 Concrete blocks analysis (Van Pelt, 2017)



Fig.2.5.23-1(Van Pelt, 2017)

-  perspex
semi-translucent
-  gutter
purple
-  steal beams
purple
-  aluminum ducts
glossy
-  glass blocks
semi-translucent
-  smooth concrete
grey
-  glass blocks
translucent
-  wood
black
-  glass
translucent

What is the influence of the indoor materials on the spatial atmosphere and the flexibility of the design?

The original color scheme of the inner streets is created by the raw colors of the materials and three additional colors, white, black and aubergine. Hertzberger wanted to recreate a real street even with paving tiles inside and a, as the Romans would call it “impluvium” that collects real rain. And when it rains very hard, the streets won’t be flooded, but this sometimes overflows.¹

It was Hertzberger’s idea to offer the workers a raw structure and that these people should make it their own. This results in a building that feels like an empty cave when the people left. The rough concrete and the basic tree colors lead to a boring and meaningless building. The raw colors make it very dark inside, and the (semi)translucent glass and perspex are not really helping in creating an open and spatial experience. They are acting on the line between open and closed, although in this building they enclose the space more than we think was desired.

A lot of structuralistic ideas are recognizable in the use of materials. The ideas of co-determination with flexible space, polyvalent space and the growth and change of the building. The idea of integration between social and built environment is visible in the inner street, Hertzberger recreates meeting place just like you can find them outside.



Fig.2.5.23-2(Van Pelt, 2017)

-  carpeting
red/brown
-  rough concrete
grey
-  white
-  paving tiles
grey
-  steel railing
white



Fig.2.5.23-3(Van Pelt, 2017)

-  concrete
white
-  concrete
grey
-  glass blocks
semi-translucent



really street like materials, which users have to personalize



What is the influence of the materials on the spatial atmosphere and the flexibility of the design?

As we start looking more towards the edges of the building can we find a more changed atmosphere? The users of the building have been changing into a more personal space by adding colors like the painted yellow concrete construction elements.

The restaurant has always been more intimate, not only due to the play with height different and bigger/smaller spaces but also in materialization. There is a warmer wooden floor which gives the space a more comfortable feeling.

- light fixtures white 
- acoustic ceiling white 
- smooth concrete grey 
- smooth concrete yellow 
- glass translucent 
- wood black 
- rough concrete grey 
- carpeting grey 
- smooth concrete grey 
- rough concrete grey 
- perforated steel grey 
- wood black 
- steel purple 
- wood brown / yellow 



Fig.2.5.23-4 (Van Pelt, 2017)



Fig.2.5.23-5 (Van Pelt, 2017)



Fig.2.5.23-6 (Van Pelt, 2017)

Surface



Fig.2.5.24-1 (M.Wang, 2017)



Fig.2.5.24-2 (M.Wang, 2017)



Fig.2.5.24-3 (M.Wang, 2017)



Fig.2.5.24-4 (M.Wang, 2017)



Fig.2.5.24-5 (M.Wang, 2017)

Original design material texture



Fig.2.5.24-6 (M.Wang, 2017)

Original color



Later add-on color



What is the idea of the interior color scheme of the original design? Is Herman Hertzberger also encourage the later renovation?

In the original design, the building is left only the color of the material itself to encourage a further interpretation of the user. But the later renovation seemed to misunderstand this intention, and color the column and beams with bright colors. This renovation strategy works against with the intention to let the user decorate their space with their personal idea and instead give the interior space a uniform looking again, which, lower the space experience.

Photos of the renovation project later (M.Wang, 2017)



Fig.2.5.24-7 (M.Wang, 2017)



Fig.2.5.24-8 (M.Wang, 2017)



Fig.2.5.24-9 (M.Wang, 2017)

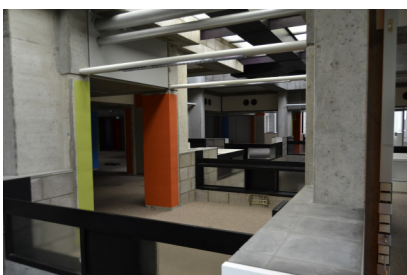


Fig.2.5.24-10 (M.Wang, 2017)



Fig.2.5.24-11 (M.Wang, 2017)



Fig.2.5.24-12 (M.Wang, 2017)

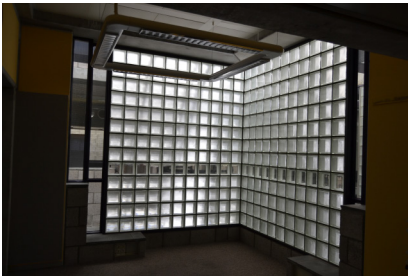


Fig.2.5.24-13 (M.Wang, 2017)



Fig.2.5.24-14 (M.Wang, 2017)



Fig.2.5.24-15 (M.Wang, 2017)



Fig.2.5.24-16 (M.Wang, 2017)

Original material transparency (M.Wang, 2017)

What is the relationship between the material transparency and space function?

It is clear that materials like glass blocks in the atrium help to hide the space behind it, creating a privacy atmosphere there. At the same time, its detail also indicates that there is a possibility for people sits behind the glass brick wall to see what's happening in the atrium. It is due to the architect's design that a line of transparent glass block at the height of sitting man's view. Therefore, we can see that Herman Hertzberger intended to relate the material transparency with privacy and public apart from function requirements.



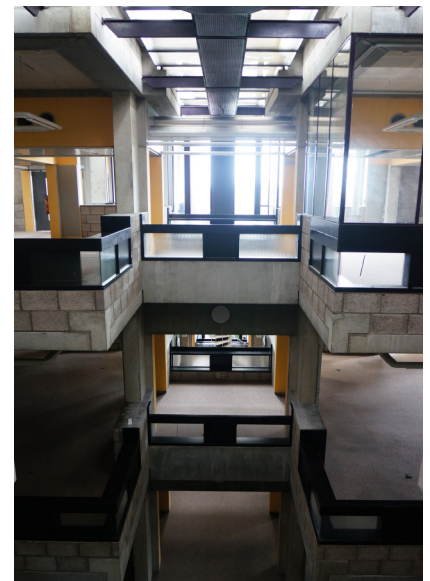
The comparison between non-transparent to fully open space in theatrium

Fig.2.5.24-17 (M.Wang, 2017)



The comparison between non-transparent to fully open space in theatrium

Fig.2.5.24-18 (M.Wang, 2017)



Office area, glass window unit on the right and a full-open unit on the left (M.Wang, 2017)

Fig.2.5.24-19 (M.Wang, 2017)

Surface - Conclusion

The Skin of the building.

What can we do to make it fit into a modern function?

The rain drainage system not only has a real function and also acts as an inseparable part of the design value. So here is the dilemma, by only changing the gutter's slope we can solve the ponding problem but still, the cold bridge problem cannot be fixed as the designer want to expose the gutter to everyone. The future solution might be a fully renovated rain system and redesign of every single component to make it fit the technical requirement and also keep its aesthetical value.

The window frame proved to be removable and thus challenge us to either add thermal insulation to the existing facade window or replace it with a new one.

The surface of the building:

There are actually two parts of the research: 1. What were Herman Hertzberger's original design and intention. 2 What was the later renovation about and its value.

1 Original design

The result turns to be cheerful as we can see in the stuff chapter, the intended "blank" space successfully encourage people who worked here to decorate their own space

2 Later renovation

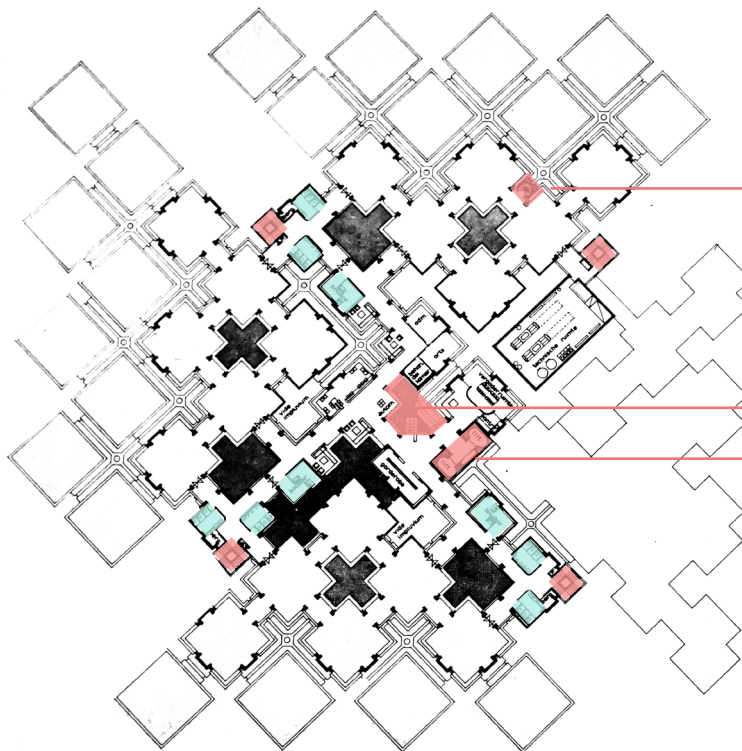
During the excursion, we found that some part of the building has been renovated. The columns and beams were painted with bright colors. But we start to think: was the renovation really follow the idea of Herman Hertzberger? It seemed that the intention to left the space empty to encourage a future possibility works here but we the renovation itself is not really qualified to meet the space quality. The renovation project right now provides us a sharp contradiction with the original design.

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Service

In this chapter, the heating, ventilation and lighting system are discussed to evaluate its efficiency for indoor environment and the dilemma we are facing right now. We want to know what is movable and what is fixed to see where is the limitation of technology renovation.

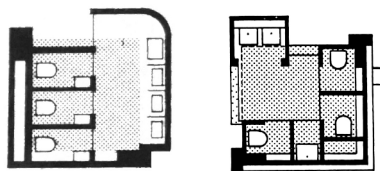
Service - Water drainage system



Water - related service elements
(toilets, baths, sinks)

Transportation installations
(escalator, lift)

Fig.2.6.1 (M.Wang, 2017)



Floor Plan Detail: 3 Toilets in 1 Unit
(HNI.2017)



Fig.2.6.2-1 Staircases in the office (M. Wang, 2017)

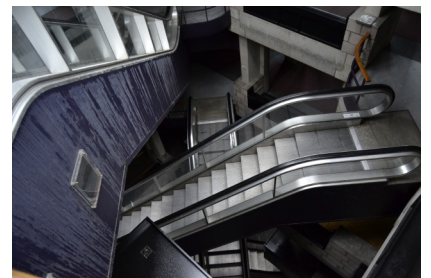


Fig.2.6.2-2 Escalator in the main atrium
(M. Wang, 2017)

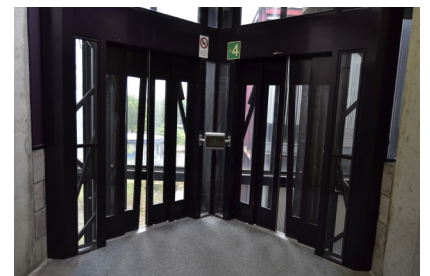


Fig.2.6.2-3
Lift (M. Wang, 2017)

What is fixed and impossible to move in the plan for water drainage and transportation installations?

Water - related service elements:

The toilet floor is higher than the standard concrete floor and uses two wood walls to have an enclosure.

The staircase near each entrance and also there are staircases at the end of each office for people go upstairs.

The toilet is removable because of the original floor design and also as concrete blocks do not fully enclose it. Therefore, those facts made it easier to do the dismantling work to toilets.

The staircases are all made of concrete blocks and impossible to move freely due to the material and space design intention.

Transport installations:

The following transport facilities are projected in the building

A: 4 escalators

B: 2 person lifts: special shape of the cages with lots of glass

C: 1 freight lift

D: 1 service lift

E: in one of the voids, a document lift is projected with automatic request and discharge

In order to prevent roof construction at the request of the architect, the passenger lifts and the freight lift are hydraulically operated. This opens the possibility of projecting the elevator machine room below.

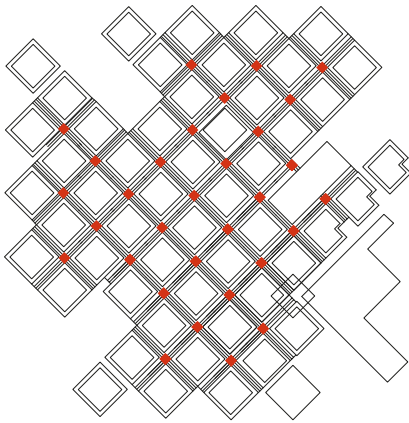


Fig. 2.6.3 Mechanical ventilation system on roof plan (the ventilator can be increased to a maximum to 31 to have a better indoor climate) (M.Wang, 2017)

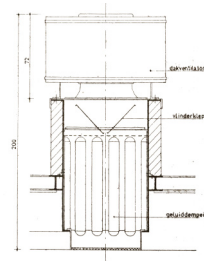


Fig. 2.6.4-1 Mechanical ventilator (HNI.2017)

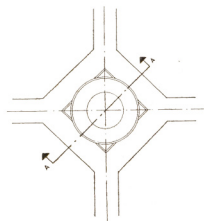


Fig. 2.6.4-2 Mechanical ventilator (HNI.2017)

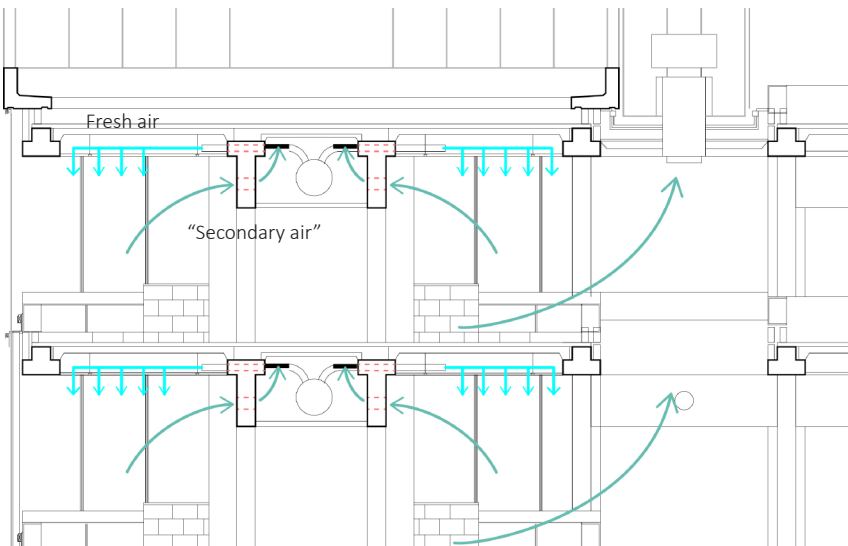


Fig. 2.6.5 Mechanical ventilation system and air move (M.Wang, 2017)

Is the original design able to provide a comfortable air environment? What can we improve?

The ventilation machine on the roof and the second ventilation system for every single unit serve for the whole building.

There is less than 15 mechanical ventilator on the roof in total in the original design, due to the floor height and indoor climate and the building regulations which improved, later on, it is difficult for the roof ventilator to meet the requirement. The mechanical ventilator on the roof is integrated together with the rain drainage system, made itself also an ornament for the building.

This system in itself did not appear to raise sufficient capacity. The capacity is increased using recirculation of "secondary air" via an inductor unit, located in the conduit space between the main beams.



Fig. 2.6.6-1 Ventilator on the roof. We can see there are moss on its surface, which means the outdoor environment is very moist. (M.Wang, 2017)



Fig. 2.6.6-2 Here we can see how the rain gutter and ventilator are integrated together. (M.Wang, 2017)



Fig. 2.6.6-3 Is the original design able to provide a comfortable air environment? What can we improve? (M.Wang, 2017)

Service - Heating system

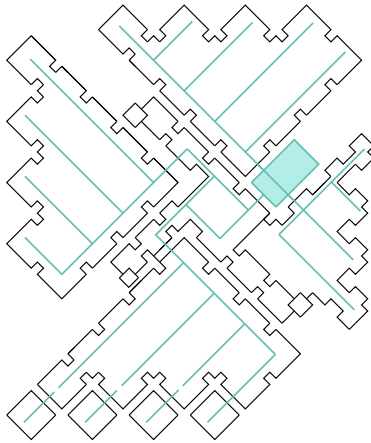


Fig.2.6.7 Heating Center
(M.Wang, 2017)

Is the heating system well-designed? What can we improve?

There are three ways of heating in this building:

- the freinger ceiling system has water pipe in its aluminum ceiling panel which can be filled with warm/ cold water to heat/cool the air near the ceiling.
- the ventilation will pipe in cold/ warm air in different season
- the heater

When designing the air conditioner in the office islands, it became clear that the flexibility of the office is very useful if a ceiling system was used, i.e., both heating and cooling, as ceiling ventilation, comparing the different ceiling systems showed that it would be a problem to get the required capacity. In the end, the Freger system was chosen with a few extensions. This ceiling consists of perforated aluminum panels, which are clamped for pipes where winter is hot water and summer cold water. Consequently, the panels become hot and cold respectively. The (primary) air for the ventilation will be hot in the winter and cold during summer.



Fig.2.6.8 The concrete block made the building hard to heat during winter and slow to radiate during summer.
(M.Wang, 2017)



Fig.2.6.9 Heater exposed in the atrium. (M.Wang, 2017)



Fig.2.6.10
Left:
Heating tubes between different building blocks (picture taken in the interior "street") (M.Wang, 2017)
Right:
Heating tubes within one building block (M.Wang, 2017)



Fig.2.6.11
Left:
Heater hide behind the parapet (M.Wang, 2017)
Right:
Heater hide behind the parapet (M.Wang, 2017)



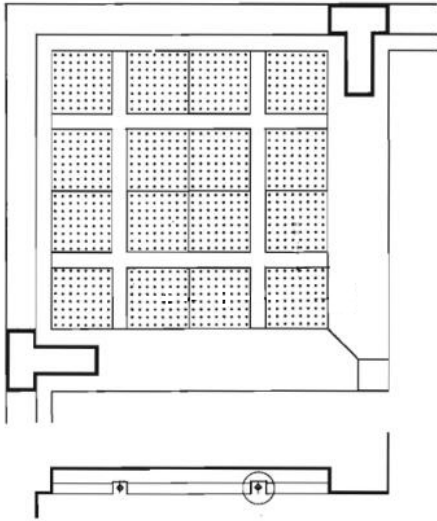


Fig.2.6.12 Freger ceiling system (Bouwkundigontwerp.1971)

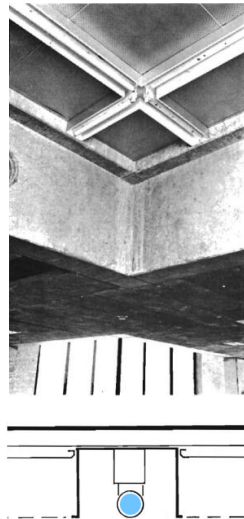


Fig.2.6.13 Pipe detail in the aluminium board (Bouwkundigontwerp.Dokumentatie bouwtechniek.1971)



Ceiling system now
The original freger system is removed because of impractical reason.

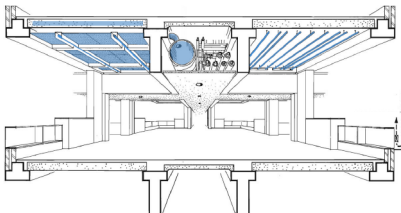


Fig.2.6.14 Cooling system during summer (M.Wang, 2017)

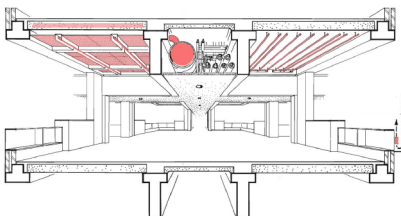


Fig.2.6.15 Heating system during winter (M.Wang, 2017)

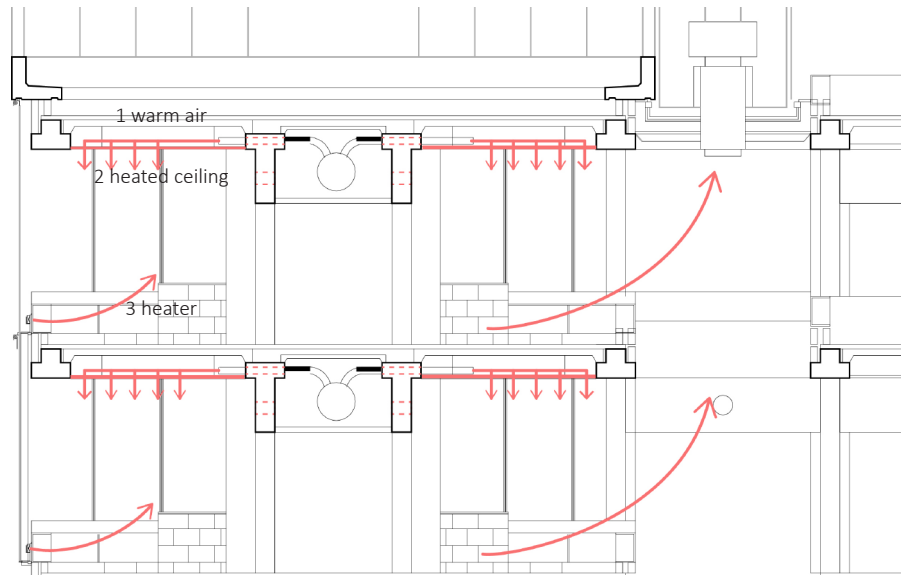


Fig.2.6.16 Heating system during winter (M.Wang, 2017)

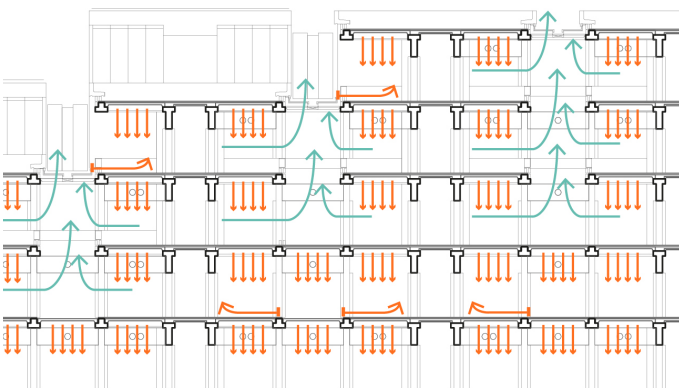


Fig.2.6.17 Ventilation during winter (M.Wang, 2017)

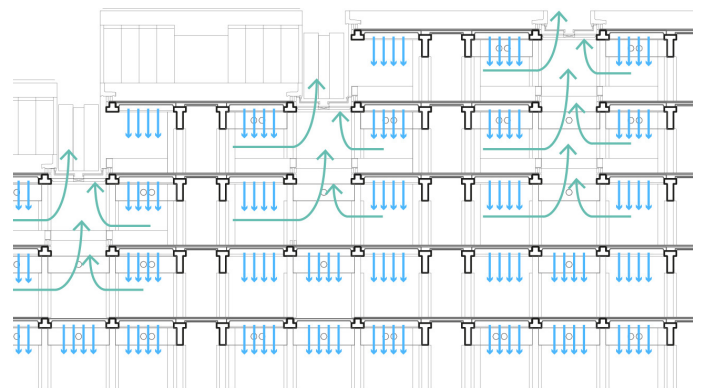


Fig.2.6.18 Ventilation during summer (M.Wang, 2017)

Service - Lighting system

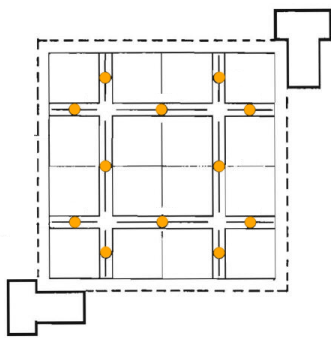


Fig.2.6.19 Original ceiling design
(Dokumentatie bouwtechniek.1971)

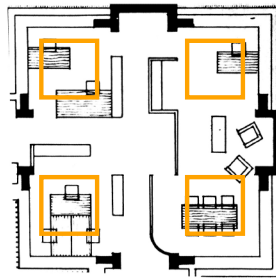


Fig.2.6.20 Present situation
(Dokumentatie bouwtechniek.1971)



Fig.2.6.21
Lamp for a standard quater
(M.Wang, 2017)

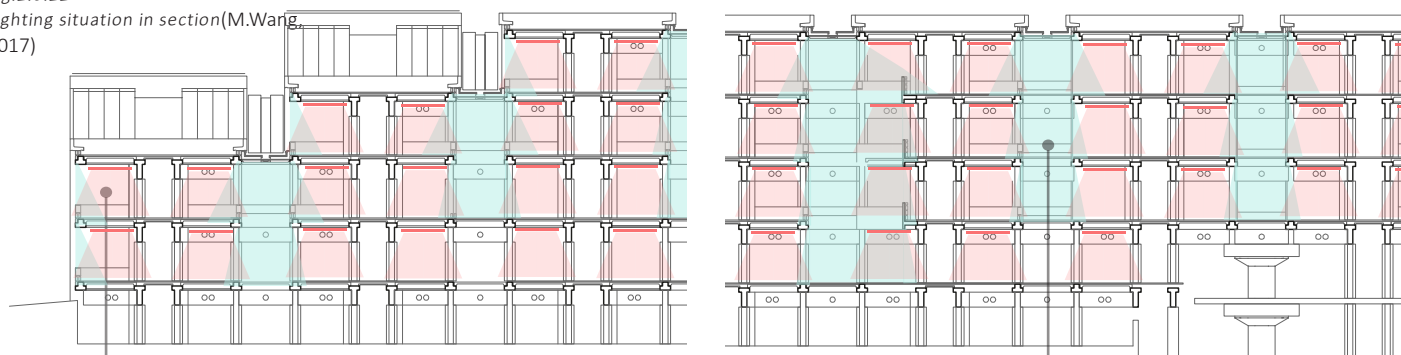
Is there enough natural light due to the special space design? Is the light arrangement relates to the space quality?

The amount of light should be between 500 and 1000 lux for office spaces, required by Dutch laws in those days. This range is so broad because there are a lot of different factors about the types of work, the light, the age of the people, contrast, etc. They chose a basic lighting of 400 lux, in the lowered Frenger ceiling, with the possibility to bring this up to 800 lux with table lights or extra lights in the ceiling.”(Dokumentatie bouwtechniek 1971 p3-6)
The lighting system was renovated as the building regulation

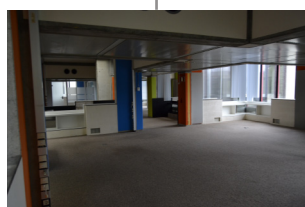
changed over over time, and now we can see that it was replaced by a common lamp, as the light requirement increase.

In this regards, the whole building’s electricity was shut down when we visited which gave us an opportunity to observe the natural light effect in its amazing interior space. The interior street and the office near the facade has an excellent natural light environment. Due to the ventilation design now, it is impossible to install the lamp in the middle of each module plan but several lamps for every unit. The circulation space, as a result, is a bit darker and its lower floor height made it not a perfect place for people to stop and have a small chat.

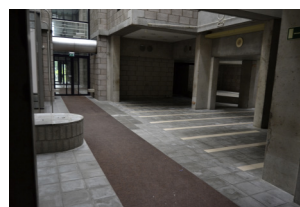
Fig.2.6.22
Lighting situation in section(M.Wang, 2017)



Office module near facade
(M.Wang 2017)



Office module near facade
(M.Wang 2017)



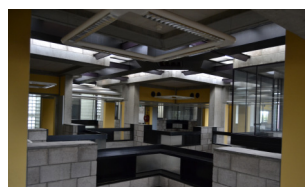
“Street” in the building center on
its “bottom” floor (2 f)
(M.Wang 2017)



3rd floor
Standing in the skylight, you can
see the sharp contrast of the office
block which need 100% artificial
light (M.Wang 2017)



Lamp for space without roof (exception
space) (M.Wang 2017)



Top floor standard office block
(M.Wang 2017)

Artificial Light Natural Light

Is there enough natural light due to the special space design? Is the light arrangement relates to the space quality?

As we can see the ventilation and rain drainage system plays a crucial part in Herman Hertzberger's idea, and it's impossible to put aside its architectural value. The original heating, ventilation, and lighting system were already proved unqualified, and the later renovation already changes the condition to fit the regulations nowadays. So for the ventilation system, we need to keep it the same in a way and try to solve its technical limitation, but for the water drainage system and heating, and lighting, they only serve as the service function, so we can try to make a further step to have a fully new system.

Reference

1. Hertzberger, H., & TH Delft, Afdeling der Bouwkunde. Vakgroep Bouwmethodiek. (1971). Kantoorgebouw/Centraal beheer/apeldoorn: Bouwkundigontwerp(Dokumentatie bouwtechniek). Delft: TH Delft, Afdeling der Bouwkunde.

Stuff

In this chapter, we will take a look at the stuff which was there when the building was in used and the stuff which has an identical meaning to the whole design.



Fig 2.7.1 pond with lots of green in the inner street (AHH Architects, 2016)



Fig 2.7.2 artworks in the Centraal street (AHH Architects, 2016)



Fig 2.7.3 phone booth in the inner street (AHH Architects, 2016)



Fig 2.7.4 artworks in the Centraal street (AHH Architects, 2016)



Fig 2.7.5 personal belongings in the offices (AHH Architects, 2016)

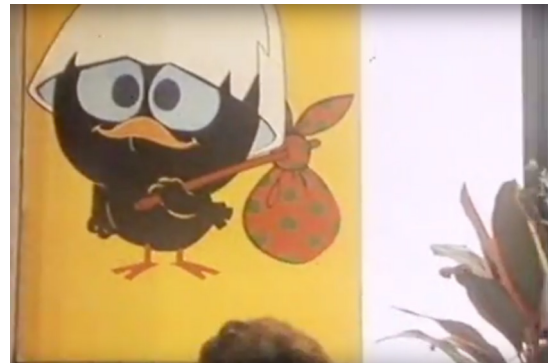


Fig 2.7.6 personal belongings in the offices (AHH Architects, 2016)

What was the original stuff that could be found in the building when it was still functioning and what was their influence on the space?

We see that the whole building is filled up with extra stuff. There are a lot of plants in the whole building, and there are artworks made by coworkers in the Centraal street. Even normal phone booths are placed in the inner street to make it look like a normal street. The offices are made personal by adding their own stuff like posters, plants or artworks.

Workpeople thought it was very bare and they tried to dress it up a bit by adding their personal stuff to make all these open spaces a little bit more intimate.

It was used just in the way Hertzberger intended. He wanted to make people make changes to the building and making it their own. This leads to lively and far from dull spaces. Even though the

architect designed every space, in the same way, it has still led to a very diverse landscape.

The ideas of co-determination and integration of the built with the social environment are clearly visible in this part. The idea of polyvalent space, growth, and change and social interaction is visible in all of these personal additions.

"I didn't expect how will the users use all the stuff. I had never imagined that the building, after only a few months would be obscured so completely.

People feel at home, because they have their personal stuff. "1

Stuff



Fig 2.7.7 original tables (Van Pelt, 2017)



Fig 2.7.8 wooden furniture (Van Pelt, 2017)

Fig 2.7.9 division walls (Van Pelt, 2017)



Fig 2.7.10 typical doors (Van Pelt, 2017)



Fig 2.7.11 typical ducts and shafts (Van Pelt, 2017)



What was the original stuff that was made especially for this place? What was their influence on the space?

The most eye-catching elements are the black wooden corner elements. The ducts are clearly visible going right through the open Centraal street space. All the doors in the building are made as a plane between two vertical tubes. Also, some freestanding division walls are made like this.

We can conclude that all these elements are contributing to Hertzberger's vision of the building. The black wooden furniture is a basic color and is perfect elements to encourage people to interact with each other. It offers high-quality spaces for this function. And when we look at the doors and division walls, we can conclude that these are the combination of an open plan ideal with the need to create private space. With these walls/doors Hertzberger creates private space without losing the visual con-

nection to the surrounding rooms.



Fig 2.7.12 balcony parapets (Van Pelt, 2017)



Fig 2.7.13 parapet design (Van Pelt, 2017)



Fig 2.7.14 thresholds on the roof terrace (Van Pelt, 2017)



Fig 2.7.15 flexible space halfway in the staircase (Van Pelt, 2017)

What were the designs Hertzberger used to create flexible space?

There are lots of 'tools or stuff' in this building designed by Hertzberger to encourage social interaction. The 'standard' ones between each square module and on the corners of the balconies. These parapets are modular designed and can be filled with different infills. They are there to encourage the staged meeting of people.

But even in smaller details, like the little extra space on the staircase, there is a place for people to have a short moment of social interaction or a place to put some plants or other personal stuff on the shelf.

There is something extra in almost every spot when there isn't another office function already. But there is a tension in the way it is designed. It was meant by Hertzberger to be used in every way the user wanted. But this resulted in a building that is (over)

designed into the smallest details. By providing so many options, the architects almost forces the inhabitants of the building to use them. Otherwise, it is just a waste of space.

Stuff - Conclusion

After researching the stuff in the building, we can come up with the following conclusion. Hertzberger's vision was that he provides an 'unfinished' building and that it is the task of the user to make it their own. And this is exactly what happened; the whole building was filled with personal belongings which made this building, although it is created out of standard modules, far from dull. But not just the user brought their own stuff, Hertzberger himself also filled the whole building with his own stuff. His influence can be found in every little detail, from the balcony designs to this little extra space on the stairs. There is a lot of not-functional space filled with his designs of interaction spaces, but if they are not used the way Hertzberger forced the users to use them, they will end up in being a waste of space. Because Hertzberger didn't just fill up left-over spaces with these design, but he specifically designed polyvalent space for his furniture.

Conclusion of Centraal Beheer Office Analysis

To summarize, each of 5S of Centraal Beheer Office showed their own spatial limitations and possibilities. Of course, they didn't always follow our research framework and research theme. Sometimes each frame was mingled each other, so it was difficult to divide them. For example, Service chapter even had no clear relation to not only our framework but also with the concept of

Flexibility. Although this reflection, we still attempted to perform our analysis to solve our research question, 'What are the possibilities and limitations of the spatial flexibility of the Centraal Beheer building?', and made a summary with the relation to this in the table below.

	Architectural analysis		Technical analysis
	Limitations	Possibilities	
Structure	Centraal Beheer Office is based on the underlying grid system, and this grid is the foundation of current polyvalent system. However, this polyvalent space consists of excessive repetition of the same size of 'module.' Moreover, it is doubtful whether the size of module is rightsized or not.	The whole skeleton system of the building can be divided into 'the main beam' that practically bearing the building load, and 'the secondary beam' that actually forming the polyvalent spatial system of the building. This division means that the most fundamental 'protoform' of the building is the underlying structural grid that consists of the main beams structure. It provides us the clue to apply 'the new polyvalent system' to the building.	The skeleton system of Centraal Beheer Office consists of various types of prefabricated components. By analysing which components are changeable or not, it is possible to make diverse spatial variation in the building. In this regard, the prefabricated system of Centraal Beheer Office attributes to the spatial flexibility of the building.
Space	<ul style="list-style-type: none"> - The idea of deCentralized space creates excessive labyrinthian space in the building. Moreover, the obsession with repetition spatial organization lose some spatial qualities such as more broaden inner street. - The most fundamental unit size was designed for 'working' behavior, so it could not be appropriate for other functions. - With the previous urban plan, Hertzberger intended his building's public space to be flexibly harmonized with the surroundings. However, because of the canceled urban plan and its function, the publicness of inner street and square is confined to the inside space of the building. 	<ul style="list-style-type: none"> - The repetitive spatial organization creates unexpected spatial qualities by being combined with the rhythm of high/low, light/dark, etc. - The spatial system is planned to allow individual interpretation from the beginning. And we can accommodate new functions more appropriately by changing the most fundamental elements size. - The smooth transition between public-private and between the hierarchies of the building allow users to flexibly setting the relationships of those factors. Moreover, active visual interaction in the building provides the sense of flexible spatial quality to users. 	
Surfass	The facade pattern and materials are creating the monotonous atmosphere of the building. Moreover, especially for the exterior facade, this excessive unified facade design is causing less sustainability and functionality of the building.	The exterior/interior facade of the building consists of fixed parts and wide proportion of vacant spaces. These spaces allow changing infills of the facade, such as window design, material usage. By transforming this changeable facade area, it is able to improve the spatial quality and atmosphere of the building more directly.	The main material of the facade is grey colored concrete block. Herman Hertzberger intentionally uses this material since he aimed to allow free individual interpretation into every facade of the building. In other words, he wanted to let users make these facades their own.
Service	It is essential to plan new insulation on the existing wall of the building. Where do we insert insulation, for example, in outside of walls or between them, could influence the spatial quality of the building.		<p>The building is presenting unsustainability since it is all built up by concrete without thermal insulation. Therefore, it is necessary to do renovation for those service parts.</p> <p>The ventilation and lighting system had been renovated already, but it seems they also should be modified in some parts.</p>
Stuff	Hertzberger thought that small amenities have to be neutral for intriguing users' own interpretation. However, it is not working sometimes because users even could not recognize why that stuff was designed.	The stuff is the most efficient and direct way for users to make the space as their own 'place.' Also, it enables for architects to create spatial qualities by simply placing small additional stuff such as additional stairs.	

As the further interpretation of this analysis, we purposed to investigate 'what are the reasons for these limitations' and 'what are the values of these possibilities.'

We thought the first reason for the limitation was the gap between Hertzberger's intention and the real outcome of his design. For example, his idea of the decentralized spatial organization actually appeared as excessive labyrinthian space. Also, this gap resulted because of difference between Hertzberger's expectation and users' actual way of using their space.

Moreover, it seemed that some architectural methodologies didn't efficient to create a good spatial quality of the building. For example, merely using same order/material and repeating same spatial organization caused not only excessive monotonous spatial feeling but also a lot of technical problems with the building.

However, regardless of these limitations, still there were the spatial possibilities that we should keep. First of all, most of those possibilities are presenting 'the open mind' of Centraal Beheer Office. For example, the design schemes of the building, such as structural system, prefabricated construction, spatial organization, the proportion of facade, smooth transition of different spaces, are the spatial possibilities on the underlying principle of 'individual interpretation.' Based on these possibilities, the building allowed various interpretation of the space, so that users could change or infill the building with their own needs and lifestyle. But also at the same time, the minimum regulation of the building combined those various interpretations into one building. Therefore, these possibilities were the reason why the building could satisfy individuality, plurality, and complementarity at the same time. In this aspects, Centraal Beheer Office realized the flexibility that we defined in the Structuralism architecture analysis. By this means, it would be able to say that, even though it is unsustainable in the technical aspect, the building could accomplish architectural sustainability.

Based on the analysis, one of our suggestion for further design work is 'returning to the origin.' As Structuralism architects explored 'primitive' to find the clue for the way to revitalize 'humanity value,' going back to the beginning and rethink of the fundamental underlying system of Centraal Beheer Office would provide us the hint to improve the spatial quality of the building. For example, by tracing the initial idea of 'polyvalent space' of Hertzberger and analyzing the most fundamental structural system, it would be able to propose 'the new polyvalent system' of the building. In this regard, this methodology will provide us the way to revise the limitations while improving the possibilities of Centraal Beheer Office.

CONCLUSION

Conclusion

This research began with the intention to analyze the possibilities and limitations of Structuralism architecture. With this purpose, the study set Centraal Beheer Office as the research subject since this building is one of the most representative projects of Herman Hertzberger, the most influential Structuralism architects. This research decided to narrow down the research perspective to the 'spatial aspect' of the building and set the research question as 'what is the spatial possibilities and limitations of Centraal Beheer Office.'

For the background analysis, this research at first investigated Structuralism architecture and their architectural methodologies to perform a more profound analysis. By this investigation, we set our research framework and the further research theme, 'spatial flexibility.' After, the research analyzed historical circumstances and surroundings that influenced and could influence the spatial design of Centraal Beheer Office.

In next chapter, the research actually explored the spatial quality of Centraal Beheer Office with five sections: Structure, Space, Surface, Service, and Stuff. With the research framework and more precise research theme, the study investigated the possibilities and limitations of the spatial flexibility of Centraal Beheer Office. Based on this analysis, we attempted to examine what were the reasons for the limitation to provide the clue how to revise them in the new design. Also, we indicated the value of possibilities to suggest the reason why we should keep them in further design work. Ultimately, as our own interpretation, we provided our suggestion for later design work; go to the origin and reinterpret the current design of Centraal Beheer Office.

It is difficult to deny that Structuralism architecture has several shortcomings. For example, because of their firm design methodologies, most of the Structuralism architecture projects presenting similar form, shape, and space. However, it is more obvious that their idea and architectural methods have been created positive influences to the architectural field, and even most of them are still valuable in these days.

For these reasons, this research would like to suggest the way of 'Reinterpretation of Structuralism architecture.' By this means, we are purposing to revitalize the spatial value of Structuralism architecture to our architectural design works in nowadays. In this regards, the re-design and re-use of Centraal Beheer Office could be the first step of this goal.

CULTURE VALUE

Introduction

PURPOSE OF THIS REPORT

This analysis on the cultural value part is the last in a series of three topics. It is executed with a special scope on the spatial aspects of the cultural value. The objective of this part is to find out the spatial cultural values of the building. Which is done with the following question: “What are the cultural values of the spatial flexibility of the Centraal Beheer building? To determine what types of cultural values we found, how these are affecting the current situation and to give our subjective priorities of these values. This gives us a clear starting point for the upcoming design phase.

METHODOLOGY

After gathering all the information in the architectural and building technology analyses, is this analysis used to find the cultural values of the building and the site. This is done with the four stages of a heritage research described by Marieke Kuipers and Wessel de Jong in the backs of our mind (de Jonge & Kuipers, 2017). This means compiling historical data, identifying and classifying these by means of ‘value mapping, differentiating these on three levels of significance and distilling a position statement on the outcomes of these three steps.

CULTURAL VALUE MATRIX

We used the method of the cultural value matrix as a basis for this analysis. The idea behind this matrix is based on the research of two people, Alois Riegl and Stewart Brand. It combines the tangible matters of Brand with the intangible matters of Riegl. The intangible values described by Riegl are made tangible by means of the different layers of Brand. With these matrix, it is possible to deal with all scale levels, from the site to the building details. We added a few more columns to the matrix in order to deal with the more specific topics of structuralism. These topics are co-determination, configurative design and integration. In order to come up with a more complete overview of all the present values we added, or left out, a few aspects into the matrix. On the tangible perspective of Brand, story has been added. And on the intangible side we left out Riegl’s intentional commemorative value, but we added spirit of the place and conflict.

INTRODUCTION OF RIEGL AND BRAND

Steward Brand is an American writer used the concept of shearing layers from an earlier research by Francis Duffy, who used the layers: shell, service, scenery and set (Brand, 1994). A set of layers as building components, based on their lifespan. Brand continued this research and came up with the concept of six layers: site, structure, skin, service, space plan and stuff (de Jonge & Kuipers, 2017).

Alois Riegl was an Austrian art historian and he was convinced that any concept of authenticity of a monument did not derive from its origin or from eternal values, but from its present day perception (de Jonge & Kuipers, 2017). So he created two kinds of values, commemorative values such as age, historical and intention commemorative values and present day values such as use and art value (Stanley-Price, Talley, & Melucco Vaccaro, 1996).

	RIEGL +	AGE value	HISTORICAL value	INTENTIONAL COMMEMORATIVE value	NON INTENDED COMMEMORATIVE value	USE value	NEW-NESS value	(relative) ART value	RARITY value (+)	OTHER relevant values (+)
BRAND +										
SURROUNDINGS / SETTING (+)										
SITE										
SKIN (exterior)										
STRUCTURE										
SPACE PLAN										
SURFACES (interior) (+)										
SERVICES										
STUFF										
SPIRIT of PLACE (+)										

Fig 5.1 Cultural Value Matrix (de Jonge & Kuipers, 2017)



Fig. 5.2 Alois Riegl (English Wikipedia, 2017)

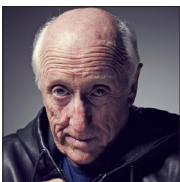


Fig. 5.3 Stewart Brand (Alchetron, 2017)

Cultural Value Matrix

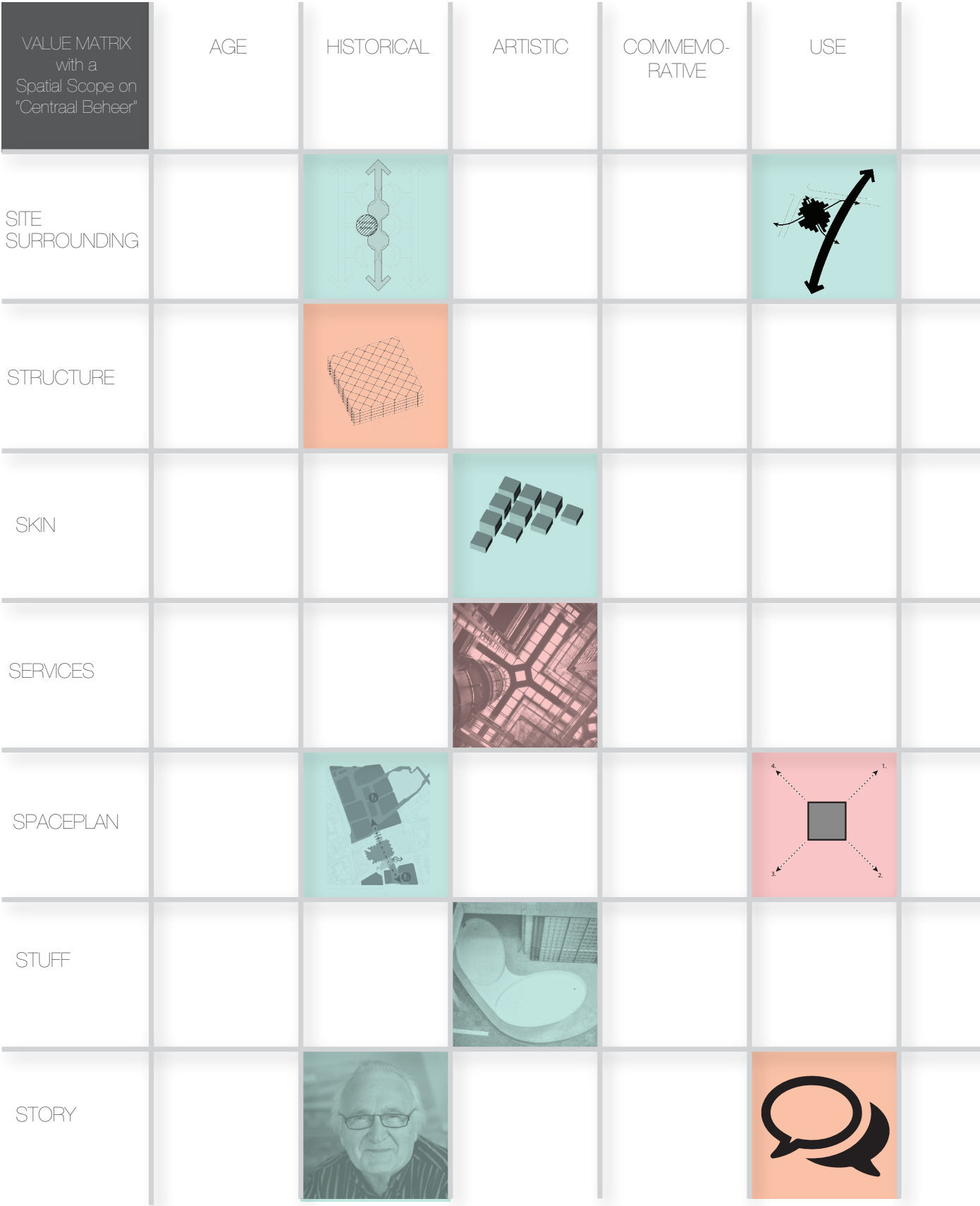
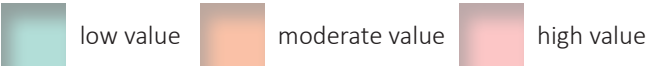
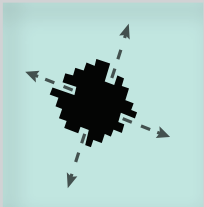


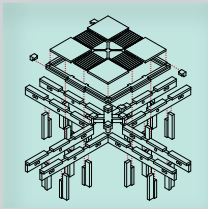
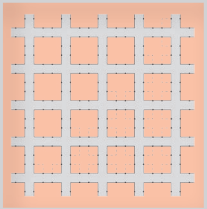
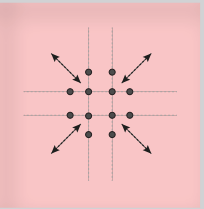
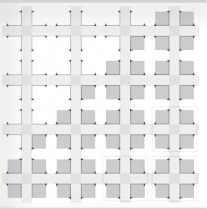
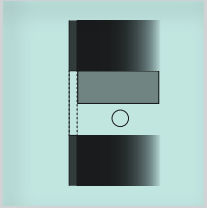
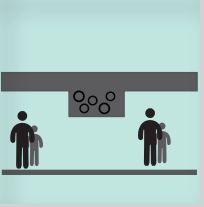
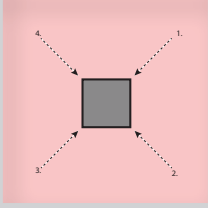
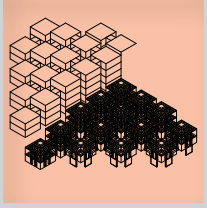
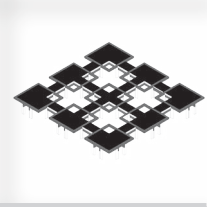
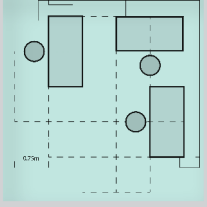



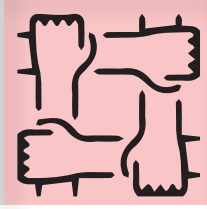

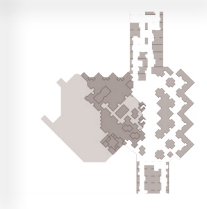


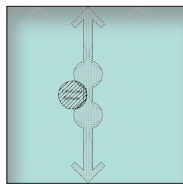
Fig. 5.4 Cultural Value Matrix (Lim, Van Pelt & Wang, 2017)



NEWNESS	CO-DETERMINATION	CONFIGURATIVE DESIGN	INTEGRATION	SPIRIT OF THE PLACE	CONFLICT
					
					
					
					
					
					
					

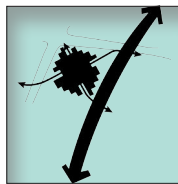
Cultural Values

SITE AND SURROUNDINGS



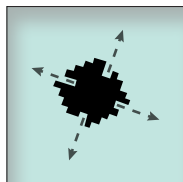
HISTORICAL VALUE

The Centraal Beheer site was intended to be an important part of the pedestrian area of the new city center.



USE VALUE

The Centraal Beheer building was intended to be the gate to the new city center. People would use the “inner streets” as real streets.



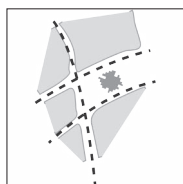
INTEGRATION VALUE

The intention of the architect was to create an ongoing public pedestrian space through the building, to bring a diverse audience to the building.



SPIRIT OF THE PLACE

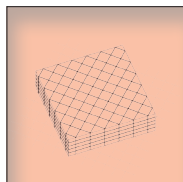
The Centraal Beheer building is a freestanding building in an open environment. A world on its own, without any affection with its surroundings.



CONFLICT

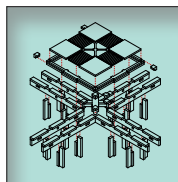
The Centraal Beheer building is not in connection like it was supposed to be, but it is cut off from its surrounding by big infrastructure lines.

STRUCTURE



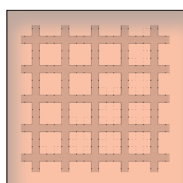
HISTORICAL VALUE

The grid is based on the former urban plan and rotated by 45 degrees relative to the Prins Willem Alexanderlaan and the railway.



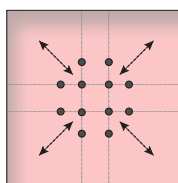
CO-DETERMINATION

The whole building is built up by prefabricated construction elements what makes it well suited for future extensions.



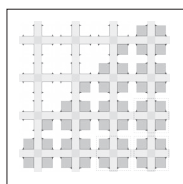
CONFIGURATIVE DESIGN

The building is built upon a grid system which is designed and derived from the idea of polyvalency.



INTEGRATION

This unique grid offers an extra connection due to its diagonal views between the construction elements.



CONFLICT

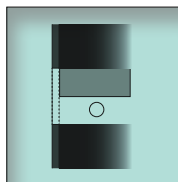
The grid is unique for this building but it also a very rigid grid.

SKIN



ARTISTIC VALUE

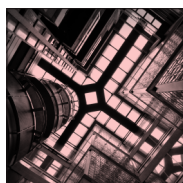
The Centraal Beheer building offers a unique monotonous image which is completely different from the surrounding buildings.



CONFIGURATIVE DESIGN

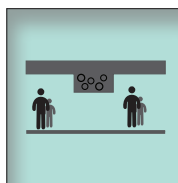
The exterior design is derived from the interior function.

SERVICES



ARTISTIC VALUE

The design of the gutter is unique and important for the atmosphere in the building.



INTEGRATION

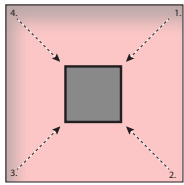
The space that is taken by the services and ducts softly divides the space into traffic space and work space.

SPACE PLAN



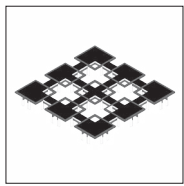
HISTORICAL VALUE

The inner street used to be part of the Centraal pedestrian axis from the new train station to the new city center.



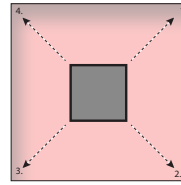
CO-DETERMINATION

The big open space is divided in multiple smaller and more private spaces without using real dividing borders.



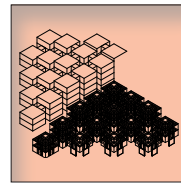
CONFLICT

The module system of this building is unique but also very rigid.



USE VALUE

The spaces are designed from a viewpoint of polyvalency, every space is open for multiple interpretations.



CONFIGURATIVE DESIGN

The building is made up by a grid full with modules, all these smaller space combined is creating one big open space.

STUFF



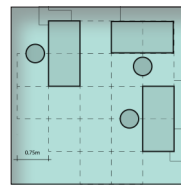
ART VALUE

The indoor pond is a striking element in this building and stands out from the rest of the building in form and function.



INTEGRATION

The building is filled with furniture elements designed by Hertzberger to encourage social interaction.



CONFIGURATIVE DESIGN

The dimensions of the furniture and the space that is used per person is determining the dimensions of the rest of the building.



SPIRIT OF THE PLACE

The building used to be filled and decorated with personal belongings, brought together by all the users of the building to make it more intimate.

STORY



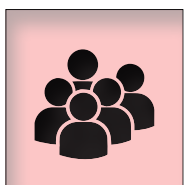
HISTORICAL VALUE

The building is the most famous building of Herman Hertzberger and is an important building for the structuralism movement.



NEWNESS VALUE

Herman Hertzberger is positive about the transformation plans of the site, keeping the building in a functional state is important for him.



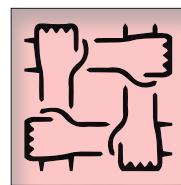
INTEGRATION

The building is designed to create a community and to bring people together.



USE VALUE

Every detail in the building is designed to encourage social interactions.



CO-DETERMINATION

The users are in charge in this building. User participation is important because the users have to finish the building and make it their own.

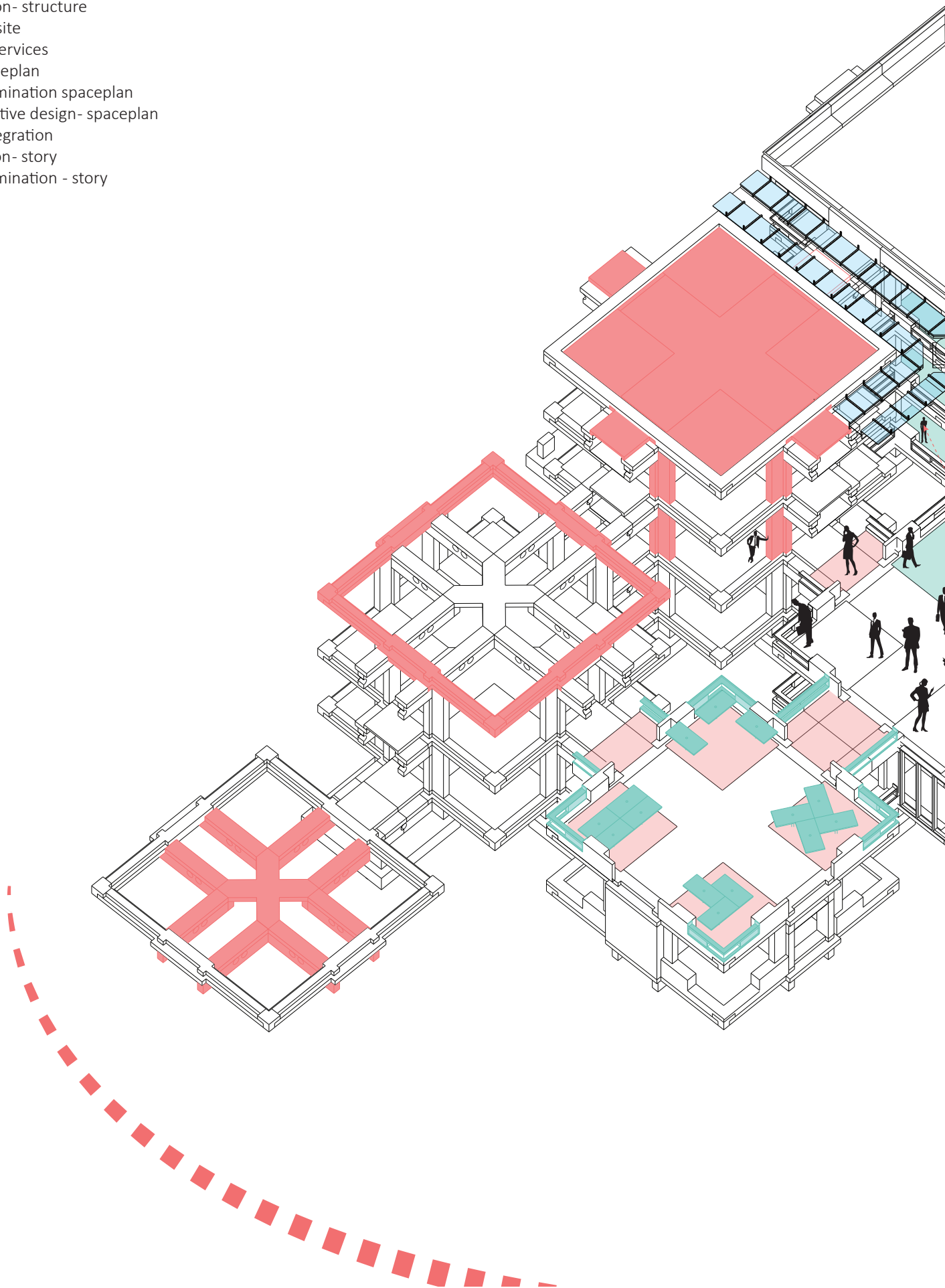


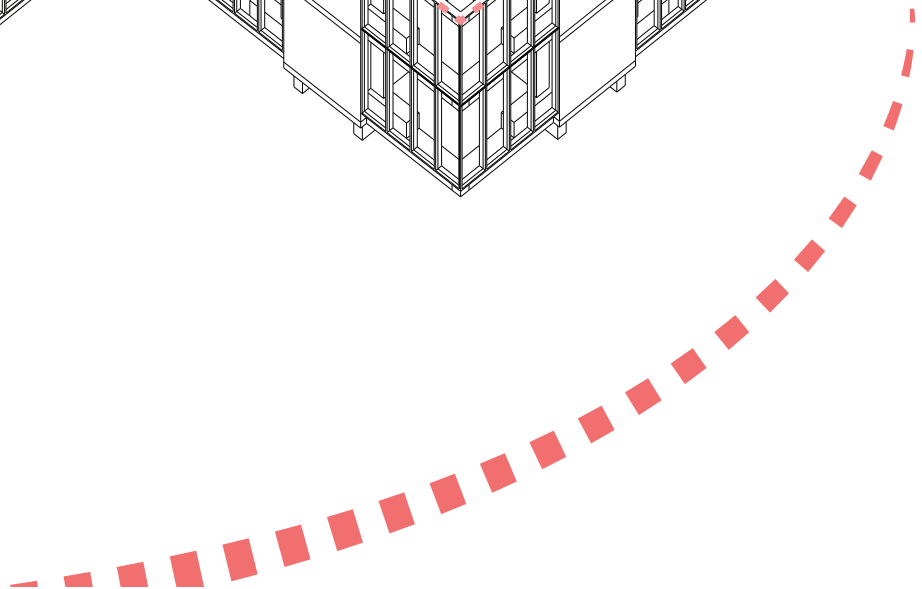
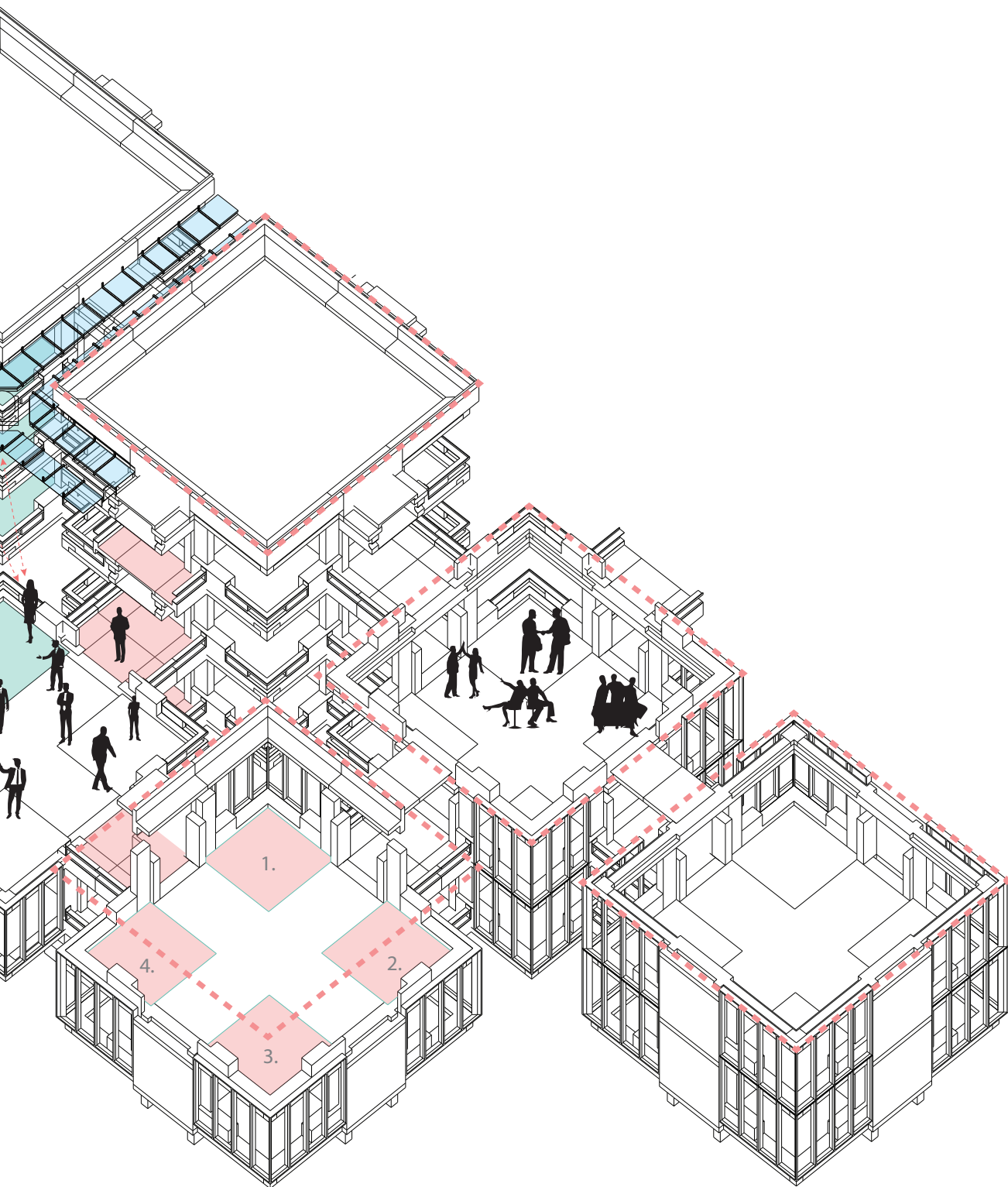
CONFLICT

Exactly at the spot what would have been the summit of creating a informal office space has Hertzberger himself designed a very representative and monumental new entrance

CONCLUSIONS CULTURAL VALUE IN AXONOMETRIC VIEW

- Visible values:
configurative design- structure
Integration- structure
conflict- site
artistic- services
use- spaceplan
co-determination spaceplan
configurative design- spaceplan
stuff- integration
integration- story
co-determination - story





Cultural Values - Conclusion

In order to answer the research question we started this chapter with, we used the architectural and technical analysis as a basis. After we did that and mapped all the values with the cultural value matrix we have come up with a list limitations and possibilities which we think the building offers.

Limitations

We start with the limitations in the spatial flexibility we found. On the bigger scale was the Centraal Beheer building part of a huge urban transformation plan. But, in contrast to our building, is most of this plan not executed. This means that the building instead of being heavily connected with its surroundings is just a freestanding without any relation to its context. Not in its layout nor in its looks.

The next topic is about structure. The building has a very fixed structure, which is everywhere in the building. And it is very present everywhere in the building. But this structure system is designed with fifty-year-old standard dimensions, which lead to a very low hanging construction through the whole building. This prefabricated construction system creates a very rigid space plan with a very specific size in the whole building. This means that the floorplan is already divided which could make it harder for further functions to blend in.

Possibilities

But there are possibilities in this building as well. As mentioned before is the building divided from its surroundings. This island function could be a possible strength as well. The structure offers a unique possibility by the way it is designed. There is an extra diagonal horizontal and vertical connection, which links all these modules and spaces together. The idea behind the inner streets is a possibility as well. It is designed to be just like outside, with the glass roof to experience an outside environment. It is not really designed in the right way but it is still an interesting part of the design. Another possibility could be find in the idea of the polyvalence of the design. It is designed to be suitable for different functions to make it adapt to the user. And this user is also very important. Creating a community amongst the users is main design theme for Hertzberger and it is an interesting possibility for a future design.

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