



**In the Belly  
of the Beast**

‘Het graan stroomde zoo snel in de lichters, het leek dikke gele olie. Zij lagen daar stil en vraatzuchtig, zij hadden het heele schip in hun macht, het bloedde aan hun zuignappen dood.’

*Ferdinand Bordewijk, Karakter (1938)*

‘There is no complete life. There are only fragments.’

*James Salter, Lightyears (1975)*



Source; <https://nl.pinterest.com/pin/324681454381535203/>

## **The Maassilo**

### **Heritage + Architecture** ***'Rotterdam Harbour'***

*Final version of P5 report,*  
*March 12th, 2021*

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# Introduction

Heritage is all around us. It defines us, it defines our cities. It is a constant dialogue that forms a bridge between the past, present and the future. The Maassilo is a perfect case study for the city of Rotterdam and other port cities around the world on how to deal with industrial buildings that have no or little purpose. These buildings, once palaces of labor are now abandoned, decaying or ready to be demolished by project developers. Ironically enough the Maassilo wasn't demolished since its demolition was too comprehensive and too expensive. Its dimensions and massiveness literally saved its succession.

The urban development in the city of Rotterdam has been a leading actor in the development of

the Maassilo. It contributed to its conception and also to its relocation. After 2003, when the Maassilo stopped operating as a storage facility for grain, the building became vacant for the first time in almost 100 years. Subsequently it was transformed into a cultural stage and offered space to two dance clubs. This change in program was a result of a large urban development.

Since the docks and quays in the city of Rotterdam were close to the city center, the land became too valuable for industrial activities. Furthermore the growth of industry led to the demand for more space and larger ships. Therefore the harbor, whom at that time already expanded westwards, expanded even further and

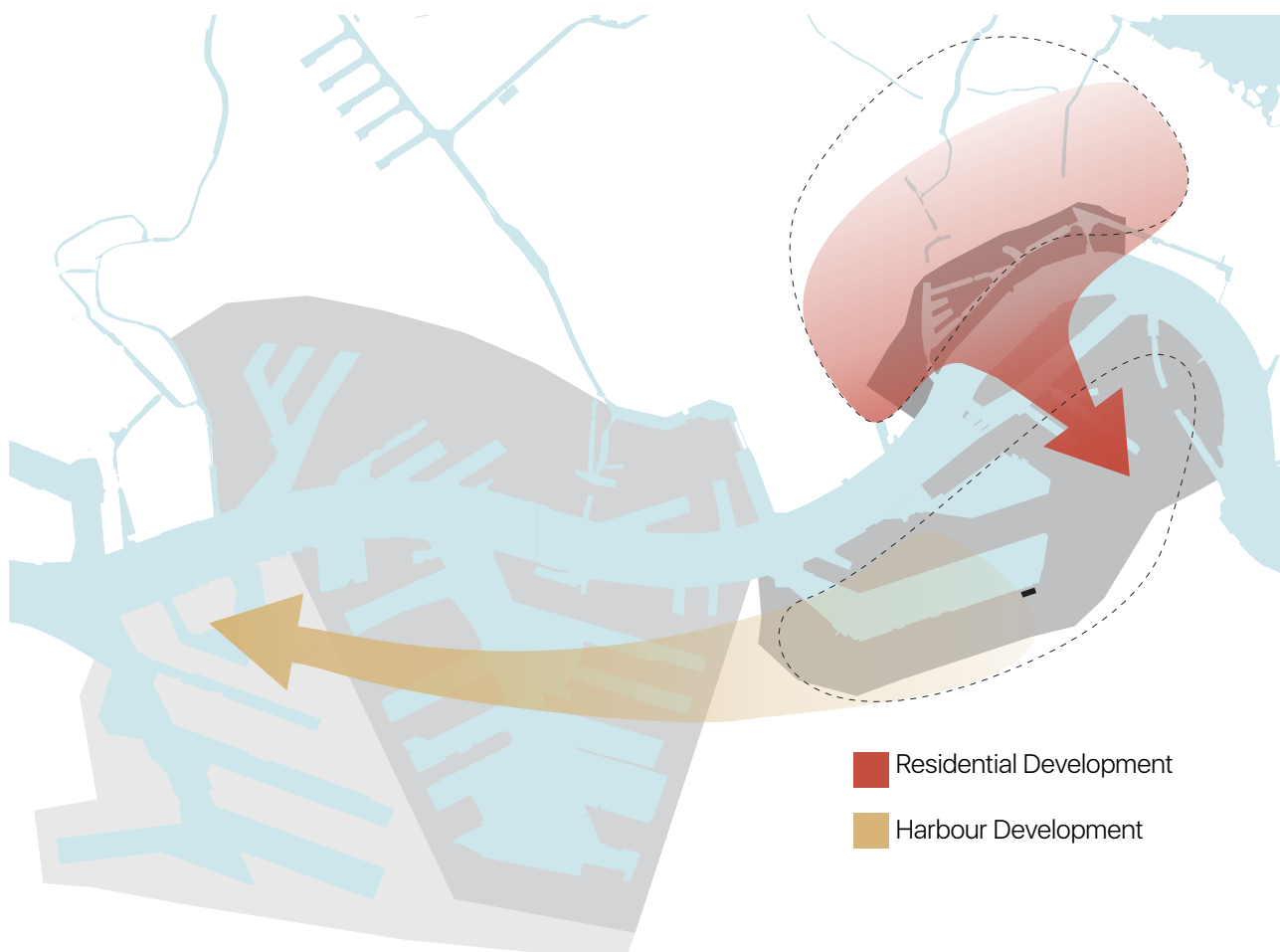


Diagram of the urban development of the relocation of the Maassilo's industrial activities



Image by Rodesk, source: (<https://onthegrid.city/rotterdam/zuid/maassilo>)

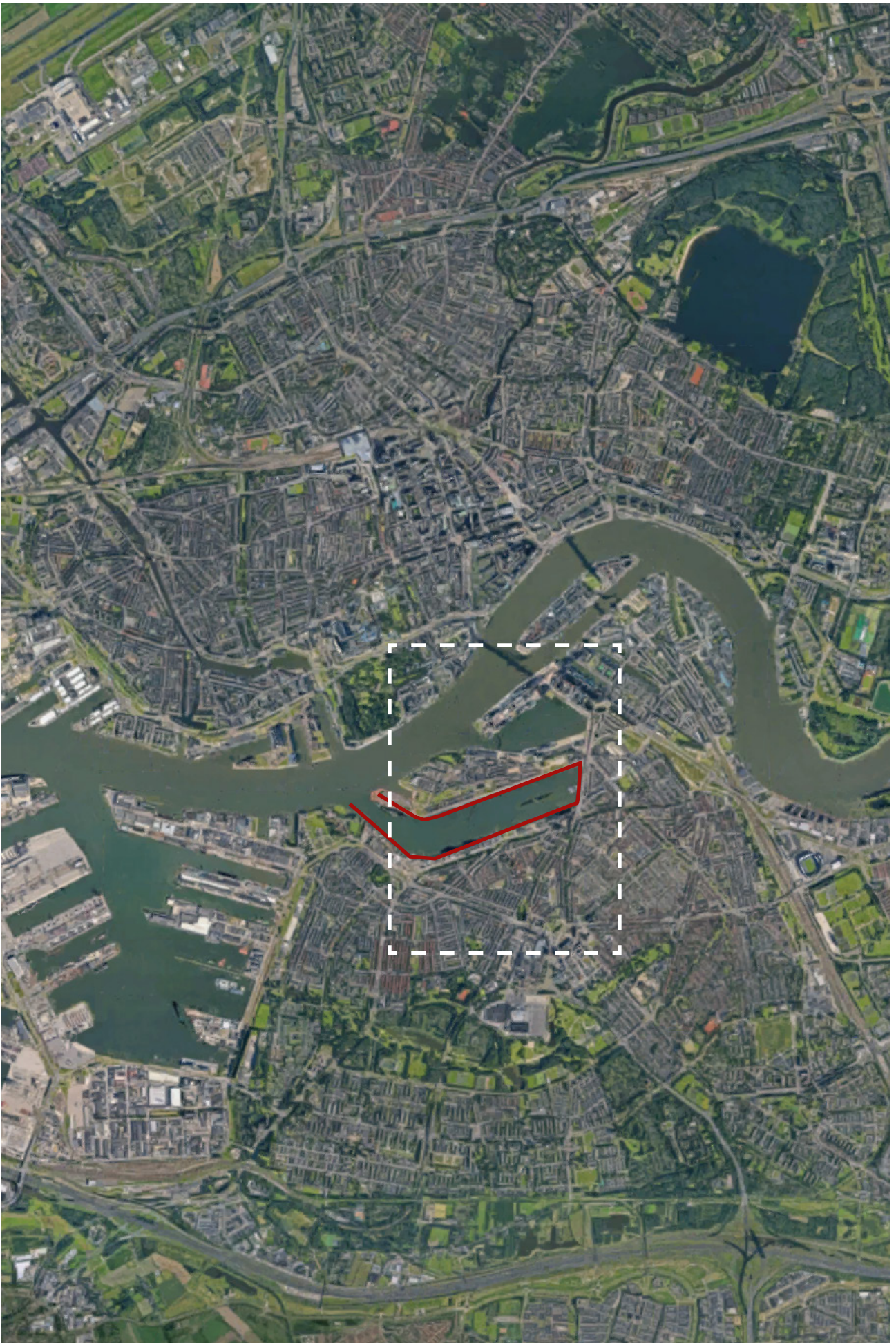
provided space along the river to be repurposed for residential housing.

Since its conception in 1910, the Maassilo, a composition of multiple buildings or complex, has also been a product of the growth of the Rotterdam harbor. The expansions of 1930, 1951 and 1963 all are a result of this development.

The P1 report showed that the building faced challenges in addressing other types of program in the building. Challenges such as, its severed relation with the Maashaven, its proportions

for industrial activities, its limited accessibility, its extremely dense volume allowing little to no daylight to enter and its unclear routing. However the building showed tremendous potential in solving these issues and provided a solid foundation for a future intervention.

The building, although simple to glance at, possessed a high degree of complexity. This complexity was one of the biggest challenges in dealing with the new design. Therefore various tools and strategies were developed to overcome this complexity and to simplify the new design.







# Cultural Values

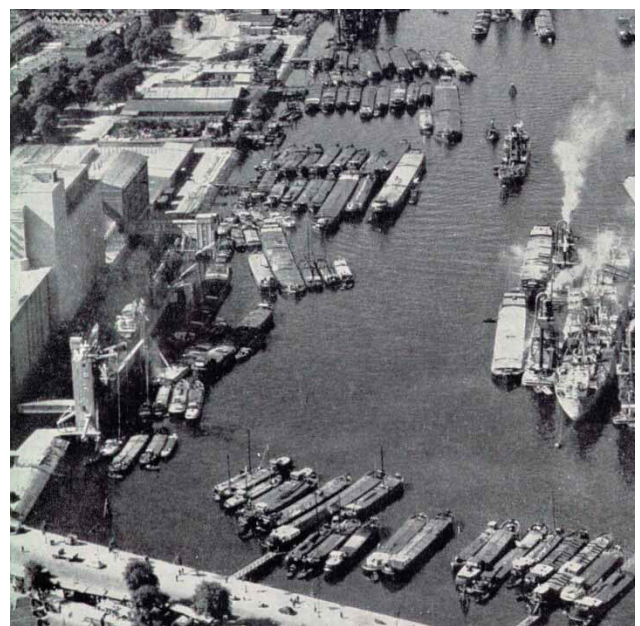
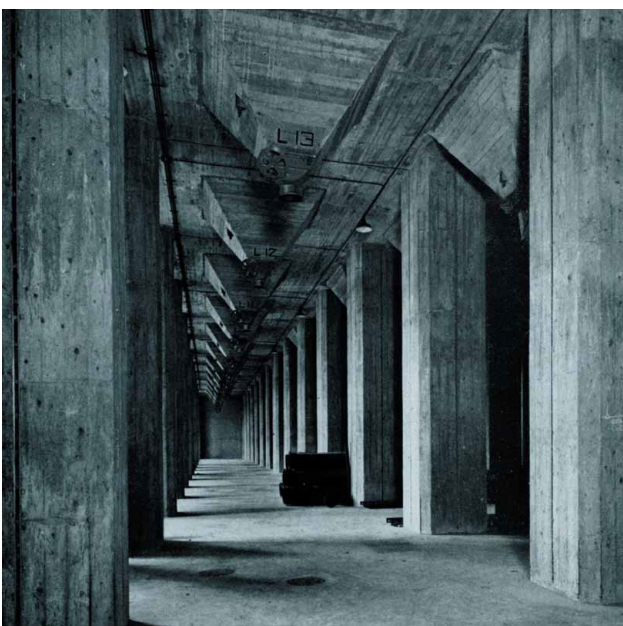
The cultural value assessment was a resourceful tool to evaluate the Maassilo in an objective but also subjective way. The report revolved around one important but simple question; Is the Maassilo a site of cultural heritage? It is essential to review the building as an object but also as a place. A place in time or a place in the city.

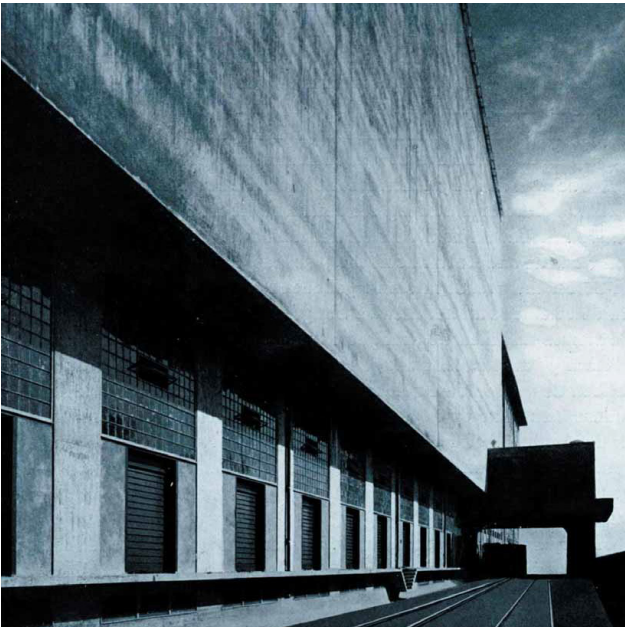
As described in the introduction the building survived its demolition due to its size and massive character. This unique anecdote formed an incentive towards a design approach which will be explained further on. Its dimensions, its abundance in concrete, its presence on the quay in the corner of the Maashaven gave the building a rarity value. Although the building isn't a display of power in the classical sense, for instance a 17th century opera building or a 19th century bank. However it does embody a display of structural power. This formed an incentive to exhibit its counter identity or vulnerability. This juxtaposition elaborates on the fact that even though concrete can withstand tremendous force, time will always reveal

its fragility. Therefore the project needed to embody this juxtaposition by highlighting its scars/forces and strengthening the building for its longevity.

As described before the harbor development as part of the urban development of the city of Rotterdam played an essential role in the development of the Maassilo. The growth of the harbor conceived the building and expanded along side it. Therefore the building forms a representation of the rise of the Rotterdam harbor. As the harbor grew, the building grew with it. Together with the historical remnants, that still reside in the building and adjacent to it, the building has a historical value.

These two values were of major importance in the next phase. They helped shape the new design and helped to form a bridge between the past and the future by valuating its identity.

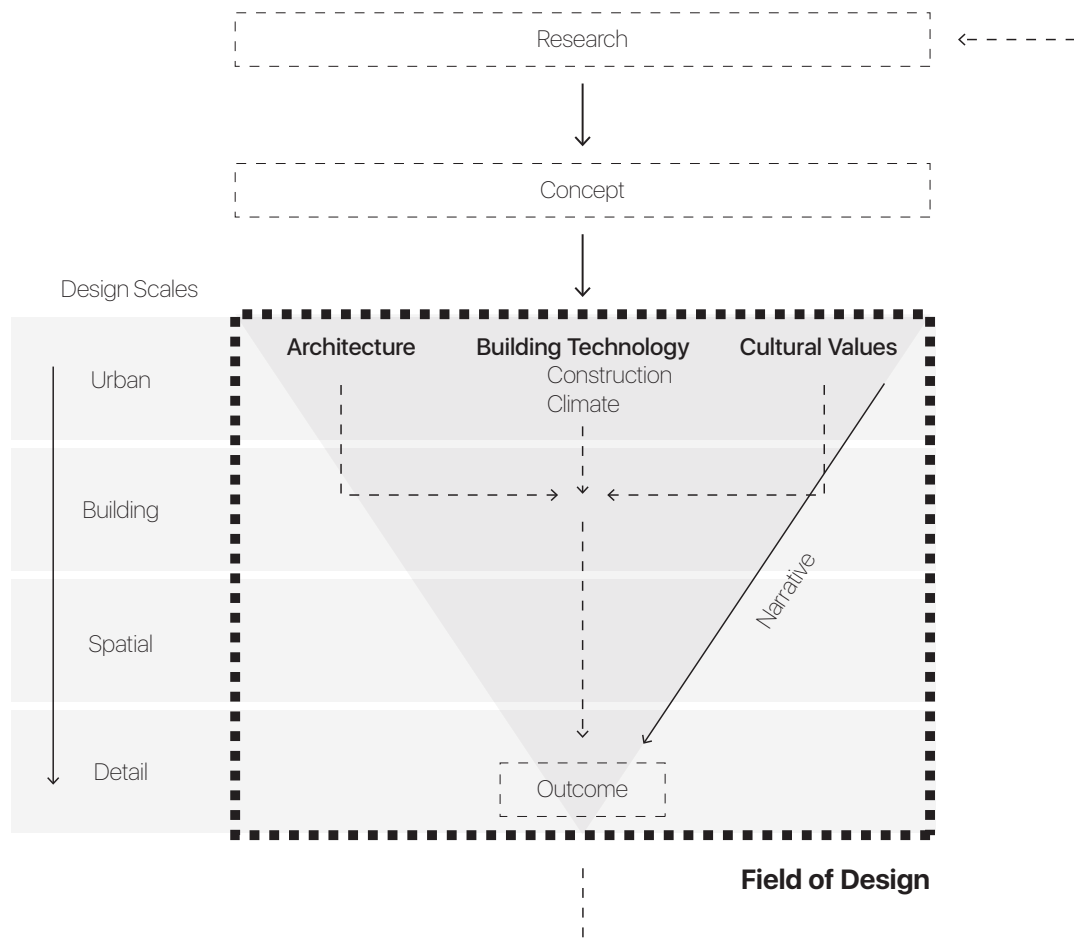




# Narrative and Design Framework

As part of the design process to tackle the complexity of the building, a strategy or tool had to be developed to deal with this issue. The P1 report formed a comparison between the building and a machine, since the building was in fact one large machine. This operation and composition of the machine contributed to understanding the building more comprehensively. However it also formed an incentive in comparing the building to a living organism that rested on the quay. I imagined a large whale resting on the concrete, desperate for water and food, now forgotten but once a glorious animal that basked in the sunlight.

Since words offer a strong expression of something they provided me with the opportunity to express my own feelings to the public. Words are often neglected in architecture, since most text are either academical or offer a boring description. The narrative and the design framework offered structure in the (design) process.



# Verisimilitude

As though I awakened on a summer gale  
Filled with airy voices whispering  
voraciously  
Blustering swiftly underneath the dangling  
sail  
Thy shallow waves leaving the hull in  
agony

Morning was humming  
And we sailed against the current  
effortlessly  
As if it drew us in, like the soaring sounds  
of singing sirens  
Once more into the odorous fog of  
morning labors  
As the river paved our serpent path

And from the meadows rose a beast  
The salt glaring on its freckled skin  
Which curtain out the day with scars and  
wounds  
Of days forgotten past  
Under no veneer who dare to aspire  
Bare and naked on the quay  
And weathered with an houndstooth cloth,  
And a metal claw leaps in the edges of the  
steeply bank with a shivering sound  
While gulls are circling, chanting  
Orphean-like above its crown  
Lauding choruses over this harvesting  
town

I never had behold such magnificent sight  
That usurped the morning light and  
swallowed it whole  
While blooming fairly right  
The dusty light burning bright  
Pounding endlessly on its Nemean skin

And in its shade,  
Like ants, or bees or wasps  
Soothing her eternal sleep  
And breathing her breath and glancing her  
views  
The grain-sized dockworkers were feeding  
their queen  
While her dormant visage smiled never to  
be seen

She roars sick with famine  
That echoes through her lungs  
In the depths of her core  
Dance those small kernels for love and for  
song

And as she grew, far beyond the reach of  
the sun  
With tides of grain and the ashes of the  
earth  
That gave her heart to all who she birth  
She bore those children that outgrew her  
Feeding under the breath of the river  
always to be near

And the day will come that the son of my  
son  
Sees her rise that will obscure the light of  
the sun  
Her mysteries forgone, as well as her lust  
But there will be a time when rise,  
Oh rise she must.

(Marcus de Moes, 2020)

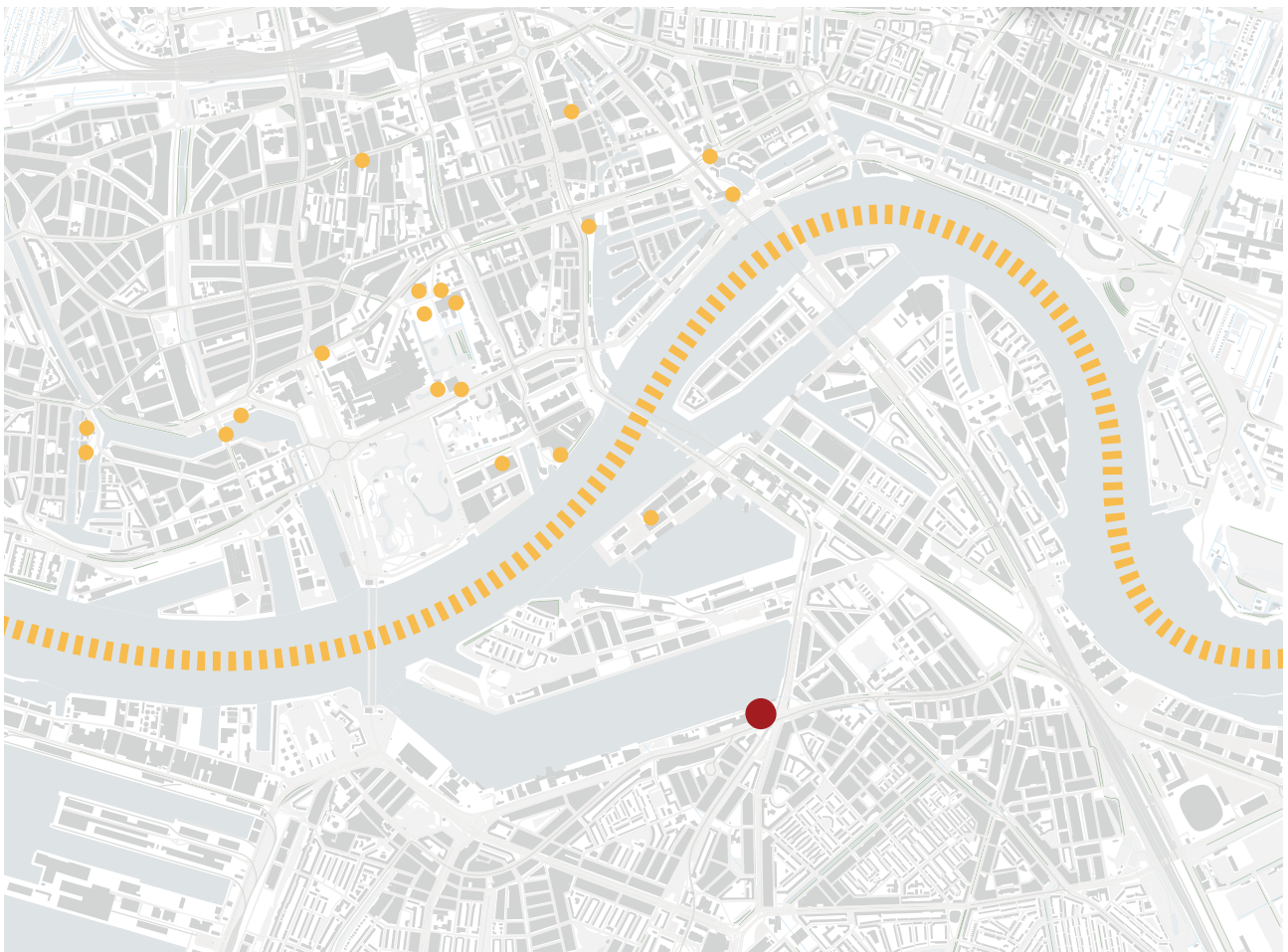
# (New) Program

The municipality of the city of Rotterdam has destined this building to become a cultural facility. As part of their new policy report (Uitgangspunten voor het nieuwe Rotterdamse cultuurbeleid 2021-2024, juni 2019) they strive towards broaden and enlarging the public reach towards cultural facilities. Furthermore they plan to strengthen the interconnectivity between those cultural facilities. Together with the development of Rotterdam South, the area could really benefit from a cultural facilities on this location.

Due to the conclusions of the P1 report and the building showed limitations towards different types of new program. Since daylight is a huge factor in this building, the new program had to

be suitable for artificial lighting and little natural daylight. A museum deemed a suitable solution. The diagram below shows the museums in the city of Rotterdam. Only the fotomuseum is located on the southern side of the river. In agreement with the new policy report the redesignation of the Maassilo to a museum was a suitable solution.

The new museum is a relocation of two existing museums in Rotterdam. Both museums can benefit from the new spatial qualities of the project and have a stronger affinity with the Maassilo. The exterior collection of the Maritiem museum can be relocated in the Maashaven and can help restore the relation between the building and the





Maritiem Museum

Source; [https://qwa.nl/projecten/musea/maritiem\\_museum.html](https://qwa.nl/projecten/musea/maritiem_museum.html)

Total surface: **5.130 m<sup>2</sup>**

Exhibition Space: 1.300 m<sup>2</sup>

Depot Space: 1.300 m<sup>2</sup>

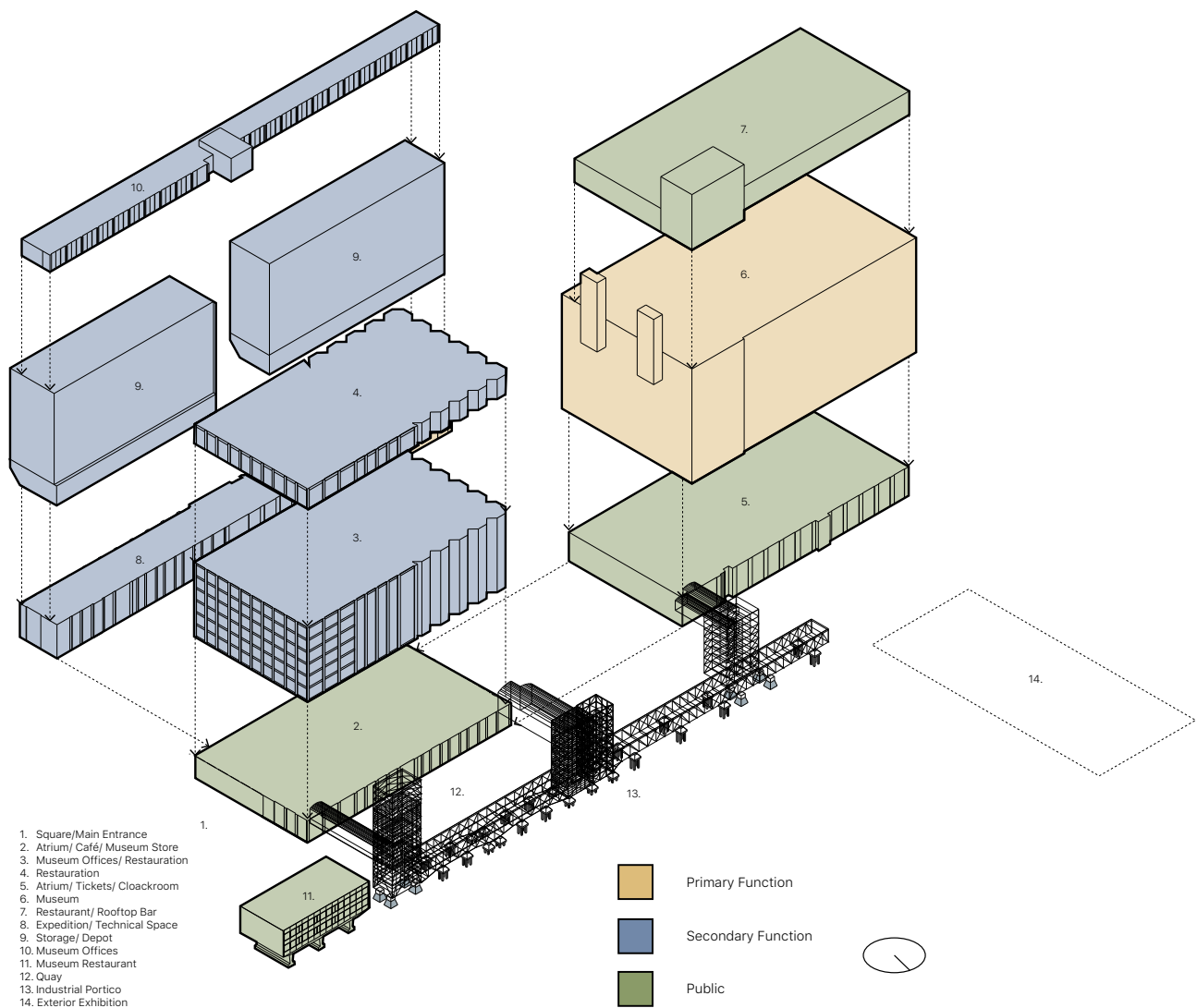


Rotterdam Museum

Source; <https://www.ad.nl/rotterdam/doek-valt-voor-museum-rotterdam-maar-deze-instellingen-krijgen-wel-geld-a-f7adbb8/?referrer=https%3A%2F%2Fwww.google.com%2F>

Total Surface: **1.615 m<sup>2</sup>**

Exhibition Space: 1.100 m<sup>2</sup>



Above: Diagram of new program

Right page Top: Image: <https://archieff12.archiefweb.eu/archives/archiefweb/20200816092233/http://>

Right page Bottom: [www.rotterdam.nl/wonen-leven/getijdenpark/Getijdenpark.pdf](http://www.rotterdam.nl/wonen-leven/getijdenpark/Getijdenpark.pdf)

harbor. Furthermore the Rotterdam museum stop receiving subsidiary support from the government and by relocating it and form a collaboration with the Maritiem museum it has a chance of survival.

Both museums not only have a strong connection with the building but also with each other since the harbor of Rotterdam is a huge part of the country's maritime history. The two museums have the opportunity to share their

recources, their knowledge and their collections. Furthermore they have the possibility to tell a cohert (his)story of their collection.

The municipality has also made plans to create a tidal park in the Maashaven to restore the relation between the city and the harbor. This plan will be situated in front of the Maassilo and can complement the new design. The two pictures on the right show the current situation and a possible design outcome.

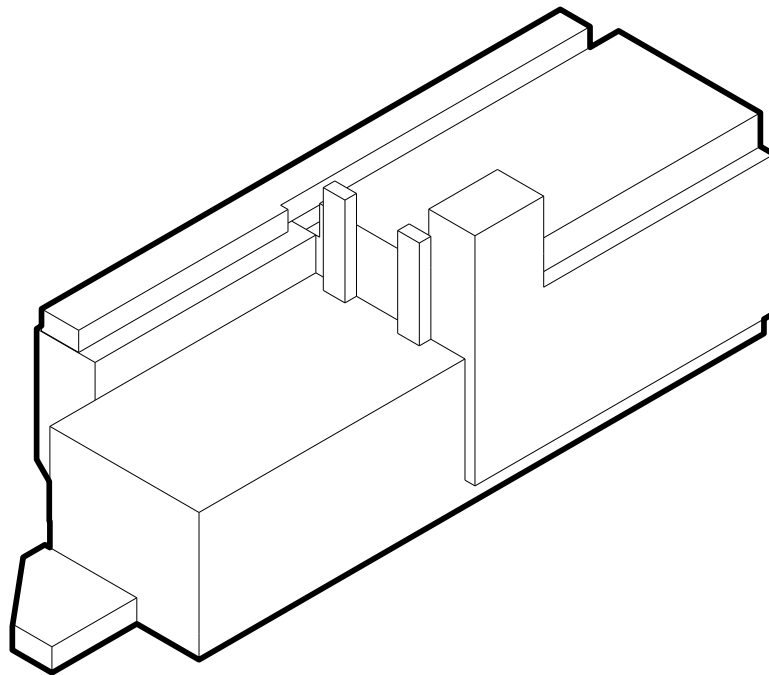


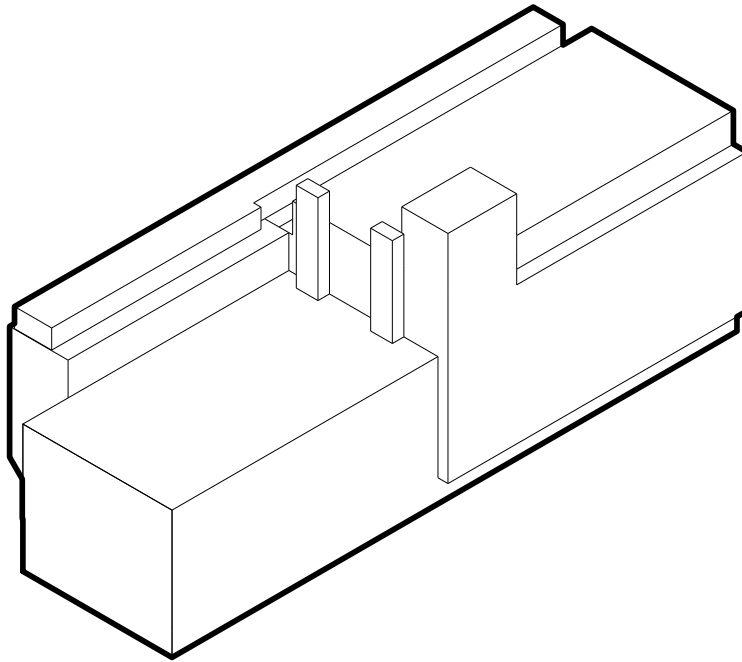


# Conceptual Design

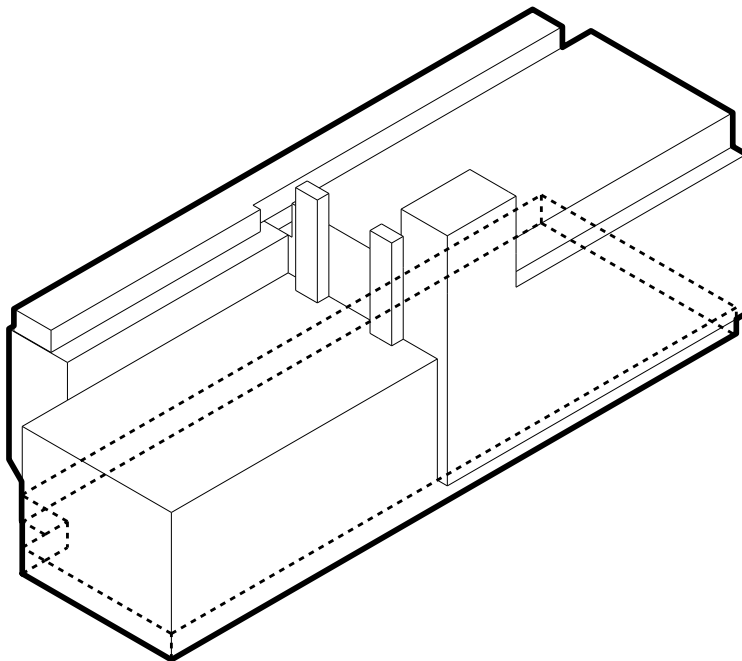
The conceptual design was the first step in reshaping the Maassilo. By acknowledging what was there and what the strengths of the building were I created the first series of interventions (1-5) that will occur. The first diagram (1) shows the total volume of the Maassilo. The second diagram (2) shows the removal of a small building on the east facade of the complex. The building doesn't seem to fit in with the totality of the complex and after demolition it offers the current entrance to be complemented with a large square that serves as a gateway to the building. The third diagram (3) shows the ground floor as one large open volume filled with the columns of the building. By creating an open and transparent volume people can easily navigate underneath the building. The

fourth diagram (4) and most drastic shows a large section in the middle of the building. By removing 2.5 rows of silo cells the building opens up and creates a large atrium which has the architectural quality to reveal the building from top to bottom and show all the historical layers of time in one simple but monumental intervention. The fifth and last diagram (5) shows the two newly created volumes sliding into each other. And finally the two other diagrams on the following page show its integration into the urban fabric from the perspective of the Maashaven and the Tarwewijk.

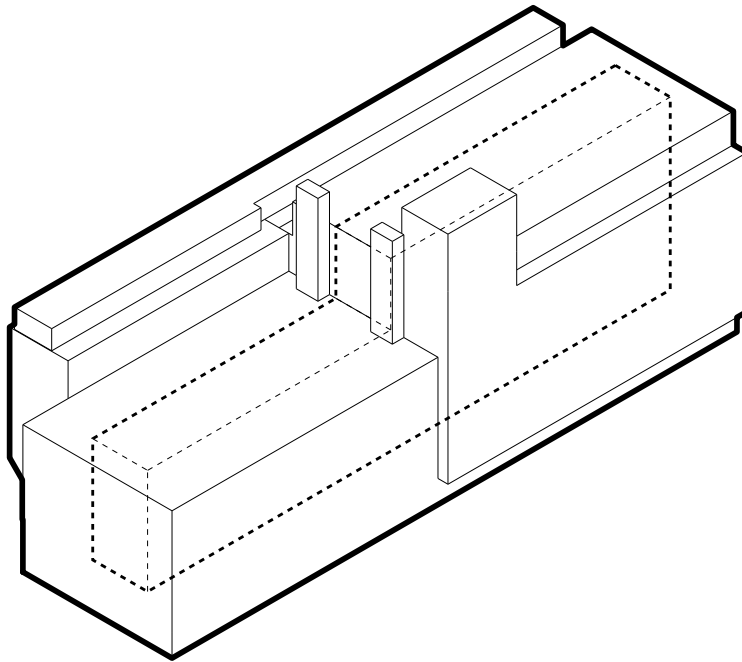




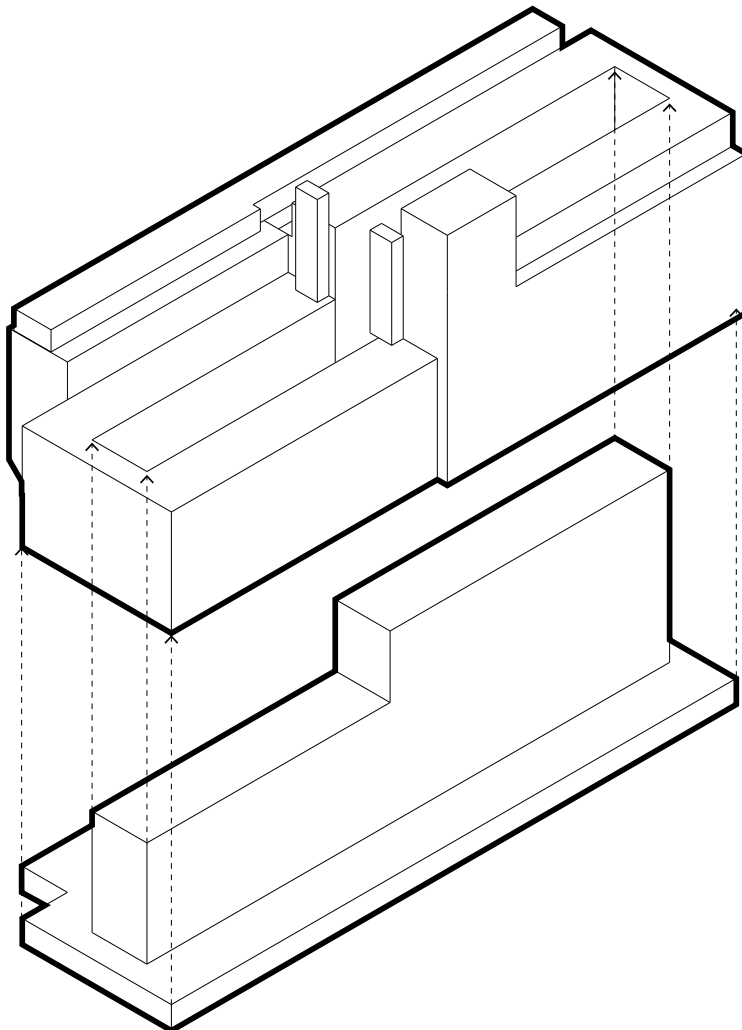
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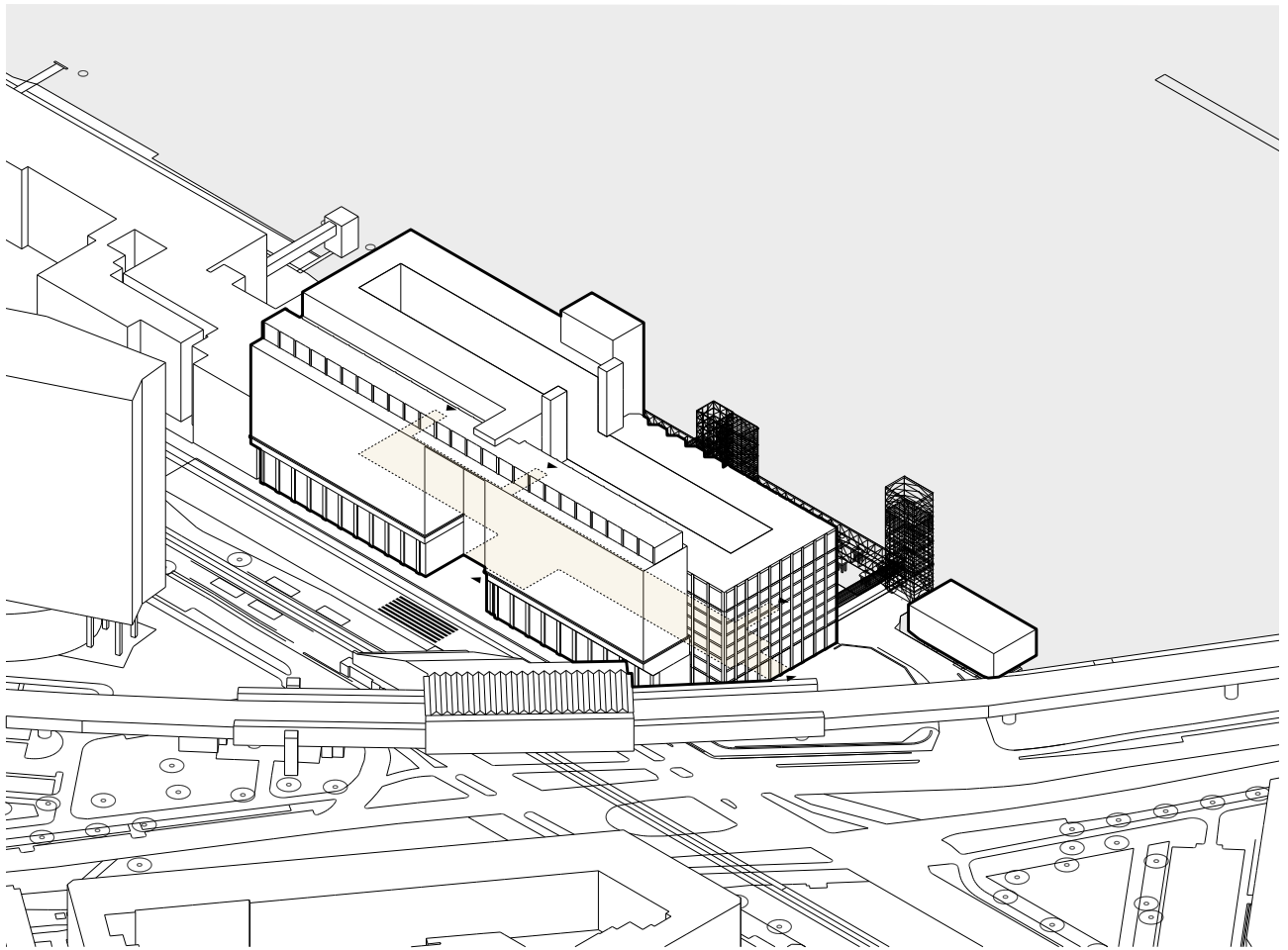
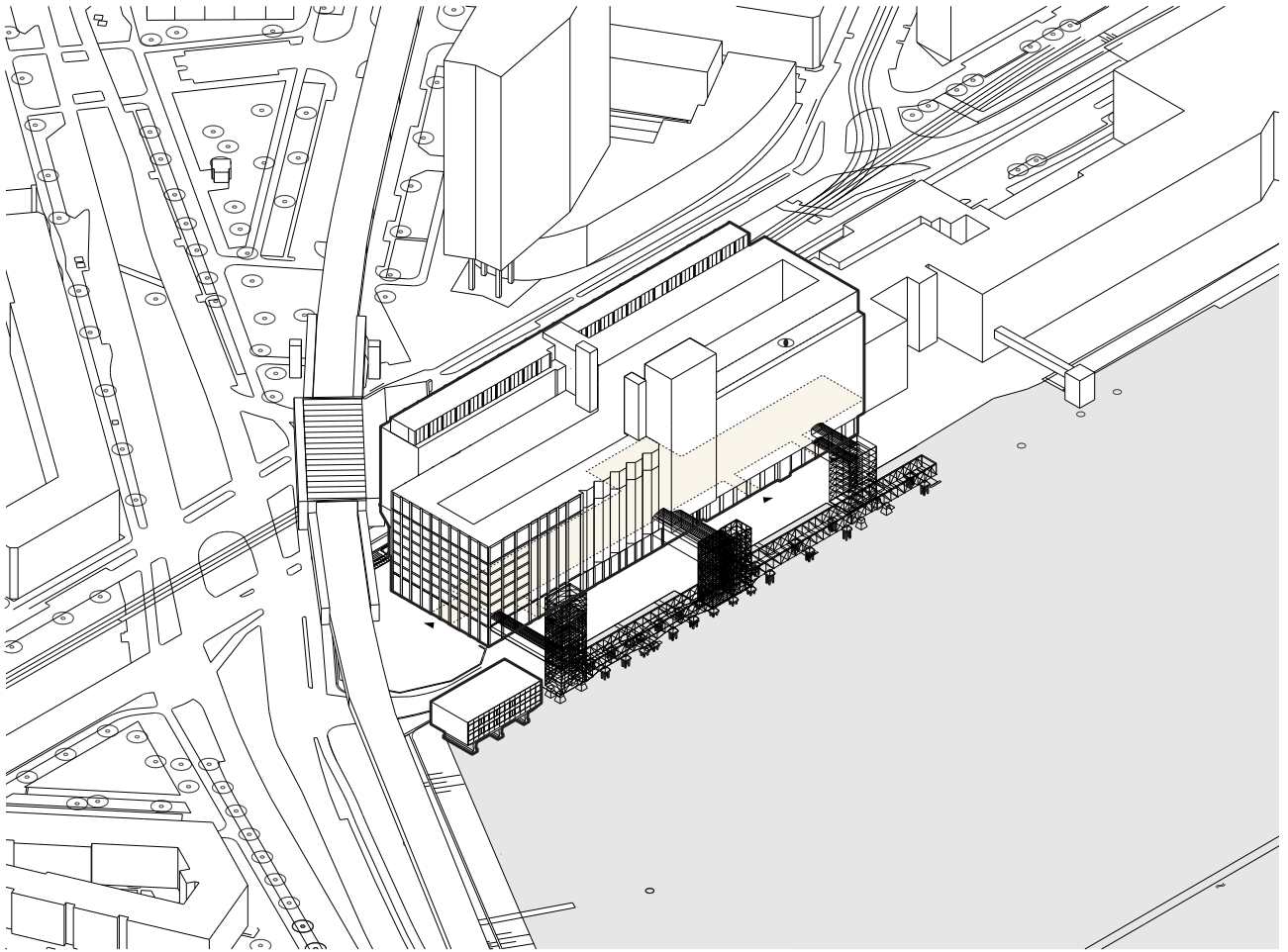
3.



4.



5.



# Design Tools

As part of the design process I created or used a series of tools that helped me structure the design process and helped me taking decisions. The tools along side the narrative I created are respectively; the performance heptagram, the warm-up and cool-down space, the sequence of usage and forms and expression.

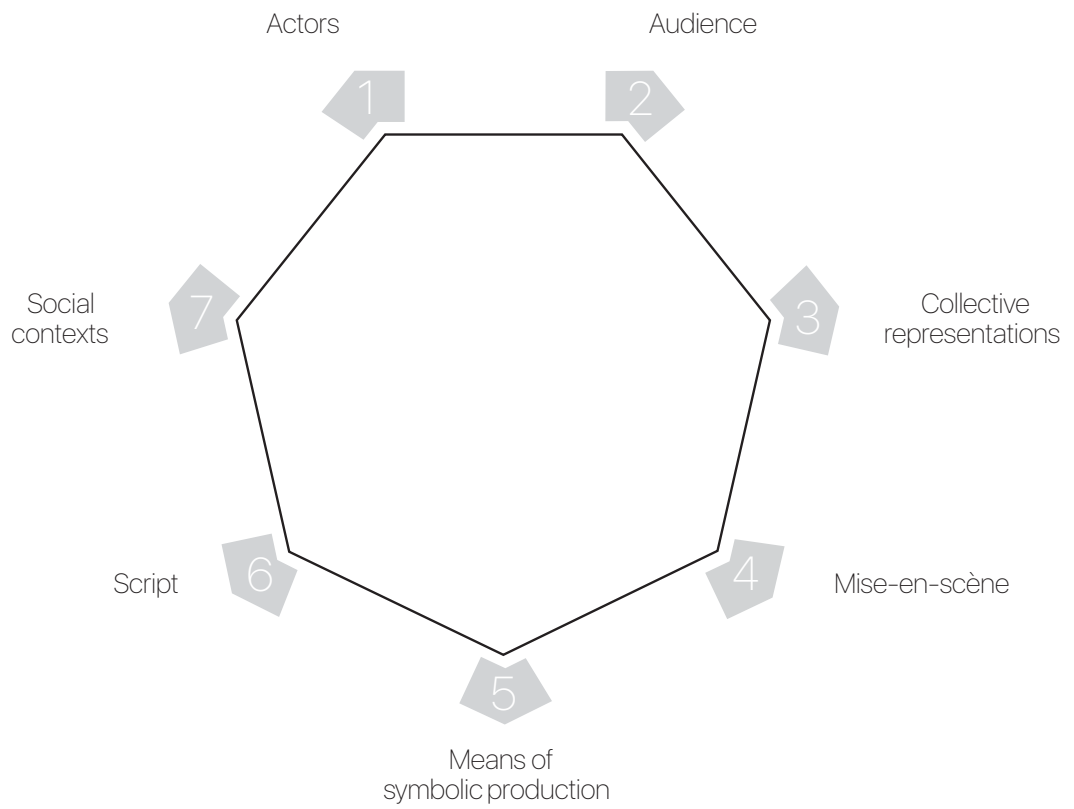
The performance heptagram is a tool, created by D. Hoebink in *Metamorphosis: The transformation of Dutch Museums*, to visualize the museum's performance. How does the museum operate. It primarily focusses on the experience of the visitor and can help structurize the new design.

Besides the performance heptagram Hoebink also addresses the warm-up and cool-down spaces (transitional spaces). Warm-up spaces can be seen as space you enter in the museum before visiting the collection. Cool-down spaces work the other way around, spaces you visit after you've seen the collection. In my research I added a third type of space in this theory, respectively the pause space or intermediate space. A space that is intertwined with the collection and offers a moment of contemplation or experiencing the space itself.

The sequence of usage is a tool to create pathways for each specific user of the building (visitor, passenger, employee or logistic services). Each user has its own specific spaces and needs when visiting the building.

The pathways you create can help you relate spaces to each other and can help you form a composition of adjacent spaces that can benefit from each other.

The last diagram shows which forms I created in experiencing the museum and contributing to a specific design. The diagram shows the floor, the walls and the ceiling, each expressing a certain meaning. This form language helped me in making a more comprehensive design.



The museum performance heptagram / Hoebink D.

Source; Roos, J., Hoebink, D. en Arjen Kok. *Metamorphosis: The transformation of Dutch Museums*. Delft: TU Delft: Heritage & Architecture, 2019

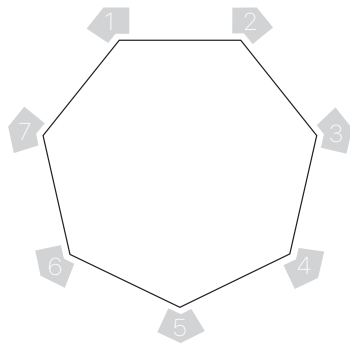


1986

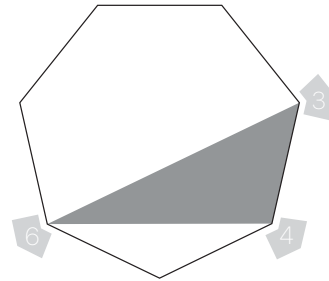
Maritime Museum

1<sup>st</sup> museum

Museum as a performance

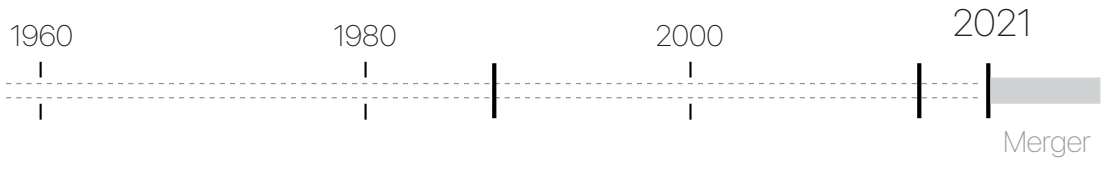


- 1 Actor
- 2 Public
- 3 Collective representations
- 4 Mise-en-scène
- 5 Means of symbolic production
- 6 Script
- 7 Social contexts



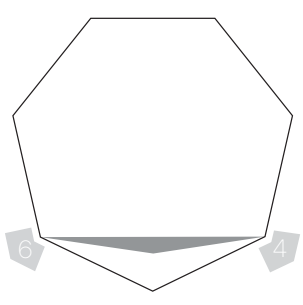
Objects exhibited by form, use and subject, without strong unity in their coherence and chronology. Strong contrast between the exterior and interior collection.



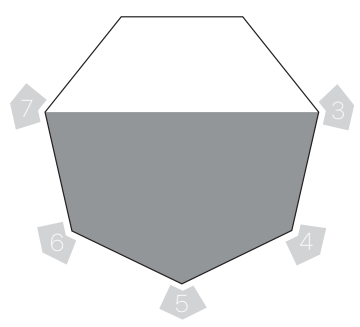


2016  
 Rotterdam Museum  
 2<sup>nd</sup> museum

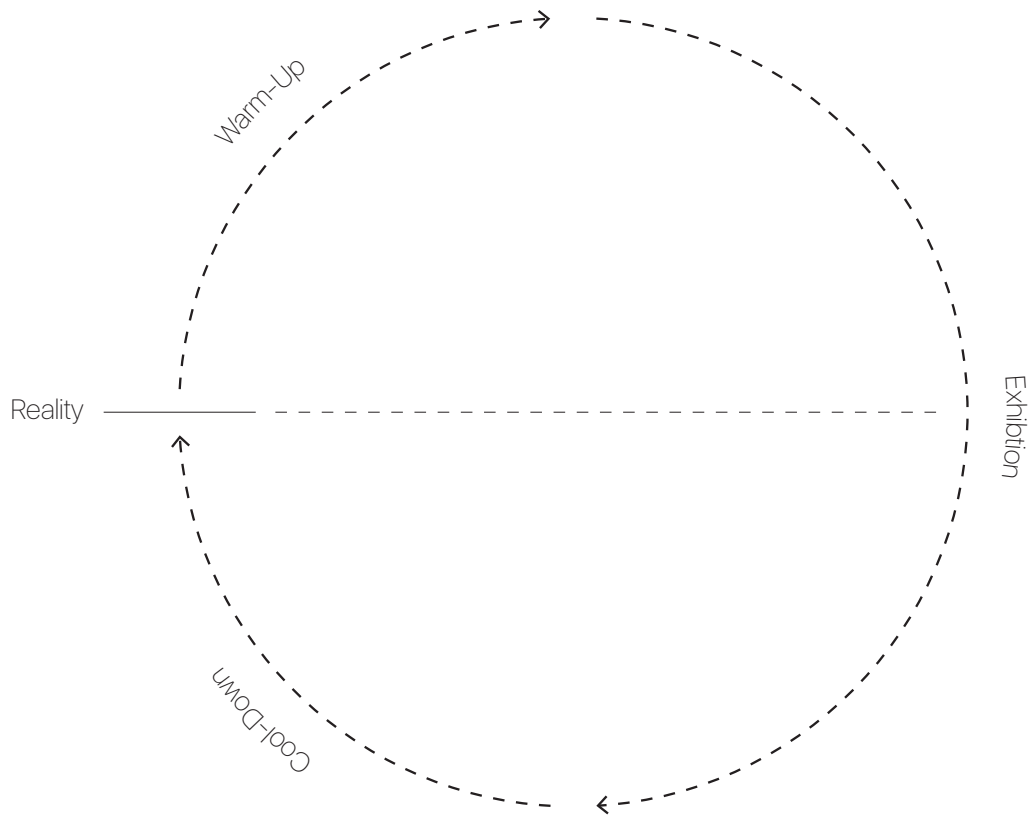
2021  
 Rotterdam Museum of Maritime History  
 merged museum



Objects displayed in a fragmented composition, with no apparent sequence. Exhibition of the collections incoherent with the original identity of the museum.



Objects displayed by form, use and subject. Coherent relation between the human and industrial scale. Strong representation of both their individual as their collective importance within their exhibitions.

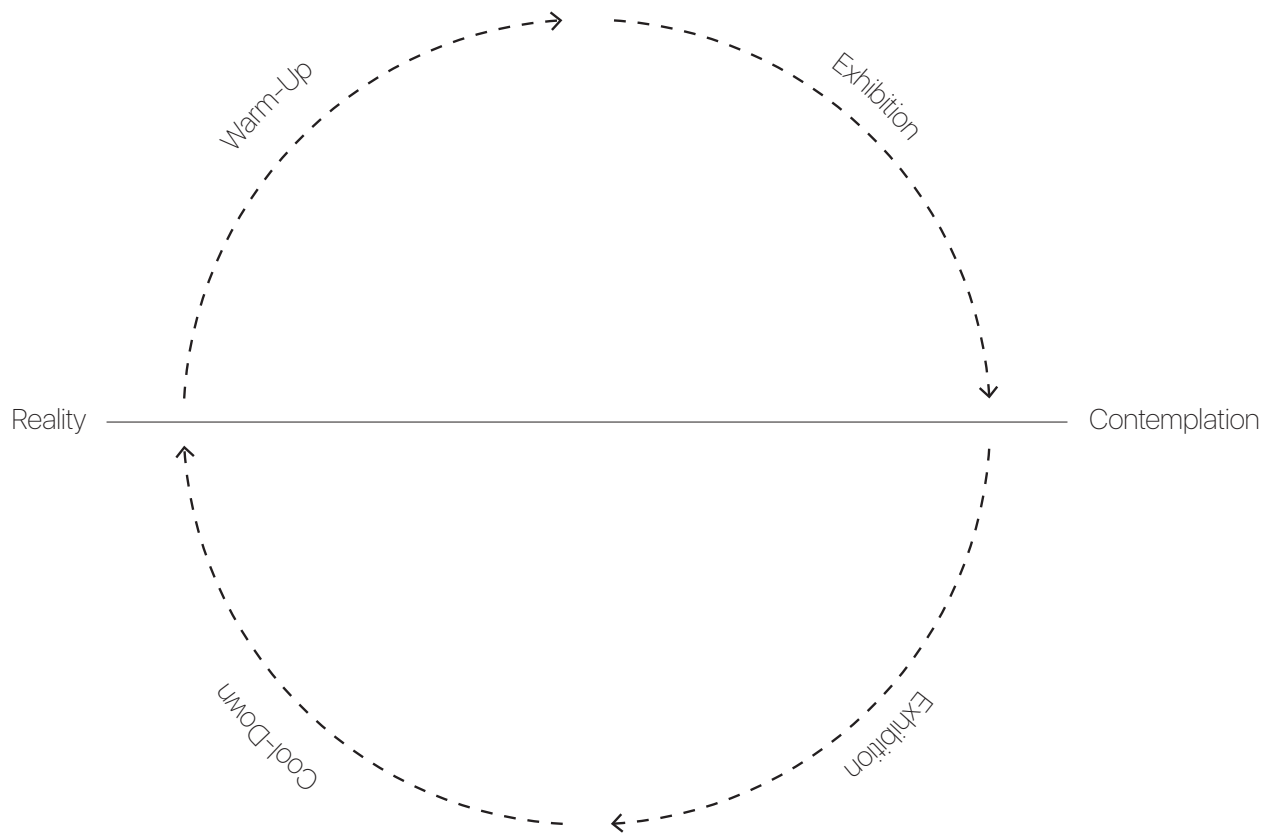


Warm-Up Spaces:

- Café
- Cloakroom
- Restroom
- Ticket/Info Counter
- Atrium

Cool-Down Spaces:

- Museum Store
- Café
- Restaurant
- Cloakroom
- Restroom
- Atrium



Warm-Up Spaces:

- Café
- Cloakroom
- Restroom
- Ticket/Info Counter
- Atrium

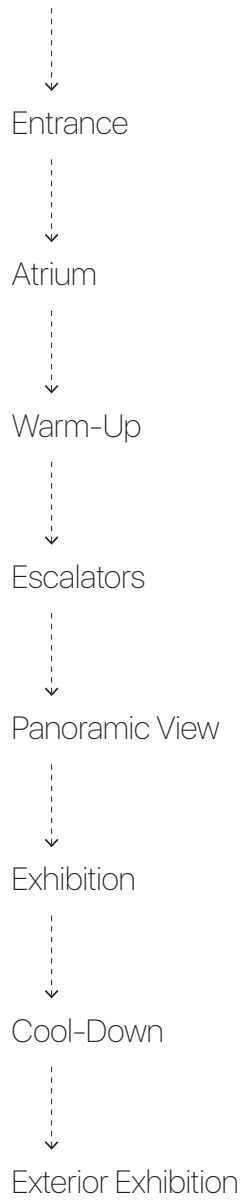
Cool-Down Spaces:

- Museum Store
- Café
- Restaurant
- Cloakroom
- Restroom
- Atrium

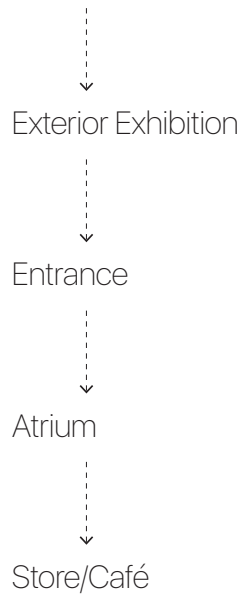
Intermediate Spaces:

- Atrium
- Escalators
- Pause Spaces

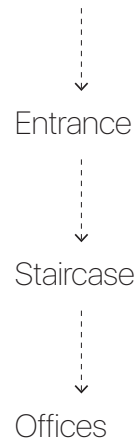
**Visitor**



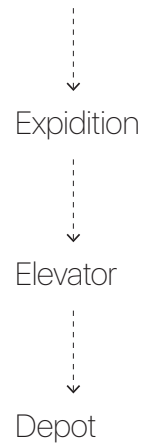
**Passenger**

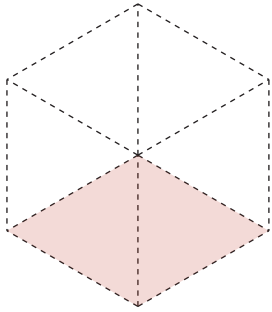


**Employee**



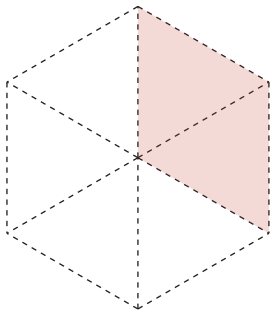
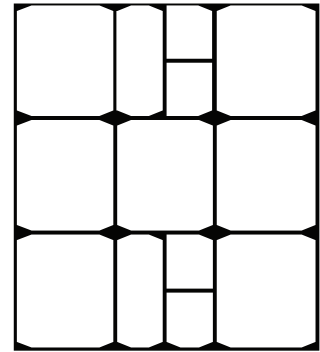
**Logistic Services**





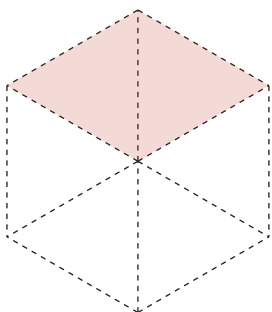
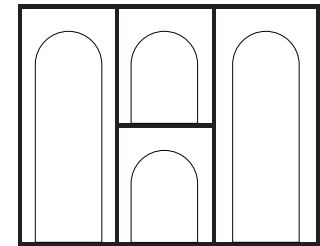
**Plan:**

Pure Forms  
Rational  
Stasis



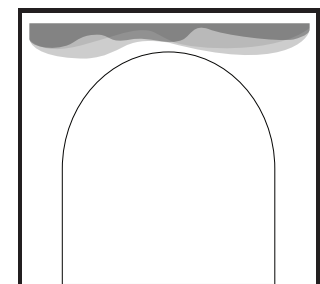
**Section:**

Hybrid  
Movement  
Navigation  
Spatial Relations



**Ceiling Elevation:**

Organic  
Experience of Space  
Verticality



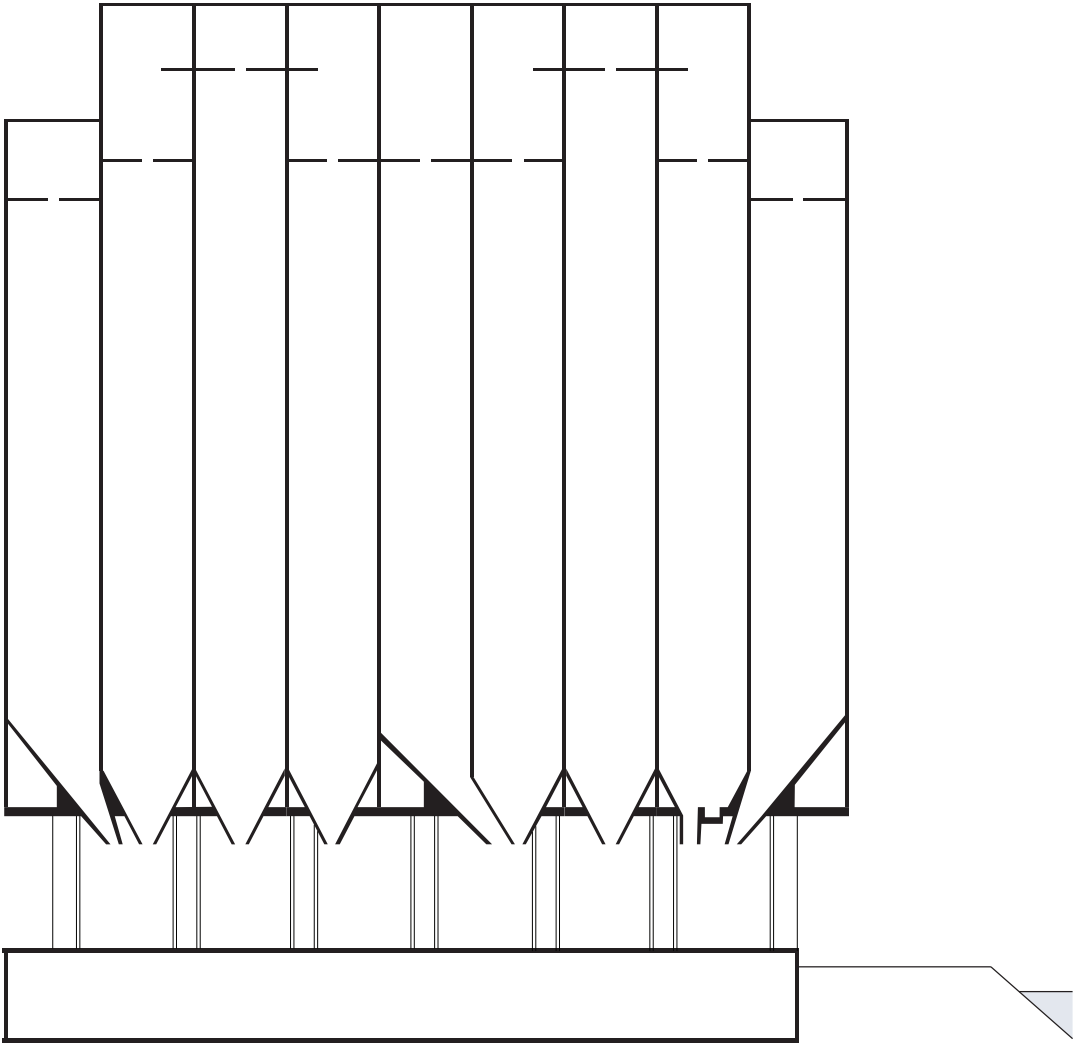
# Structual Design

Manufacturability was a challenge in creating a new design for the Maassilo since the building offered a very specific design compiled of large rows of silo cells. The cells were also the construction itself which limited the possibility of some interventions.

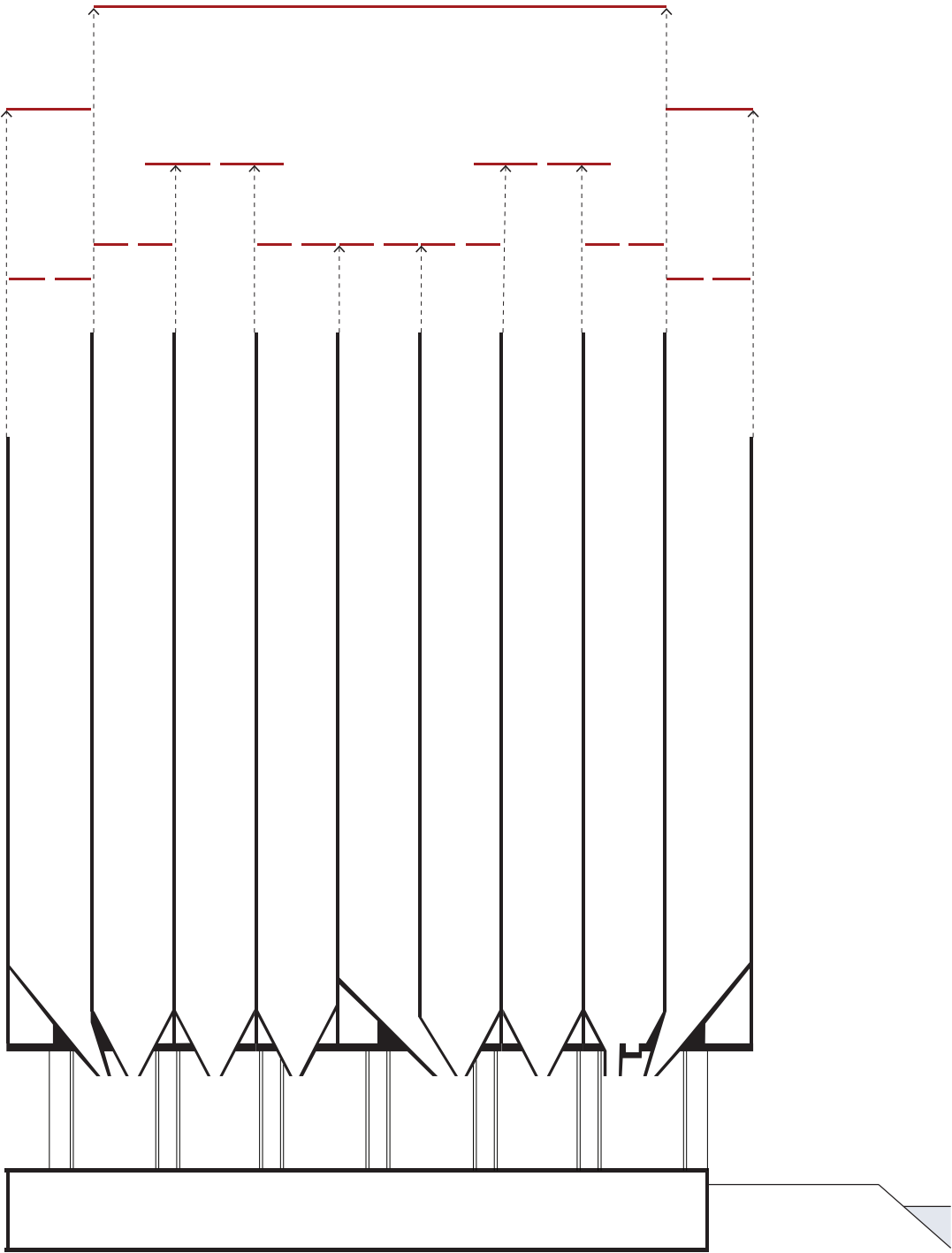
By lifting the complete roof of the building, since the roof needed to be improved anyway, it offered the possibility to create new floors in every cell. After making curved sections in the walls to create larger space from adjacent silo's the rubble of the section (made with a diamond wire cable) could be removed from above with a construction worker. Subsequently a rappelling construction worker would enter the silo from above and with the help of the construction

worker would place the new steel composite deck floors in place and do the same routine for the floor above until the total construction is in place. The excavations in the silo wall are arches since they can direct the forces through the concrete naturally towards the side of the section. In this way there was no need for any extra support. This strategy of demolition was essential in the totality of the plan. By removing concrete new larger spaces were formed.

# Contemporary Condition

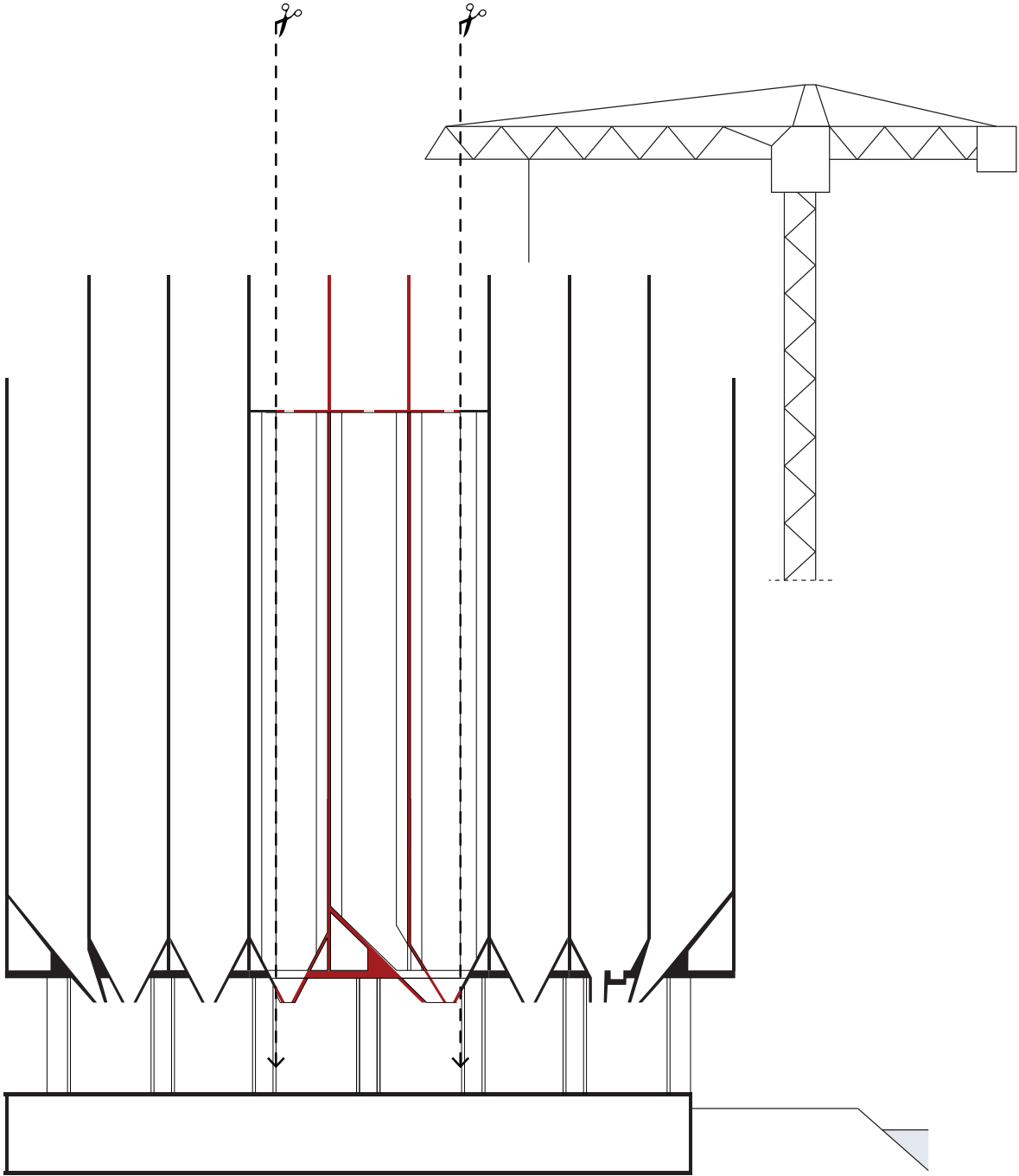


# Removal Roof + Top Layer

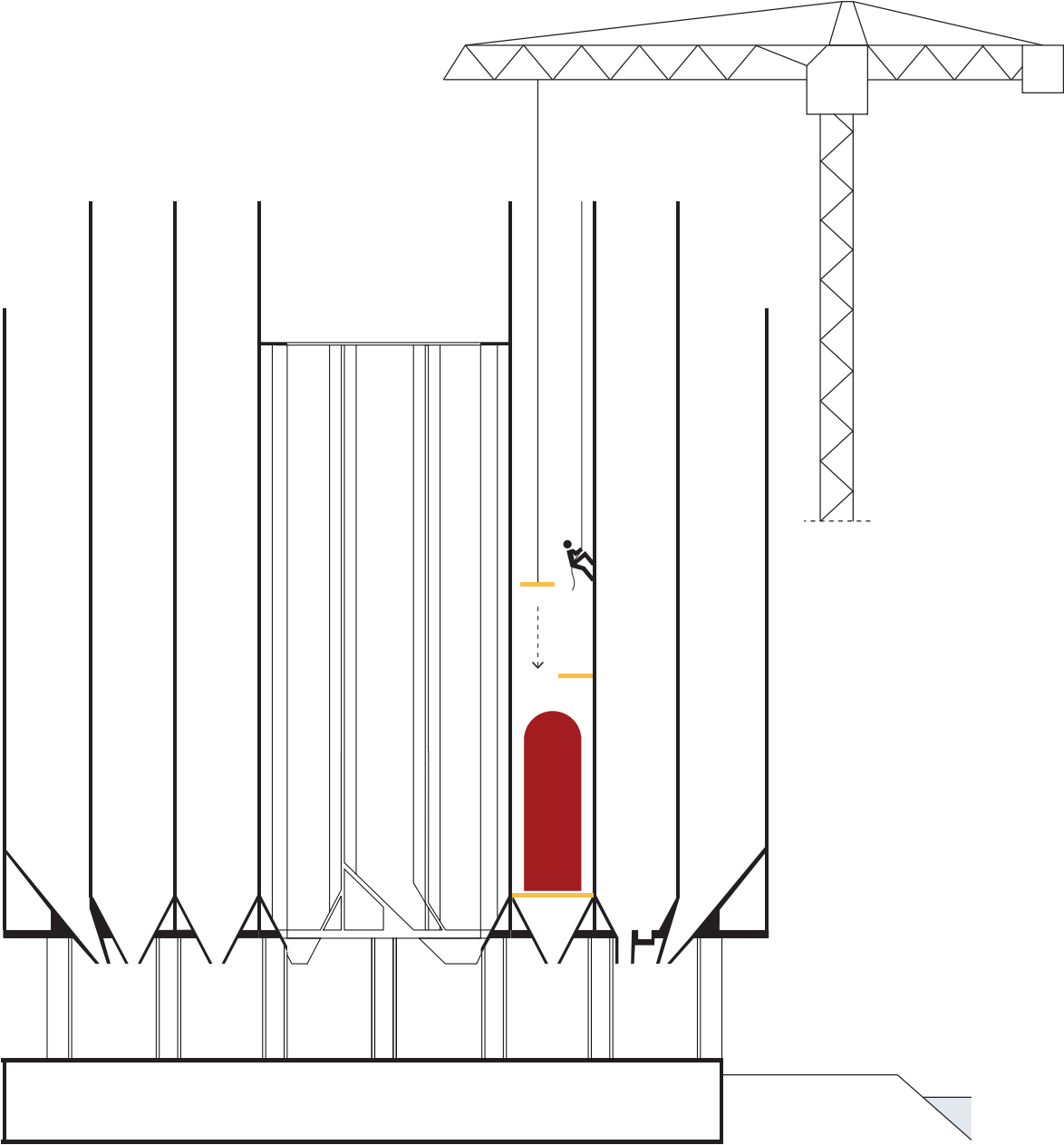




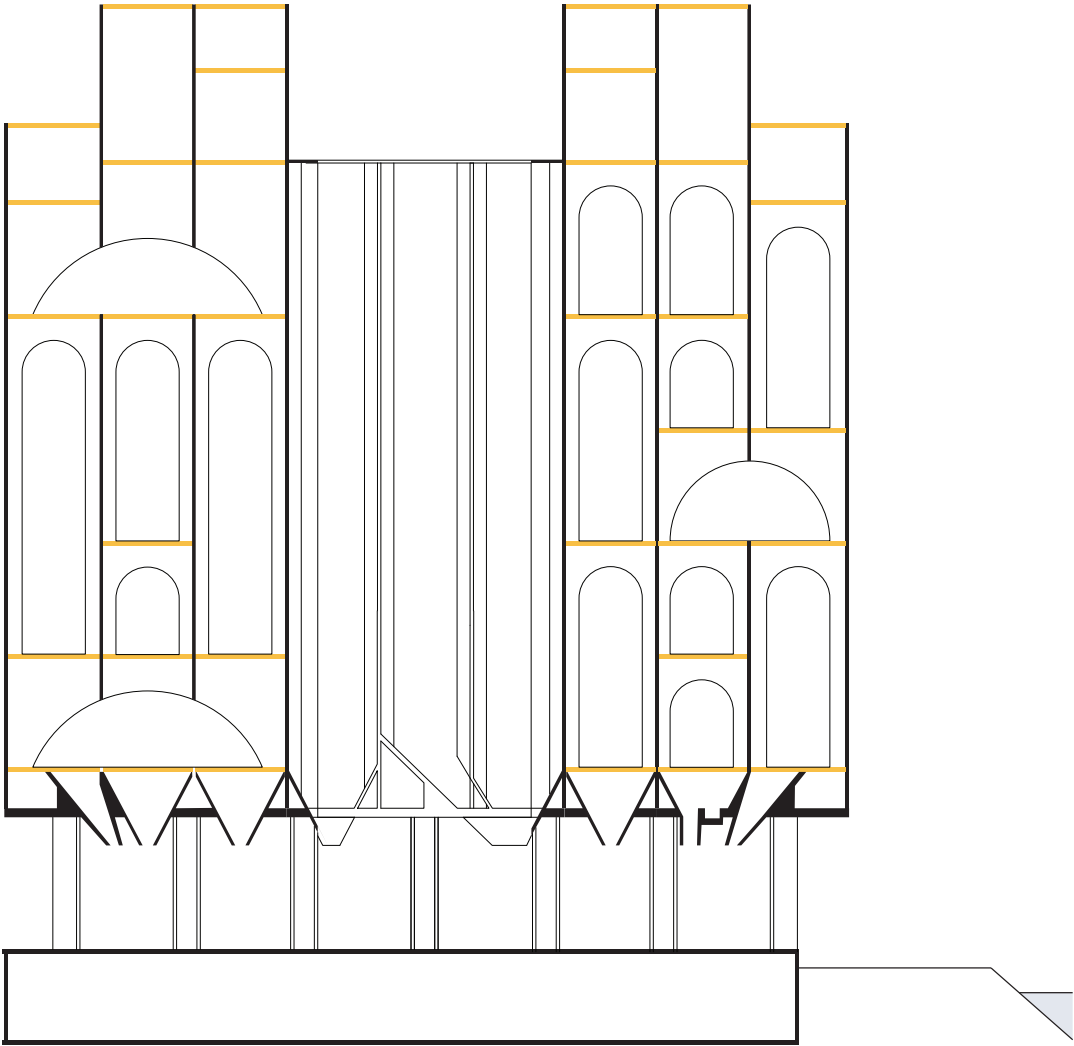
# Removal Silo's



# Manufacturability



# Floor Composition



# Atrium Roof

